<table>
<tr><td colspan="2">CITY OF FRESNO

MITIGATED NEGATIVE DECLARATION</td><td rowspan="2">Notice of Intent was filed with:

FRESNO COUNTY CLERK
2220 Tulare Street
Fresno, California 93721

on

May 15, 2020</td></tr>
<tr><td>The full Initial Study and the Fresno General Plan Master Environmental Impact Report are on file in the Planning and Development Department,
Fresno City Hall, 3rd Floor
2600 Fresno Street
Fresno, California 93721
(559) 621-8277</td><td>ENVIRONMENTAL ASSESSMENT NUMBER:

<u>P19-06018/P19-06286/P20-00369/T-6241 dated May 15, 2020</u></td></tr>
<tr><td>APPLICANT:

Lorren Smith
Harbour and Associates
389 Clovis Avenue, Suite 300
Clovis, CA, 93611</td><td colspan="2">PROJECT LOCATION:

6351 East Clinton Avenue; Located on the southwest corner of East Clinton and North Armstrong Avenues in the County of Fresno, California

APNs: 574-050-12; 575-050-13
Site Latitude: 36.768585° & Site Longitude: -119. 675577°</td></tr>
</table>

<u>PROJECT DESCRIPTION</u>:

Annexation Application No. P19-06018, Plan Amendment Application No. P19-06286, Prezone/Rezone Application No. P19-06286, Planned Development Application No. P20-00369, and Tentative Tract Map No. 6241 was filed by Lorren Smith of Harbour and Associates on behalf of Wilson Premier Homes Inc. and pertains to ± 79.12 acres of property. The applicant proposes to annex approximately ± 79.12 acres of property in to the City of Fresno. Of that, ±19.38 will be subdivided into 225 single family lots with customized development standards.

The City of Fresno has conducted an initial study and proposes to adopt a Mitigated Negative Declaration for the above-described project. The environmental analysis contained in the Initial Study and this Mitigated Negative Declaration is tiered from the Master Environmental Impact Report (SCH # 2012111015) prepared for the Fresno General Plan (“MEIR”) and Program EIR No. 10126 prepared for the Copper River Ranch Project. A copy of the MEIR and Program EIR No. 10126 may be reviewed in the City of Fresno Development and Resource Management Department as noted above. The proposed project has been determined to be a subsequent project that is not fully within the scope of the Master Environmental Impact Report ("MEIR) prepared for the Fresno General Plan. Pursuant to Public Resources Code § 21157.1 and California Environmental Quality Act (CEQA) Guidelines § 15177, this project has been evaluated with respect to each item on the attached environmental checklist to determine whether this project may cause any additional significant effect on the environment which was not previously examined in the MEIR. After conducting a review of the adequacy of the MEIR pursuant to Public Resources Code, Section 21157.6(b)(1), the Development and Resource Management Department, as lead agency, finds that no substantial changes have occurred with respect to the circumstances under which the MEIR was certified and that no new information, which was not known and could not have been known at the time that the MEIR was certified as complete, has become available.

This completed environmental impact checklist form, its associated narrative, and proposed mitigation measures reflect applicable comments of responsible and trustee agencies and research and analyses conducted to examine the interrelationship between the proposed project and the physical environment. The information contained in the project application and its related environmental assessment application, responses to requests for comment, checklist, initial study narrative, and any attachments thereto, combine to form a record indicating that an initial study has been completed in compliance with the State CEQA Guidelines.

All new development activity and many non-physical projects contribute directly or indirectly toward cumulative impacts on the physical environment. It has been determined that the incremental effect contributed by this project toward cumulative impacts is not considered substantial or significant in itself, and/or that cumulative impacts accruing from this project may be mitigated to less than significant with application of feasible mitigation measures.

Based upon the evaluation guided by the environmental checklist form, it was determined that there are foreseeable impacts from the Project that are additional to those identified in the MEIR, and/or impacts which require mitigation measures not included in the MEIR Mitigation Measure Checklist.

The completed environmental checklist form indicates whether an impact is potentially significant, less than significant with mitigation, or less than significant.

For some categories of potential impacts, the checklist may indicate that a specific adverse environmental effect has been identified which is of sufficient magnitude to be of concern. Such an effect may be inherent in the nature and magnitude of the project, or may be related to the design and characteristics of the individual project. Effects so rated are not sufficient in themselves to require the preparation of an Environmental Impact Report, and have been mitigated to the extent feasible. With the project specific mitigation imposed, there is no substantial evidence in the record that this project may have additional significant, direct, indirect or cumulative effects on the environment that are significant and that were not identified and analyzed in the MEIR. Both the MEIR mitigation checklist measures and the project-specific mitigation checklist measures will be imposed on this project.

The initial study has concluded that the proposed project will not result in any adverse effects which fall within the "Mandatory Findings of Significance" contained in Section 15065 of the State CEQA Guidelines.

The finding is, therefore, made that the proposed project will not have a significant adverse effect on the environment.

PREPARED BY: Provost and Pritchard Consulting Firm	SUBMITTED BY: Israel Trejo, Supervising Planner PLANNING AND DEVELOPMENT DEPARTMENT
DATE: May 15, 2020	
Attachments:	-Notice of Intent -Initial Study (Appendix G) -MEIR Mitigation Monitoring Checklist Mitigation and Monitoring Reporting Program dated May 15, 2020 - Project Specific Mitigation Monitoring Checklist dated May 15, 2020

CITY OF FRESNO **NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION**	Filed with:
EA No. P19-06018/P19-06286/P20-00369/T-6241 dated May 15, 2020 for Annexation Application No. P19-06018 Plan Amendment Application No. P19-06286 Prezone/Rezone Application No. P19-06286 Planned Development Application No. P20-00369 Tentative Tract Map No. 6241	FRESNO COUNTY CLERK 2220 Tulare Street, Fresno, CA 93721
PROJECT SPONSOR: Lorren Smith Harbour & Associates 389 Clovis Avenue, Suite 300 Clovis, Ca, 93611	
PROJECT LOCATION: 6351 East Clinton Avenue; Located on the southwest corner of East Clinton and North Armstrong Avenues in the County of Fresno, California APNs: 574-050-12; 575-050-13 Site Latitude: 36.768585° & Site Longitude: -119. 675577° Mount Diablo Base & Meridian, Township 13S, Range 21E, Sections 27 and 34	

PROJECT DESCRIPTION:

Annexation Application No. P19-06018, Plan Amendment Application No. P19-06286, Prezone/Rezone Application No. P19-06286, Planned Development Application No. P20-00369, and Tentative Tract Map No. 6241was filed by Lorren Smith of Harbour and Associates on behalf of Wilson Premier Homes Inc. and pertains to ± 79.12 acres of property. The applicant proposes to annex approximately ± 79.12 acres of property in to the City of Fresno. Of that, ±19.38 will be subdivided into 225 single family lots with customized development standards.

The City of Fresno has conducted an initial study of the above-described project and it has been determined to be a subsequent project that is not fully within the scope of the Master Environmental Impact Report SCH No. 2012111015 (MEIR) prepared for the Fresno General Plan. Therefore, the Planning and Development Department proposes to adopt a Mitigated Negative Declaration for this project.

With the project specific mitigation imposed, there is no substantial evidence in the record that this project may have additional significant, direct, indirect or cumulative effects on the environment that are significant and that were not identified and analyzed in the MEIR. After conducting a review of the adequacy of the MEIR pursuant to Public Resources Code, Section 21157.6(b)(1), the Development and Resource Management Department, as lead agency, finds that no substantial changes have occurred with respect to the circumstances under which the MEIR was certified and that no new information, which was not known and could not have been known at the time that the MEIR was certified as complete has become available. The project is not located on a site which is included on any of the lists enumerated under Section 65962.5 of the Government Code including, but not limited to, lists of hazardous waste facilities, land designated as hazardous waste property, hazardous waste disposal sites and others, and the information in the Hazardous Waste and Substances Statement required under subdivision (f) of that Section.

Additional information on the proposed project, including the MEIR proposed environmental finding of a mitigated negative declaration and the initial study may be obtained from the Development and Resource Management Department, Fresno City Hall, 2600 Fresno Street, 3rd Floor Fresno, Room 3043, California 93721-3604. Please contact Kelsey George at (559) 621-8060 for more information.

ANY INTERESTED PERSON may comment on the proposed environmental finding. Comments must be in writing and must state (1) the commentor's name and address; (2) the commentor's interest in, or relationship to, the project; (3) the environmental determination being commented upon; and (4) the specific reason(s) why the proposed environmental determination should or should not be made. Any comments may be submitted at any time between the publication date of this notice and close of business on June 8, 2020 Please direct comments to Kelsey George, Planner, City of Fresno Planning and Development Department, City Hall, 2600 Fresno Street, Room 3043, Fresno, California, 93721-3604; or by email to Kelsey.George@fresno.gov ; or comments can be sent by facsimile to (559) 498-1026.

INITIAL STUDY PREPARED BY: Provost and Pritchard Consulting Group	SUBMITTED BY: Israel Trejo, Supervising Planner CITY OF FRESNO PLANNING AND DEVELOPMENT DEPARTMENT
DATE: May 15, 2020	

City of Fresno

Vesting Tentative Tract Map No. 6241

Administrative Draft Initial Study/Mitigated Negative Declaration
March 2020

Prepared for:
City of Fresno

Prepared by:
Provost & Pritchard Consulting Group
286 W. Cromwell Avenue
Fresno, CA 93711-6162

Report Prepared for:

The City of Fresno

Planning and Development Department
2600 Fresno Street, Room 3065
Fresno, CA 93721

Contact:
Will Tackett
(559) 621-8063

Project Proponent:

Jeff Harris
Tri-Wilson LP
7550 N. Palm, Suite 102
Fresno, CA 93711

Contact:
Jeff Harris
(559) 224-7550

Report Prepared by:

Provost & Pritchard Consulting Group

Dawn E. Marple, Principal Planner, QA/QC
Louise Palmer, Senior Planner
Hilary Malveaux, Assistant Planner
Mallory Serrao, GIS
Jackie Lancaster, Administrative Support

Contact:
Dawn E. Marple
(559) 636-1166

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Acronyms & Abbreviations

AF .... acre-feet
AFY .... acre-feet/year
ALUCP .... Airport Land Use Compatibility Plan
AQP .... Air Quality Plan
BAU .... business as usual
bcf .... billion cubic feet
Cal/OSHA .... California Occupational Safety and Health Administration
CalEEMod .... California Emissions Estimator Modeling (software)
CalEPA .... California Environmental Protection Agency
CARB .... California Air Resources Board
CCAA .... California Clean Air Act
CCAP .... Climate Change Action Plan
CDFW .... California Fish and Wildlife
CEQA .... California Environmental Quality Act
CNDDB .... California Natural Diversity Database
CO .... Carbon Monoxide
CO_2 .... carbon dioxide
CSUB .... California State University Bakersfield
dBA .... A weighted decibels
DWR .... Department of Water Resources
EE .... PGE Energy Efficiency Programs
EIR .... Environmental Impact Report
EPA .... Environmental Protection Agency
FMFCD .... Fresno Metropolitan Flood Control District
FMMP .... Farmland Mapping and Monitoring Program
GAMAQI .... Guidelines for Assessing and Mitigating Air Quality Impacts
GHG .... greenhouse gases
GSA .... Groundwater Sustainability Agency
GSP .... Groundwater Sustainability Plans
IS .... Initial Study
IS/MND .... Initial Study/Mitigated Negative Declaration
LOS .... Level of Service

MEIR .... Master Environmental Impact Report
mgd .... million gallons per day
MMRP .... Mitigation Monitoring and Reporting Program
MND .... Mitigated Negative Declaration
MRZs .... Mineral Resource Zones
$MTCO_2e$ .... metric tons carbon dioxide
NAAQS .... National Ambient Air Quality Standards
NAHC .... Native American Heritage Commission
ND .... Negative Declaration
NFWTF .... North Fresno Wastewater Treatment Facility
NO_2 .... Nitrogen Dioxide
NO_x .... Nitrogen oxides
NWI .... National Wetland Inventory
PGE .... Pacific Gas & Electric
PM_{10} .... particulate matter 10 microns in size
$PM_{2.5}$ .... particulate matter 2.5 microns in size
ROG .... reactive organic gases
SGMA .... Sustainable Groundwater Management Act
SJVAB .... San Joaquin Valley Air Basin
SJVAPCD .... San Joaquin Valley Air Pollution Control District
SO_2 .... Sulfur Dioxide
SR .... State Route
SSJVAIC .... Southern San Joaquin Valley Archaeological Information Center
SWPPP .... Storm Water Pollution Prevention Plan
SWRCB .... State Water Resources Control Board
TACs .... Toxic Air Contaminants
TDS .... total dissolved solids
TIS .... Traffic Impact Study
TIZ .... Traffic Impact Zone
TPZ .... Traffic Pattern Zone
USFWS .... United States Fish and Wildlife Service
USGS .... United States Geological Survey
UWMP .... Urban Water Management Plan
VOCs .... volatile organic compounds
VTM .... Vesting Tentative Tract Map

Chapter 1 Introduction

Provost & Pritchard Consulting Group (Provost & Pritchard) has prepared this Initial Study/Mitigated Negative Declaration (IS/MND) on behalf of the City of Fresno (City) to address the environmental effects of Plan Amendment Application No. P19-06286, Prezone Application No. P19-06286, Annexation Application No. P19-06018, Planned Development Permit Application No. P20-00369, and Vesting Tentative Tract Map No. 6241 pertaining to ±79.12 acres of property located on the southwest corner of East Clinton and North Armstrong Avenues in Fresno, CA, Fresno County. This document has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Section 21000 *et seq*. The City is the CEQA lead agency for this proposed Project.

The site and the proposed Project are described in detail in **Chapter 2 Project Description**.

1.1 Regulatory Information

An Initial Study (IS) is a document prepared by a lead agency to determine whether a project may have a significant effect on the environment. In accordance with California Code of Regulations Title 14 (Chapter 3, Section 15000, *et seq*.)—also known as the CEQA Guidelines—Section 15064 (a)(1) states that an environmental impact report (EIR) must be prepared if there is substantial evidence in light of the whole record that the proposed Project under review may have a significant effect on the environment and should be further analyzed to determine mitigation measures or project alternatives that might avoid or reduce project impacts to less than significant levels. A negative declaration (ND) may be prepared instead if the lead agency finds that there is *no* substantial evidence in light of the whole record that the project may have a significant effect on the environment. An ND is a written statement describing the reasons why a proposed Project, not otherwise exempt from CEQA, would not have a significant effect on the environment and, therefore, why it would not require the preparation of an EIR (CEQA Guidelines Section 15371). According to CEQA Guidelines Section 15070, a ND or *mitigated* ND shall be prepared for a project subject to CEQA when either:

a. The IS shows there is no substantial evidence, in light of the whole record before the agency, that the proposed Project may have a significant effect on the environment, or

b. The IS identified potentially significant effects, but:

    1. Revisions in the project plans or proposals made by or agreed to by the applicant before the proposed MND and IS are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur is prepared, and

    2. There is no substantial evidence, in light of the whole record before the agency, that the proposed Project *as revised* may have a significant effect on the environment.

1.2 Document Format

This IS/MND contains five chapters and four appendices. **Chapter 1 Introduction** provides an overview of the proposed Project and the CEQA process. **Chapter 2 Project Description** provides a detailed description of proposed Project components and objectives. **Chapter 3 Impact Analysis** presents the CEQA checklist and environmental analysis for all impact areas, mandatory findings of significance, and feasible mitigation measures. If the proposed Project does not have the potential to significantly impact a given issue area, the relevant section provides a brief discussion of the reasons why no impacts are expected. If the proposed Project could have a potentially significant impact on a resource, the issue area discussion provides a description of potential impacts, and appropriate mitigation measures and/or permit requirements that would reduce those impacts to a less than significant level. **Chapter 3** concludes with the Lead Agency's determination based upon this initial evaluation. **Chapter 4 Mitigation Monitoring and Reporting Program** (MMRP), provides the proposed mitigation measures, implementation timelines, and the entity/agency responsible for ensuring implementation. The IS/MND concludes with **Chapter 5 Works Cited** a listing of the works cited or relied upon in the analysis.

Chapter 2 Project Description

2.1 Project Title

General Plan Amendment Application No. P19-06286
Annexation Application No. P19-06018
Prezone Application No. P19-06286
Planned Development Permit Application No. P20-00369
Vesting Tentative Tract Map No. 6241

2.2 Project Details

Lorren Smith of Harbour & Associates, on behalf of Wilson Premier Homes, Inc., has filed General Plan Amendment Application No. P19-06286, Prezone Application No. P19-06286, Annexation Application No. P19-06018, Planned Development Permit Application No. P20-00369, and Vesting Tentative Tract Map No. 6241 pertaining to a total ±79.12 acres of property located on the southwest corner of East Clinton and North Armstrong Avenues.

General Plan Amendment Application No. P19-06286 proposes to amend the City of Fresno General Plan to change the planned land use designation for ±8.66 acres of the subject property from Rural Urban Neighborhood (16-30 dwelling units per acre) to Single Family Residential – Medium Density (5–12 dwelling units per acre).

Prezone Application No. P19-06286 proposes to amend the Official Zoning Map of the City of Fresno to pre-zone ±59.74 acres of subject property from the Fresno County AE-20 (Exclusive 20-acre Agricultural District) to the City of Fresno RS-5/UGM/ANX (Residential Single Family, Low Density / Urban Growth Management / Annexed Rural Residential Transitional Overlay) zone district and ±19.38 acres of subject property from the Fresno County AE-20 (Exclusive 20-acre Agricultural District) to the City of Fresno RS-5/UGM (Residential Single Family, Low Density / Urban Growth Management) zone district.

Annexation Application No. P19-06018 has been filed requesting authorization to initiate annexation proceedings for the Clinton-Armstrong No. 3 Reorganization proposing incorporation of the subject property within the City of Fresno; and, detachment from the Kings River Conservation District and Fresno County Fire Protection District (these actions are under the jurisdiction of the Fresno Local Area Formation Commission).

Planned Development Permit Application No. P19-00369 has been filed for purposes of authorizing customized development standards for Vesting Tentative Tract Map No. 6241. Customized development standards may include, but not be limited to, modifications to minimum lot size and dimension requirements, reductions to building setback requirements, and increases in lot coverage allowances.

Vesting Tentative Tract Map No. 6241 proposes to subdivide a ±19.38 net acre portion of the subject property located on the southwest corner of East Clinton and North Armstrong Avenues for purposes of creating 225 single family residential lots.

The project will also require dedications and/or acquisitions for public street rights-of-way and utility easements as well as the construction of public facilities and infrastructure in accordance with the standards, specifications, and policies of the City of Fresno in order to facilitate the future proposed development of the subject property.

2.2.1 Lead Agency Name and Address

City of Fresno
2600 Fresno Street, Room 3065
Fresno, CA 93721

2.2.2 Contact Person and Phone Number

Will Tackett
(559) 621-8063
Will.Tackett@fresno.gov

CEQA Consultant
Provost & Pritchard Consulting Group
Dawn E. Marple, Environmental Project Manager
(559) 636-1166

2.2.3 Project Location

The Project is generally located on the southwest corner of East Clinton and North Armstrong Avenues. The proposed subdivision is located on an undeveloped parcel on the east side of North Armstrong Avenue. between East Clinton and East McKinley Avenues (APNs: 574-050-12 and 574-050-13) Fresno County, California, Township 13S, Range 21E, Sections 27 and 34, Mount Diablo Base & Meridian (see **Figure 2-2**). The project is within the McLane Community Plan area in the County of Fresno. The site is topographically flat and is bounded by City of Fresno incorporated parcels on the north, east, and west sides. These parcels are planned for residential land uses and zoned for single family residential at different densities. The parcel south of the project site is located outside City of Fresno limits, within the County of Fresno. Assessor's Parcel Numbers involved in discretionary actions included in this analysis are listed below.

Table 2-1 Project Assessor Parcels

Project Discretionary Action	Assessor Parcel Numbers Involved
Annexation	310-041-23 – 25; 574-050-01 – 02; 574-050-10 – 13
Planned Development Permit Application	574-050-12 & 13
Vesting Tentative Tract No. 6241	574-050-12 & 13

2.2.4 Latitude and Longitude

The centroid of the Project area is located within:
Latitude: 36.768585°
Longitude: -119. 675577°

2.2.5 General Plan Designation

The City of Fresno General Plan designates the subject properties for the following planned land uses: Residential – Medium Density (5–12 dwelling units per acre) and Residential – Urban Neighborhood (16–30 dwelling units per acre).

Table 2-2 General Plan Designation

Assessor's Parcel Number	General Plan Designation
310-041-23 – 25; 574-050-01 – 02; 574-050-10 – 11	Residential – Medium Density
574-050-12 – 13	Residential – Medium Density Residential – Urban Neighborhood

2.2.6 Zoning

The subject property is zoned by Fresno County as AE-20 (Exclusive 20-acre Agricultural District).

Table 2-3 Existing and Proposed Zone Districts

Assessor's Parcel Number	Zoning
310-041-23 – 25; 574-050-01 – 02; 574-050-10 – 13	AE 20 (Exclusive 20- acre Agriculture District)

2.2.7 Surrounding Land Uses

Table 2-4 Surrounding Land Uses

Direction	Existing Land Use	General Plan	Zoning
North	Rural residence, fallow ag land	RM – Residential, Medium Density	RS-5, Residential Single Family, Medium Density
South	Rural residences	CBP – Employment, Business Park Canal	AE 20 Exclusive Agriculture
East	Rural residences and ag operations	RL – Residential, Low Density; RML – Residential, Medium Low Density	AE 20 Exclusive Agriculture RS-4, Residential Single Family, Medium Low Density
West	Agricultural operations	RM – Residential Medium Density	RS-5, Residential Single Family, Medium Density

Other Public Agencies Whose Approval May Be Required

Clovis Unified School District
Fresno Unified School District
City of Fresno Development and Resource Management
City of Fresno Department of Public Works
City of Fresno Department of Public Utilities
City of Fresno Fire Department
City of Fresno of Fresno Department of Public Health
City of Fresno Department of Transportation
Fresno Irrigation District
Fresno Metropolitan Flood Control District
San Joaquin Valley Air Pollution Control District (SJVAPCD)
County of Fresno Department of Public Works and Planning
Fresno Local Agency Formation Commission

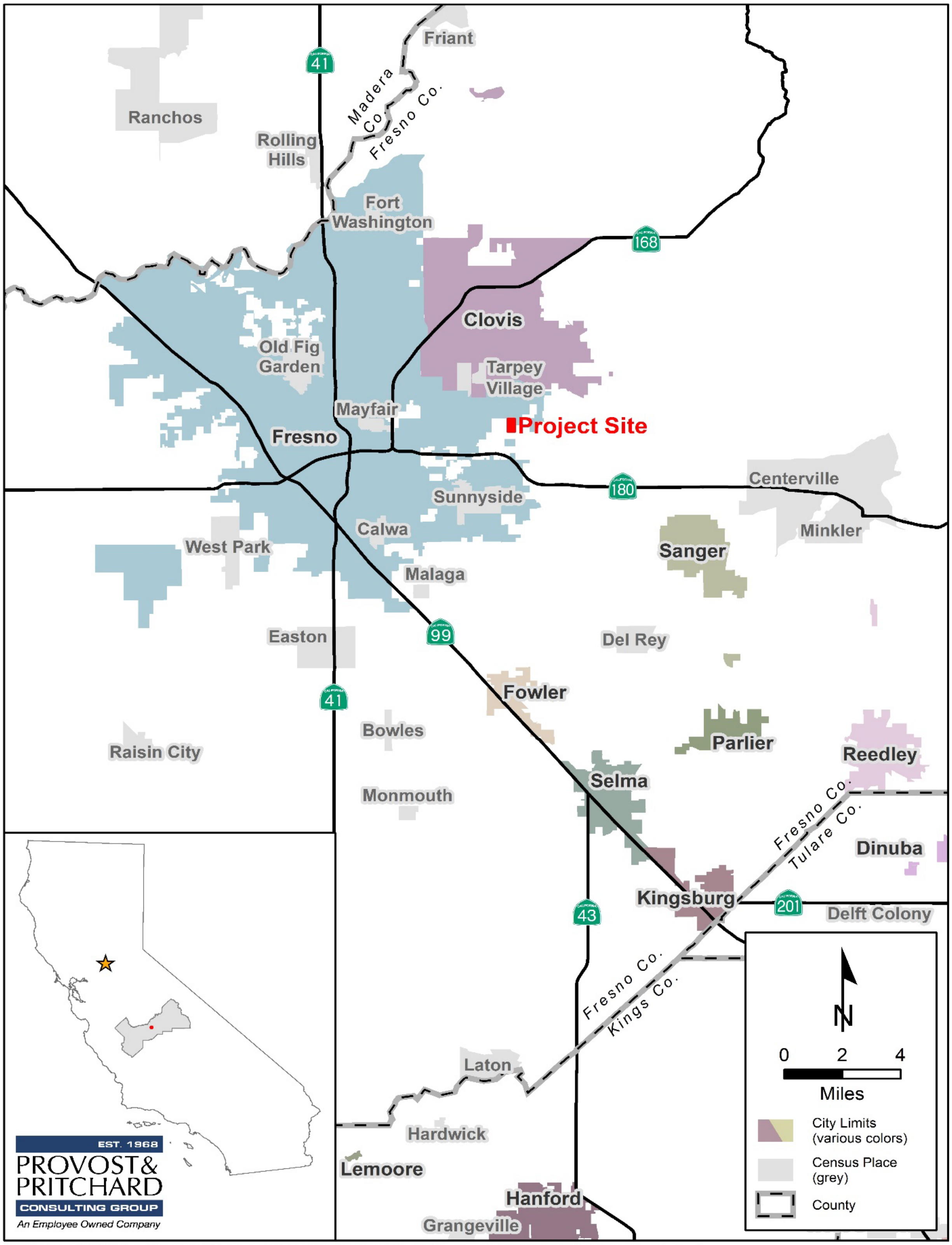

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Figure 2-1 Regional Location

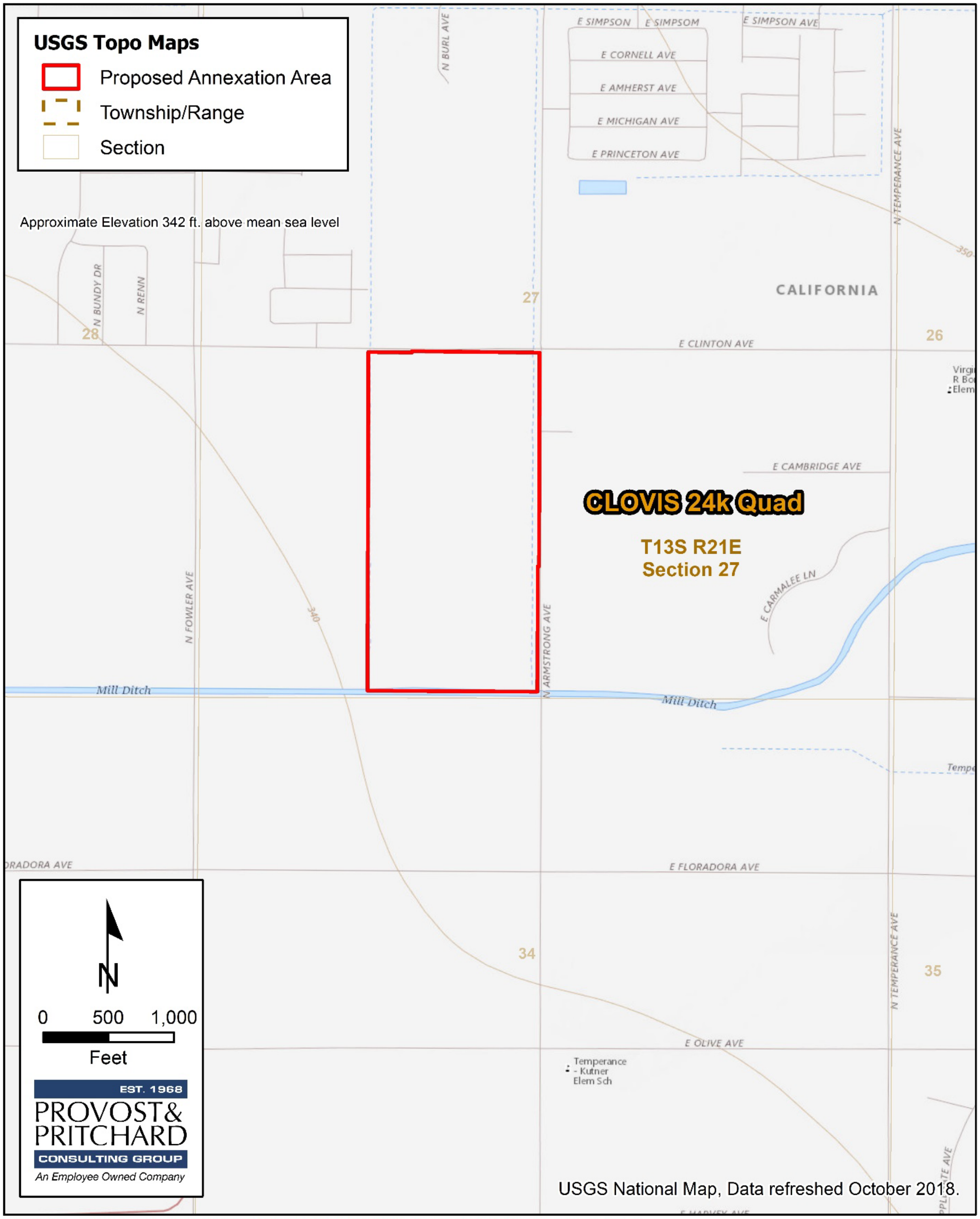

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Figure 2-2 Topographic Quadrangle Map

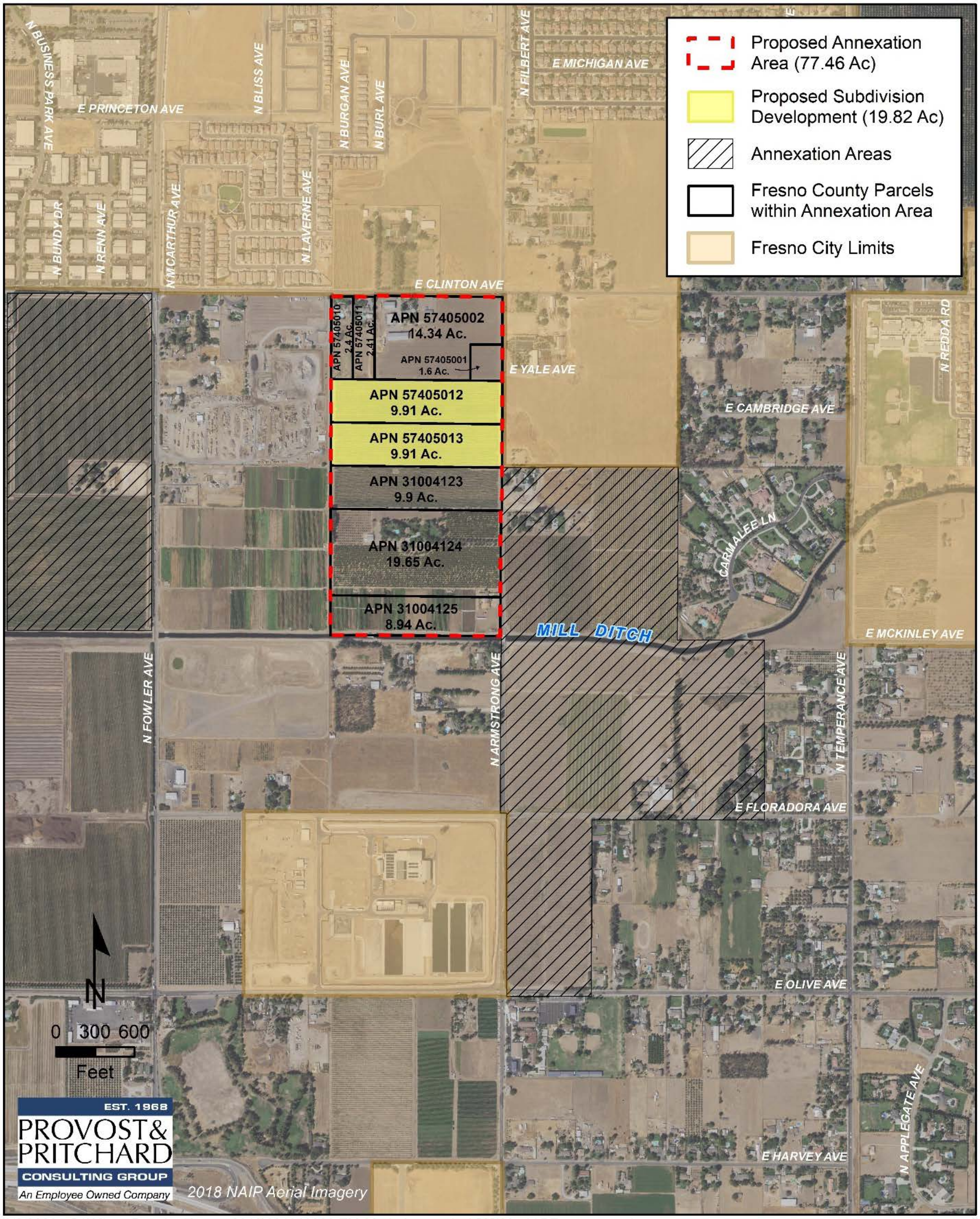

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Figure 2-3 Vicinity Map

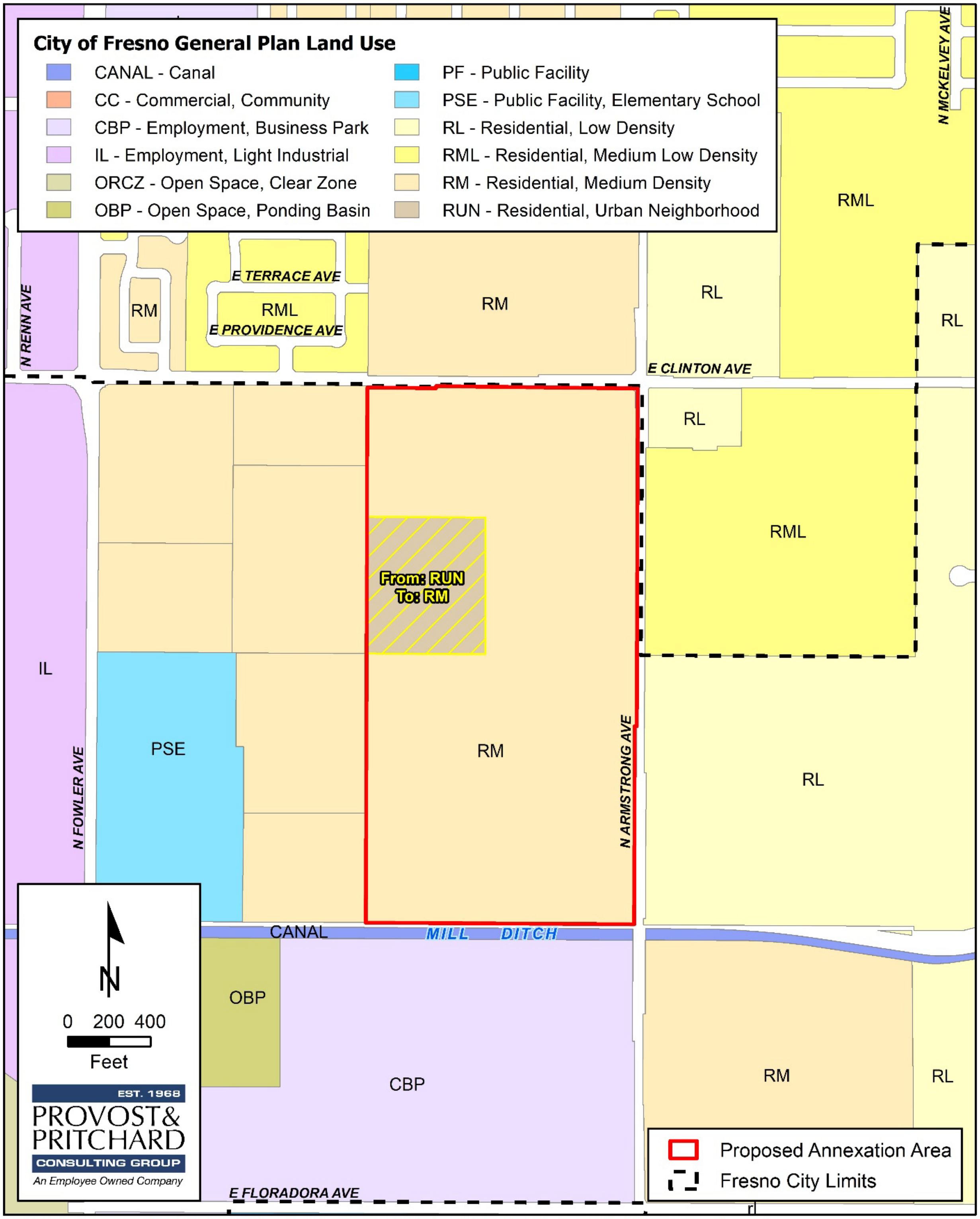

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Figure 2-4 General Plan Land Use Designation Map

Figure 2-5 Zone District Map

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Chapter 3 Impact Analysis

3.1 Environmental Factors Potentially Affected

As indicated by the discussions of existing and baseline conditions, and impact analyses that follow in this Chapter, environmental factors not checked below would have no impacts or less than significant impacts resulting from the project. Environmental factors that are checked below would have potentially significant impacts resulting from the project. Mitigation measures are recommended for each of the potentially significant impacts that would reduce the impact to less than significant.

☐ Aesthetics	☒ Agriculture and Forestry Resources	☐ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☒ Transportation	☒ Tribal Cultural Resources
☐ Utilities/Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

The analyses of environmental impacts here in **Chapter 3 Impact Analysis** are separated into the following categories:

Potentially Significant Impact. This category is applicable if there is substantial evidence that an effect may be significant, and no feasible mitigation measures can be identified to reduce impacts to a less than significant level. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

Less than Significant with Mitigation Incorporated. This category applies where the incorporation of mitigation measures would reduce an effect from a "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measure(s), and briefly explain how they would reduce the effect to a less than significant level (mitigation measures from earlier analyses may be cross-referenced).

Less Than Significant Impact. This category is identified when the proposed Project would result in impacts below the threshold of significance, and no mitigation measures are required.

No Impact. This category applies when a project would not create an impact in the specific environmental issue area. "No Impact" answers do not require a detailed explanation if they are adequately supported by the information sources cited by the lead agency, which show that the impact does not apply to the specific project (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

3.2 Aesthetics

Aesthetics				
Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

3.2.1 Impact Assessment

A scenic vista is generally regarded as a viewpoint that provides a distant view of highly valued natural or man-made landscape features for the benefit of the general public. Within the Fresno area, scenic vistas include the San Joaquin River along the northern boundary and the foothills of the Sierra Nevada Mountain Range. Scenic resources include landscapes and features that are visually or aesthetically pleasing. Scenic resources contribute positively to a distinct community or region and may confer a visual benefit upon communities. Typical scenic resources within the planning area include landscaped open spaces such as parks and golf courses. Historic buildings, generally located in downtown Fresno, represent scenic resources and provide a uniquely scenic skyline.

For purposes of this analysis, and as defined in CEQA (PRC Section 21071), an Urbanized Area means either of the following:

(a) An incorporated city that meets either of the following criteria:
- (1) Has a population of at least 100,000 persons.
- (2) Has a population of less than 100,000 persons if the population of that city and not more than two contiguous incorporated cities combined equals at least 100,000 persons.

(b) An unincorporated area that satisfies the criteria in both paragraph (1) and (2) of the following criteria:
- (1) Is either of the following:
  - (A) Completely surrounded by one or more incorporated cities, and both of the following criteria are met:
    - (i) The population of the unincorporated area and the population of the surrounding incorporated city or cities equals not less than 100,000 persons.
    - (ii) The population density of the unincorporated area at least equals the population density of the surrounding city or cities.

(B) Located within an urban growth boundary and has an existing residential population of at least 5,000 persons per square mile. For purposes of this subparagraph, an "urban growth boundary" means a provision of a locally adopted general plan that allows urban uses on one side of the boundary and prohibits urban uses on the other side.

(2) The board of supervisors with jurisdiction over the unincorporated area has previously taken both of the following actions:

(A) Issued a finding that the general plan, zoning ordinance, and related policies and programs applicable to the unincorporated area are consistent with principles that encourage compact development in a manner that does both of the following:

(i) Promotes efficient transportation systems, economic growth, affordable housing, energy efficiency, and an appropriate balance of jobs and housing.

(ii) Protects the environment, open space, and agricultural areas.

(B) Submitted a draft finding to the Office of Planning and Research at least 30 days prior to issuing a final finding and allowed the office 30 days to submit comments on the draft findings to the board of supervisors.

Because the Project does not meet the criteria of both paragraph (1) and (2) above, the Project is located within a non-urbanized area.

a) Would the project have a substantial adverse effect on a scenic vista?

a) Less Than Significant Impact. The Project area does not propose significant impediments to the general public or obstructions to the view of natural features such as the San Joaquin River or Sierra Nevada Mountain Range. Height and bulk restrictions of the base zone district would reduce visual impacts that could have the potential to obstruct views. Accordingly, the Project would not have a substantial adverse effect on a scenic vista.

Mitigation Measures

No mitigation is warranted.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

b) No Impact. There are no identified scenic resources, trees, rock outcroppings, or historic buildings on or near the subject site. There are no state scenic highways within the Project's vicinity. Therefore, the Project would have no impact on scenic resources such as trees and rock outcroppings, historic buildings, or state scenic highways.

Mitigation Measures

No mitigation is warranted.

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

c) Less Than Significant Impact. The Project is located in a non-urbanized area. Existing public views of the site and its surroundings consist of views of existing building and agricultural development. The Project would involve the construction of new residences that are similar in height, bulk, and scale to other existing development in the area. Views of other aesthetic features such as surrounding mountains would not be substantially altered by the proposed development. The Project would not substantially affect other publicly assessible vantage points that afford distant views of highly valued natural or man-made landscape features. As such, the Project would have a less than significant impact related to the degradation of existing visual character or quality of public views of either the site or its surroundings.

Mitigation Measures

No mitigation is warranted.

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

d) Less Than Significant Impact. Development of the site will introduce new sources of light and glare. The site is within a non-urbanized area; however, the area has existing sources of light and glare. Lighting sources within the Project's vicinity provide for direction and security, as well as contributing visually to the developing landscape. Existing light sources within the Project's vicinity currently affect day and nighttime views in the Project area to a degree equal to or greater than the light sources proposed by the Project. Therefore, new sources of light and glare generated by the Project would be consistent with existing lighting in the area and would be considered less than significant new sources of light and glare.

Mitigation Measures

No mitigation is warranted.

3.3 Agriculture and Forestry Resources

Agriculture and Forest Resources				
Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☒	☐	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☒	☐	☐
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☒	☐	☐

3.3.1 Environmental Setting and Baseline Conditions

The portions of the Project site proposed for the construction of VTM 6241 are currently in agriculture production while portions of the area within the proposed Annexation remain in agricultural production. The Project is currently not held under Williamson Act contract.

Farmland Mapping and Monitoring Program (FMMP)

The FMMP produces maps and statistical data used for analyzing impacts to California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status; the best quality land is called Prime Farmland. The maps are updated every two years with the use of a computer mapping system, aerial imagery, public review, and field reconnaissance.

The California Department of Conservation's (DOC) 2012 FMMP is a non-regulatory program that produces "Important Farmland" maps and statistical data used for analyzing impacts on California's agricultural resources. The Important Farmland maps identify eight general land use categories, five of which are agriculture related: prime farmland, farmland of statewide importance, unique farmland, farmland of local importance, and grazing land—rated according to soil quality and irrigation status. In addition, within the San Joaquin Valley, the Rural Land Mapping Project provides more detail on land uses within the Other Land category by adding five sub-categories within the general Other Land category.

The subject properties are designated Prime Farmland, Farmland of Local Importance, and Other Land – Rural Residential by the FMMP as illustrated on **Figure 3-1**. The DOC's explanations for the designations found within the Project area and its vicinity are summarized below:[1]

- PRIME FARMLAND (P): Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

- FARMLAND OF LOCAL IMPORTANCE (L): Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

- OTHER LAND (X): Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than forty acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.

  - RURAL RESIDENTIAL (R): Residential areas of 1 to 5 structures per 10 acres ('ranchettes').

Applicable General Plan Policies include:

Chapter 7, Resource Conservation and Resilience

RC-9 Preserve agricultural land outside of the area planned for urbanization under this General Plan.

RC-9-b. **Unincorporated Land in Planning Area.** Express opposition to residential and commercial development proposals in unincorporated areas within or adjacent to the Planning Area when these proposals would do any of the following:
• Make it difficult or infeasible to implement the General Plan;
• Contribute to the premature conversion of agricultural, open space, or grazing lands; or
• Constitute a detriment to the management of resources and/or facilities important to the region (such as air quality, water quantity and quality, traffic circulation, and riparian habitat).

RC-9-c **Farmland Preservation Program.** In coordination with regional partners or independently, establish a Farmland Preservation Program. When Prime Farmland, Unique Farmland, or Farmland of Statewide Importance is converted to urban uses outside City limits, this program would require that the developer of such a project mitigate the loss of such farmland consistent with the requirements of CEQA. The Farmland Preservation Program shall provide several mitigation options that may include, but are not limited to the following: Restrictive Covenants or Deeds, In Lieu Fees, Mitigation Banks, Fee Title Acquisition, Conservation Easements, Land Use Regulation, or any other mitigation method that is in compliance with the requirements of CEQA. The Farmland Preservation Program may be modeled after some or all of the programs described by the California Council of Land Trusts.

[1] (California Department of Conservation, 2019)

3.3.2 Impact Assessment

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

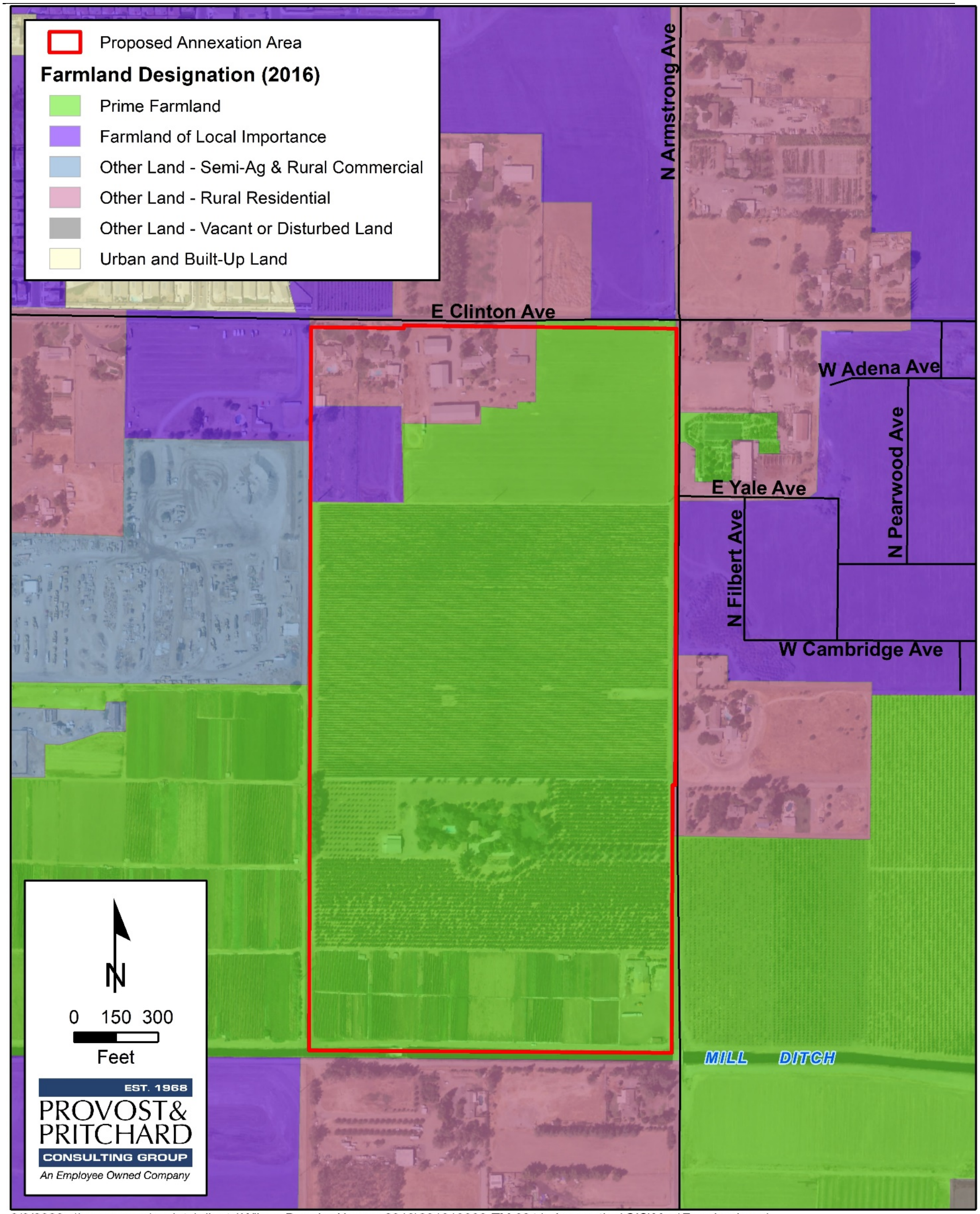
b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

a and b) Less than Significant Impact with Mitigation Incorporated. The affected properties are not subject to a Williamson Act agricultural land conservation contract. FMMP farmland designations are shown in **Figure 3-1.** Portions of the Project area are designated Prime Farmland and Farmland of Statewide Importance. The adopted Statement of Overriding Considerations for the Master Environmental Impact Report (MEIR) addressed Findings of Significant Unavoidable Impacts for Agricultural Resources- citing specific economic, legal, social, technological, or other considerations. The provision of an adequate housing stock was among the economic considerations the City Council considered to be benefits, which outweighed the unavoidable adverse environmental effects attributed to development occurring within the City of Fresno Sphere of Influence (SOI).

On December 6, 2017, the City amended and initiated Policy RC-9-c of the General Plan, to create a Farmland Preservation Program. Requirements of the program call for the mitigation of losses to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance when such lands are converted to urban uses within or outside of City limits. Therefore, with incorporation of mitigation from the MEIR, the impacts of the Project on such lands are less than significant.

City of Fresno MEIR – Mitigation Measures

> **AG-1.** Prior to recordation of final map(s), the Project proponent shall mitigate for the loss of prime and locally important farmland by one of the following at the discretion of the Planning Department: A) recording a restrictive covenant or deed on portions of the property having said designations; B) paying In-Lieu Fees as determined by the Planning Department; C) contributing to an established Mitigation Bank; or D) other comparable mitigation as approved by the Planning Department.



3/3/2020 : \\ppeng.com\pzdata\clients\Wilson Premier Homes-2913\291319002-TM 6241_Annexation\GIS\Map\Farmland.mxd

Figure 3-1 Farmland Designation Map

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

c and d) No Impact. The Project is not within the vicinity of a forest as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)). Therefore, the Project will not conflict with existing zoning for, or cause rezoning of, forest land nor result in the loss of forest land or conversion of forest land to non-forest use.

Mitigation Measures

No mitigation is warranted.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

e) Less than Significant Impact with Mitigation Incorporated. The Project may result in changes in the existing environment that due to both location and nature would result in the conversion of adjacent lands to non-agricultural uses. Development of the Project may result in a reduction of the productive potential of surrounding agricultural land by placing limitations on its future or current agricultural uses. According to the MEIR prepared for the City's General Plan Update, adopted on December 18, 2014 (SCH 2012111015), there were approximately 11,714 acres having agricultural operations within the Planning Area at the time of its completion. Impacts to agriculture were determined to be Significant and Unavoidable by the MEIR. The City Council adopted a Statement of Overriding Considerations related to specific economic, legal, social, technological, or other considerations. Among the other overriding circumstances considered in relationship to conversion of ±79.12 acres of agriculture proposed by the Project to non-agricultural land uses was the need to accommodate reasonable residential growth and development.

The Project site is a logical expansion for purposes of orderly development within land adjacent to existing City limits. The Project is among the category of projects, and within the locations identified in the MEIR to fulfill the need to accommodate reasonable residential growth and development. Given these circumstances, and with incorporation of **MM AG-1**, the proposed Project is consistent with the goals, objective and policies of the Fresno General Plan as referenced herein above; and, will not result in the premature conversion of agricultural lands not previously identified, or constitute a detriment to the management of agricultural resources and/or facilities important to the metropolitan area.

Mitigation Measures

Refer to **MM AG-1.**

3.4 Air Quality

Air Quality					
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d)	Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?	☐	☐	☐	☒

3.4.1 Environmental Setting and Baseline Conditions

The Project is located in the San Joaquin Valley Air Basin (SJVAB or air basin). The San Joaquin Valley Air Pollution Control District (SJVAPCD) provides Guidelines for Assessing and Mitigating Air Quality Impacts (GAMAQI) for quantification of emissions and evaluation of potential impacts to air resources[2] and Guidance for Land-Use Agencies in Addressing greenhouse gas (GHG) Emission Impacts for New Projects under CEQA.[3]

A report titled *Air Quality and Greenhouse Gas Analysis Report, Wilson Premier Homes Tract 6241, Fresno, California, January 20, 2020* (**Appendix A**) (hereafter collectively referred to as the "Air Quality and GHG report") was prepared by Mitchell Air Quality Consulting. The report prepared evaluates whether the estimated criteria air pollutants, toxic air contaminants (TACs), and GHG emissions generated by the development of the properties would cause significant impacts to air resources in the Project area. The Air Quality and GHG report provides an in-depth discussion detailing the air basin and the topography and climate that form the Project's environmental setting and establish its baseline conditions. The report also provides details of the framework under which air quality is regulated and by which impacts to air quality are identified.

3.4.1.1 Regulatory Attainment Designations

Under the California Clean Air Act (CCAA), the California Air Resources Board (CARB) is required to designate areas of the State as attainment, non-attainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "non-attainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an

[2] (San Joaquin Valley Air Pollution Control District, 2015)
[3] (San Joaquin Valley Air Pollution Control District, 2009)

exceptional event, as defined in the criteria. Depending on the frequency and severity of pollutants exceeding applicable standards, the non-attainment designation can be further classified as serious non-attainment, severe non-attainment, or extreme non-attainment, with extreme non-attainment being the most severe of the classifications. An "unclassified" designation signifies that the data does not support either an attainment or non-attainment designation. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The Environmental Protection Agency (EPA) designates areas for ozone, Carbon Monoxide (CO), and Nitrogen Dioxide (NO_2) as "does not meet the primary standards," "cannot be classified," or "better than national standards." For Sulfur Dioxide (SO_2), areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified," or "better than national standards." However, the CARB terminology of attainment, non-attainment, and unclassified is more frequently used. The EPA uses the same sub-categories for non-attainment status: serious, severe, and extreme. In 1991, EPA assigned new non-attainment designations to areas that had previously been classified as Group I, II, or III for PM_{10} based on the likelihood that they would violate national PM_{10} standards. All other areas are designated "unclassified."

The State and national attainment status designations pertaining to the SJVAB are summarized in **Table 3-1.** The SJVAB is currently designated as a non-attainment area with respect to the State standards for PM_{10}, ozone, and $PM_{2.5}$. The air basin has historically been in non-attainment for the PM_{10} National Ambient Air Quality Standards (NAAQS), however, on September 25, 2008, the EPA re-designated the San Joaquin Valley air basin to attainment status for the particulate matter 10 microns in size (PM_{10}) NAAQS and approved its PM_{10} Maintenance Plan. The SJVAB is currently designated non-attainment for the NAAQS 8-hour ozone and particulate matter 2.5 microns in size ($PM_{2.5}$).

Table 3-1 Summary of Ambient Air Quality Standards and Attainment Designation

Summary of Ambient Air Quality Standards & Attainment Designation					
Pollutant	Averaging Time	California Standards*		National Standards*	
		Concentration*	Attainment Status	Primary	Attainment Status
Ozone (O_3)	1-hour	0.09 ppm	Nonattainment/ Severe	–	No Standard
	8-hour	0.070 ppm	Nonattainment	0.070 ppm	Nonattainment (Extreme)**
Particulate Matter (PM_{10})	AAM	20 µg/m^3	Nonattainment	–	Attainment
	24-hour	50 µg/m^3		150 µg/m^3	
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 µg/m^3	Nonattainment	12 µg/m^3	Nonattainment
	24-hour	–		35 µg/m^3	
Carbon Monoxide (CO)	1-hour	20 ppm	Attainment/ Unclassified	35 ppm	Attainment/ Unclassified
	8-hour	9 ppm		9 ppm	
	8-hour (Lake Tahoe)	6 ppm		–	
Nitrogen Dioxide (NO_2)	AAM	0.030 ppm	Attainment	0.053 ppm	Attainment/ Unclassified
	1-hour	0.18 ppm		0.100 ppm	
Sulfur Dioxide (SO_2)	AAM	–	Attainment	0.030 ppm (for certain areas)	Attainment/ Unclassified
	24-hour	0.04 ppm		0.14 ppm (for certain areas)	
	3-hour	–		0.5 ppm	
	1-hour	0.25 ppm		0.075 ppm	
Lead (Pb)	30-day Average	1.5 µg/m^3	Attainment	–	No Designation/ Classification
	Calendar Quarter	–		1.5 µg/m^3	
	Rolling 3-Month Average	–		0.15 µg/m^3	
Sulfates (SO_4)	24-hour	25 µg/m^3	Attainment	No Federal Standards	
Hydrogen Sulfide (H_2S)	1-hour	0.03 ppm (42 µg/m^3)	Unclassified		
Vinyl Chloride (C_2H_3Cl)	24-hour	0.01 ppm (26 µg/m^3)	Attainment		
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient: 0.23/km-visibility of 10 miles or more due to particles when the relative humidity is less than 70%.	Unclassified		

** For more information on standards visit: http//www.arb.ca.gov.research/aaqs/aaqs2.pdf*
*** No Federal 1-hour standard. Reclassified extreme nonattainment for the Federal 8-hour standard May 5, 2010.*
****Secondary Standard*
Source: CARB 2015; SJVAPCD 2020

3.4.2 Impact Assessment

Conclusions in this Air Quality Impact assessment rely on information and findings found in the Air Quality and GHG reports (**Appendix A**). The sections below detail these conclusions and recommendations and utilize its conclusions in the determinations.

To assist local jurisdictions in the evaluation of air quality impacts, the SJVAPCD published the *Guide for Assessing and Mitigating Air Quality Impacts*. This guidance document includes recommended thresholds of significance to be used for the evaluation of short-term construction, long-term operational, odor, toxic air contaminant, and cumulative air quality impacts. Accordingly, the SJVAPCD-recommended thresholds of significance are used to determine whether implementation of the proposed Project would result in a significant air quality impact. Projects that exceed these recommended thresholds would be considered to have a potentially significant impact to human health and welfare. The thresholds of significance are included in **Table 3-2** through **Table 3-5** to provide for a comparative significance determination.

Assessment of the significance of project air quality impacts may be considered on a regional or localized level. Determination of project impacts on achieving the goal of air quality plans and evaluating impacts related to emissions of criteria pollutants are considered on both regional and localized levels in this analysis. Evaluation of impacts to sensitive receptors considers the project's localized criteria pollutant emissions in this analysis. Sources of the project's localized criteria pollutant emissions would include: reactive organic gases (ROG), Nitrogen oxides (NO_x), $PM_{2.5}$, PM_{10}, CO, NO_2, and Toxic Air Contaminants (TACs) which include acetaldehyde, benzene, 1.3 butadiene, carbon tetrachloride, hexavalent chromium, paradichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter which is a complex mixture of substances.

3.4.3 Methodology of Determining the Significance of Air Quality Impacts

3.4.3.1 Short-Term Construction-Generated Emissions

Short-term construction emissions associated with the Project were modeled by Mitchell Air Quality Consulting. The modeling includes emissions generated by construction and grading associated with the development, equipment delivery, and vehicle, equipment, and worker fuel usage. Emissions were quantified based on anticipated construction schedules and construction equipment requirements that would occur in two phases beginning on August 24, 2020 and ending December 30, 2022. All remaining assumptions were based on the default parameters contained in the model. Modeling assumptions and output files are included in **Appendix A**.

The SJVAPCD is responsible for controlling emissions primarily from stationary sources. The SJVAPCD in coordination with the eight countywide transportation agencies, is responsible for developing, updating, and implementing air quality attainment plans for the air basin. The SJVAPCD has adopted ozone plans and particulate matter plans for purposes of controlling harmful emissions and achieving attainment of state and national attainment standards. A project that would exceed established thresholds for criteria pollutants would be considered to have a significant impact on the implementation of air quality plans and would also constitute a cumulatively considerable net increase of criteria pollutants for which the air basin is in non-attainment.

Construction emissions were modeled using the CalEEMod version 2016.3.2. Construction of VTM 6241 is expected to begin in August 2020 with full buildout completed in December 2022. The results of the modeling for Tract 6241 are presented in **Table 3-2.**

Table 3-2 Short-Term Construction-Generated Emissions of Criteria Air Pollutants – VTM 6241

Short-Term Construction-Generated Emissions of Criteria Air Pollutants[4]					
Source	Annual Emissions (Tons/Year) (1)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
2020	0.10	0.99	0.76	0.13	0.09
2021	1.14	2.85	2.56	0.36	0.23
2022	1.01	1.67	1.71	0.13	0.09
Grand Total for All Years of Construction	2.25	5.51	5.03	0.62	0.41
Highest Construction Emissions Any Year	*1.14*	*2.85*	*2.56*	*0.36*	*0.23*
SJVAPCD Significance Thresholds	*10*	*10*	*100*	*15*	*15*
Exceed SJVAPCD Thresholds?	*No*	*No*	*No*	*No*	*No*

3.4.3.2 Long-Term Operational Emissions

Operational emissions occur over the lifetime of the Project and are from three main sources: area sources, energy usage, and motor vehicles usage known as mobile sources. Sources of emissions include emissions natural gas, landscape, and painting. First occupancy of VTM 6241 is expected as early as April 2021 and was used as the Project buildout modeling year for the subdivision as a conservative assumption. The SJVAPCD considers construction and operational assumptions separately when making significance determinations. Modeling assumptions and output files are included in **Appendix A**. The unmitigated long-term operational emissions for VTM 6241 is listed in **Table 3-3**.

Table 3-3 Unmitigated Long-Term Operational Emissions – VTM 6241

Long-Term Operational Emissions of Criteria Air Pollutants[5]					
Source	Annual Emissions (Tons/Year) (1)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Area	2.33	0.16	5.39	0.61	0.61
Energy	0.03	0.27	0.12	0.02	0.02
Mobile	0.70	2.54	7.88	1.18	0.64
Annual Operational Emissions	*3.06*	*2.98*	*13.38*	*1.82*	*1.28*
SJVAPCD Significance Thresholds	*10*	*10*	*100*	*15*	*15*
Exceed SJVAPCD Thresholds?	*No*	*No*	*No*	*No*	*No*

3.4.4 Screening Thresholds for Determining Impacts to Sensitive Receptors

Impacts to sensitive receptors would occur primarily during Project construction. Construction activities could produce short-term emissions that have the potential in large concentrations to contribute to cancer

[4] (Mitchell Air Quality Consulting, January 29, 2020), Table 9
[5] (Mitchell Air Quality Consulting, January 29, 2020), Table 10

risk over a 70-year exposure period. The Air Quality and GHG reports (**Appendix A**) provide technical information on the types of pollutants that have the potential to affect sensitive receptors.

The SJVAB includes screening thresholds for identifying projects that need detailed analysis for localized impacts. Projects with on-site emission increases from construction activities that exceed the 100 pounds per day screening level of any criteria pollutant after compliance with Rule 9510 and implementation of all applicable mitigation measures would require preparation of an ambient air quality analysis. The criteria pollutants of concern are NO_x, CO, PM_{10}, and $PM_{2.5}$. There is no localized emission standard for ROG and most types of ROG are not toxic and have no health-based standard, however, ROG was included for informational purposes only.[6]

An analysis of maximum daily emissions during both construction and operation was prepared for each planned subdivision by Mitchell Air Quality Consulting (**Appendix A**).

Table 3-4 lists the maximum daily air pollutant emissions generated by VTM 6241 during construction.

Table 3-4 Maximum Daily Air Pollutant Emissions During Construction – VTM 6241

Maximum Daily Air Pollutant Emissions during Construction[7]					
Maximum Daily Emissions by Year	Emissions (Pounds/Daily)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
2020	4.16	42.47	22.09	10.48	6.53
2021	86.95	56.07	36.45	11.52	7.24
2022	82.97	13.75	14.25	0.11	0.72
Highest Emissions in any Year	*86.95*	*56.07*	*36.45*	*11.52*	*7.24*
SJVAPCD Screening Thresholds	–	*100*	*100*	*100*	*100*
Exceed SJVAPCD Thresholds?	*No*	*No*	*No*	*No*	*No*

[6] (Mitchell Air Quality Consulting, January 29, 2020)
[7] (Mitchell Air Quality Consulting, January 29, 2020), Table 11

Operational emissions of criteria pollutants would occur upon first occupancy of the homes. First occupancy of phase one is anticipated to occur in 2021.

Table 3-5 lists the maximum daily air pollutant emissions generated by VTM 6241 during its operation.

Table 3-5 Maximum Daily Air Pollutant Emissions During Operation – VTM 6241

Maximum Daily Air Pollutant Emissions during Operation[8]					
Maximum Daily Emissions per Source	Emissions (Pounds/Daily)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Area	10.41	2.28	19.42	0.27	0.41
Energy	0.17	1.49	0.63	0.12	0.12
Mobile	0.34	0.96	3.21	0.86	0.24
Total Daily Emissions	*10.93*	*4.73*	*23.26*	*1.25*	*0.62*
SJVAPCD Screening Thresholds	–	*100*	*100*	*100*	*100*
Exceed SJVAPCD Thresholds?	*No*	*No*	*No*	*No*	*No*

Table 3-2 through **Table 3-5** demonstrate the Project's impacts as evaluated against SJVAPCD screening thresholds for criteria pollutant emissions used to determine significance in accordance with health-based standards.

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

a) Less Than Significant Impact. The CEQA Guidelines indicate that a significant impact would occur if the Project would conflict with or obstruct implementation of the applicable air quality plan. The GAMAQI does not provide specific guidance on analyzing conformity with the Air Quality Plan (AQP). Therefore, the Air Quality and GHG report assumed the following criteria for determining Project consistency with the current AQPs:

1. Will the project result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQPs? This measure is determined by comparison to the regional and localized thresholds identified by the SJVAPCD for regional and local air pollutants.
2. Will the project comply with applicable control measures in the AQPs? The primary control measures applicable to development projects is Regulation VII-Fugitive PM_{10} Prohibitions and Rule 9510 Indirect Source Review.

Regional air quality impacts and attainment of standards are the result of cumulative impacts of all emission sources within the air basin. Individual projects are generally not large enough to contribute measurably to an existing violation of air quality standards. Therefore, the cumulative impact of the Project is based on its cumulative contribution. Because of the region's non-attainment status for ozone, $PM_{2.5}$, and PM_{10}, if Project generated emission of either of the ozone precursor pollutants ROG, NO_x, PM_{10}, or $PM_{2.5}$ would exceed the SJVAPCD's significance thresholds, then the Project would be considered to contribute to violations of the applicable standards and conflict with the attainment plans. As demonstrated in **Table 3-2** through **Table 3-5**, individual tract and combined Project operational emissions. Project emissions of criteria pollutants

[8] (Mitchell Air Quality Consulting, January 29, 2020), Table 12

would not exceed the SJVAPCD's significance thresholds. Therefore, the Project will not contribute to air quality violations in conflict with attainment plans.

The AQP contains a number of control measures, including Regulation VII-Fugitive PM_{10} Prohibitions and Rule 9510 Indirect Source Review which are applicable to the Project. Regulation VII-Fugitive PM_{10} Prohibitions and Rule 9510 Indirect Source Review are adopted rules and regulations that constitute enforceable requirements with which the project must comply. The Project would comply with all applicable SJVAPCD rules and regulations; therefore, the Project complies with the criterion and would not conflict with or obstruct implementation of the applicable air quality attainment plans.

Mitigation Measures

No mitigation is warranted.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

b) Less Than Significant Impact. To result in a less than significant impact, the following criteria must be true:

1. Regional analysis: emission of non-attainment pollutants must be below the SJVAPCD's regional significance thresholds. This is an approach recommended by the SJVAPCD in its GAMAQI.
2. Summary of projections: the project must be consistent with current air quality attainment plans including control measures and regulations. This is an approach consistent with Section 15130(b) of the CEQA Guidelines.
3. Cumulative health impacts: the project must result in less than significant cumulative health effects from the non-attainment pollutants. This approach correlates the significance of the regional analysis with health effects, consistent with the court decision in Bakersfield Citizens for Local Control v. City of Bakersfield (2004) 124 Cal.App.4th 1184, 1219-20.

As discussed in Item III-a, the Project generated emissions are below the SJVAPCD's regional significance thresholds and the Project is consistent with current air quality attainment plans including control measures and regulations.

With respect to cumulative health impacts, the air basin is in non-attainment for ozone, $PM_{2.5}$, and PM_{10} (state only), which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect public health, including the health of sensitive individuals (such as children, the elderly, and persons with pre-existing respiratory or cardiovascular illnesses). Therefore, when the concentration of those pollutants exceeds the standard, it is likely that some sensitive individuals in the population would experience adverse health effects. Since the air basin is already in non-attainment, it is considered to have an existing significant cumulative health impact without the Project.

The issue is whether the Project's contribution to the existing violation of air quality standards is cumulatively considerable. The SJVAPCD through its GAMAQI has determined that projects that exceed regional thresholds would have a cumulatively considerable health impact. As demonstrated in **Table 3-2** through **Table 3-5,** the project would not exceed the SJVAPCD's significance thresholds. Therefore, in accordance with GAMAQI, the Project's cumulatively considerable contribution would be less than significant.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

c) Less Than Significant Impact. Sensitive receptors are those who are sensitive to air pollution, including children, the elderly, and people with respiratory illnesses. The SJVAPCD considers a sensitive receptor a location that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools. The closest existing off-site sensitive receptors are single-family homes located on adjacent properties. Temperance-Kutner Elementary School, a sensitive receptor, is located approximately one mile southeast of VTM 6241. As a residential land use development project, proposed residences included as part of the Project would also be considered sensitive receptors once occupied.

As demonstrated in **Table 3-2** through **Table 3-5**, the Project would not exceed the SJVAPCD's thresholds established in accordance with health-based standards for determining significance of criteria pollutant emissions. Therefore, in accordance with these standards, the Project would have a less than significant impact related to exposure of sensitive receptors to substantial pollutant concentrations.

Mitigation Measures

No mitigation is warranted.

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

d) No Impact. CEQA does not require an analysis of the location of sensitive receptors in the vicinity of existing adverse conditions, therefore no discussion of existing uses is warranted.[9] Land uses that are typically identified as sources of objectionable odors include landfills, transfer stations, sewage treatment plants, wastewater pump stations, composting facilities, feed lots, coffee roaster, asphalt batch plants, and rendering plants, among other uses. The Project does not include any of these activities or land uses. The Project would therefore have no impact with respect to generation of emissions leading to odors or other adverse or objectionable emissions.

Mitigation Measures

No mitigation is warranted.

[9] (California Building Industry Association v. Bay Area Air Quality Management District, 2015)

3.5 Biological Resources

Biological Resources				
Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

3.5.1 Environmental Setting and Baseline Conditions

The proposed Project site is located within the unincorporated area of Fresno County. The existing General Plan land use designation is Residential – Medium Density and Residential – Urban Neighborhood. Based on aerial photographs the site has been developed for agricultural purposes since at least the 1950s. No significant changes have been made to the property in that time. The surrounding area has also been developed as agricultural and rural residential since at least 1938 with little change. Based on historical aerials, the Project site has been in near continuous agricultural production with VTM 6241 supporting a variety of different row crops and cover types. The remainder of the annexation lands have also been in near continuous agricultural production. A single home was located in the northern end of the potential annexation lands (along Clinton) in 1938. Currently there are three homes along Clinton Avenue and a single home within the annexation area off of Armstrong Avenue. There are no homes within the proposed VTM 6241.

The surrounding lands also support a combination of agricultural lands and rural residential homes. Habitat within the Project site is a mixture of agricultural land, fallow agricultural land, rural residential, landscaped lawns, ruderal habitat. The ruderal habitat is primarily composed of weedy species such as bindweed, dove weed, mustard, and star-thistle.

The Project site is located within the Upper Dry Watershed (HUC 18030009) and drains to the southwest. Mill Ditch and Temperance Ditch No 37 are operated by the Fresno Irrigation District. Mill Ditch No. 36 crosses just south of the Project site. Temperance Ditch No 37 is connected to the Mill Ditch east of Armstrong Avenue. The Project site is located between Red Bank Creek system to the north and Fancher

Climate in the proposed Project site and surrounding area is typical of the central San Joaquin Valley with summers that are long, hot, and dry and winters that are cool and mild. Rainfall in the winter averages approximately 10.9 inches per year, falling mainly between November and April (Western Regional Climate Center, 2004). During this rainy season (Oct–May/to date) the total rainfall has been more than 11 inches as recorded at California State University, Fresno.

3.5.2 Methodology

Argonaut Ecological Consulting, Inc. (Argonaut Ecological Consulting), prepared a Biological Habitat Assessment in September of 2019 (**Appendix B**). The methods used for the literature review and biological reconnaissance survey are presented below and further detailed in the Biological Habitat Assessment.

Biological Reconnaissance Survey: The biological reconnaissance survey was conducted in May 2019, by Argonaut Ecological's biologist. The survey was conducted over the course of several site visits.

Literature Review: Prior to conducting the biological reconnaissance survey, a review of the California Natural Diversity Database/RareFind (CNDDB/RareFind) and the U.S. Fish and Wildlife (USFWS) Information for Planning and Consultation database was performed to determine the presence of special status species in the vicinity of the Project site. These species, and their potential to occur within the Project area are listed in **Table 3-6** and **Table 3-7** on the following pages.

Table 3-6 List of Special Status Animals with Potential to Occur Onsite and/or in the Vicinity

List of Special Status Animals with Potential to Occur Onsite and/or in the Vicinity[10]			
Species	**Status**	**Habitat**	**Occurrence on Project Site**
Burrowing owl *(Athene cunicularia)*	CSC	Resides in open, dry annual or perennial grasslands, deserts, and scrublands with low growing vegetation. Nests underground in existing burrows created by burrowing mammals, most often ground squirrels.	**Absent.** For the most part the Study Area does not appear to provide suitable habitat. However, small areas of the study area may provide some prey base. No evidence of occupation was observed within VTM 6241 and it is unlikely the species is present within the Project site.
Fresno kangaroo rat *(Dipodomys nitratoides)*	CE, FE	An inhabitant of alkali sink open grassland environments in western Fresno County. Prefers bare, alkaline, clay-based soils subject to seasonal inundation with more friable soil mounds around shrubs and grasses.	**Absent.** Species requires a land surface with hummocks as sites for its extensive, but shallow burrow system, and a substrate of suitable compactness to permit burrowing. Critical habitat limited to area within western Fresno County. No suitable habitat is present.
least Bell's vireo *(Vireo bellii pusillus)*	CE, FE	This migratory species breeds in southern California. Breeding habitat consists of dense, low, shrubby, riparian vegetation in the vicinity of water or dry river bottoms. By the early 1980s, this species was extirpated from most of its historic range in California, including the Central Valley. This species now occurs exclusively along the coast of southern California (USFWS, 1998).	**Absent.** Breeding habitat historically found in Southern California and the Central Valley, but population was greatly decreased, and breeding was restricted to Southern California. However, riparian restoration in the Central Valley is beginning to show promise of the species resuming breeding in the Central Valley. No suitable breeding habitat is present within the Study Area.
San Joaquin kit fox *(Vulpes macrotis mutica)*	CT, FE	Underground dens with multiple entrances in alkali sink, valley grassland, and woodland in valleys and adjacent foothills.	**Absent**. No suitable habitat present to support species, no dens.
Swainson's hawk *(Buteo swainsoni)*	CT	Nests in large trees in open areas adjacent to grasslands, grain or alfalfa fields, or livestock pastures suitable for supporting rodent populations.	**Absent.** No raptor nests were observed. Species may use the site for foraging.
Tricolored blackbird *(Agesaius tricolor)*	CT	Nests colonially near fresh water in dense cattails or tules, or in thickets of riparian shrubs. Forages in grassland and cropland. Large colonies are often found on dairy farm forage fields.	**Absent.** Suitable breeding habitat is not present within the Project site.
Western yellow-billed Cuckoo *(Coccyzus americanus Occidentalis)*	FT/CE	Suitable nesting habitat in California includes dense riparian willow-cottonwood and mesquite habitats along a perennial river. Once a common breeding species in riparian habitats of lowland California, this species currently breeds consistently in only two locations in the State: along the Sacramento and South Fork Kern Rivers.	**Absent.** The Project site does not support riparian streams or riparian habitat that this species requires.

[10] (Argonaut Ecological Consulting, Inc., January 2020)

Table 3-7 List of Special Status Plants with Potential to Occur Onsite and/or in the Vicinity

List of Special Status Plants with Potential to Occur Onsite and/or in the Vicinity[11]			
Species	Status	Habitat	Occurrence on Project Site
Hartweg's golden Sunburst *(Pseudobahia bahiifolia)*	CE, FE 1B	Found in valley and foothill grassland and cismontane woodland communities in clay soils that are often acidic. Occurs predominantly on northern slopes, but also along shady creeks and near vernal pools at elevations between 300 feet and 650 feet. Blooms March – May.	**Absent.** Found in Valley grassland habitat. The Project site does not support grassland habitat. Habitat appears to be routinely disturbed by agricultural activities and likely precludes establishment.
San Joaquin adobe Sunburst *(Pseudobahia peirsonii)*	CE, FT 1B	Found in the San Joaquin Valley and the Sierra Nevada Foothills in bare dark clay in valley grassland and foothill woodland communities at elevations between 325 feet and 2950 feet. Blooms March – May.	**Absent.** Found in Valley grassland habitat. The Project site does not support grassland habitat.
Sanford's arrowhead *(Sagittaria sandordii)*	1B	Found in the San Joaquin Valley and other parts of California in freshwater-marsh, primarily ponds and ditches, at elevations below 1000 feet. Blooms May–October.	**Likely Absent.** Occurs in slow moving waters and irrigation canals, ditches, and detention basins. The Mill Ditch support suitable habitat, but no plants were observed during the field survey.

EXPLANATION OF OCCURRENCE DESIGNATIONS AND STATUS CODES

Present:	Species observed on the site at time of field surveys or during recent past
Likely:	Species not observed on the site, but it may reasonably be expected to occur there on a regular basis
Possible:	Species not observed on the site, but it could occur there from time to time
Unlikely:	Species not observed on the site, and would not be expected to occur there except, perhaps, as a transient
Absent:	Species not observed on the site, and precluded from occurring there due to absence of suitable habitat

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CCT	California Threatened (Candidate)
FPT	Federally Threatened (Proposed)	CFP	California Fully Protected
FC	Federal Candidate	CSC	California Species of Special Concern
		CWL	California Watch List
		CCE	California Endangered (Candidate)
		CR	California Rare

CNPS LISTING

1A	Plants Presumed Extinct in California	2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere
1B	Plants Rare, Threatened, or Endangered in California and elsewhere		

[11] (Argonaut Ecological Consulting, Inc., January 2020)

3.5.3 Impact Assessment

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

a) Less Than Significant Impact with Mitigation Incorporated.

Project-Related Mortality and/or Disturbance of Nesting Raptors, Migratory Birds, and Special Status Birds (Including Burrowing Owl)

The Biological Habitat Assessment determined there were no active nests observed during the field review but determined there are several mature trees within the Project area that may provide suitable nesting habitat for raptors. The Project includes removal of trees, activities that could kill or injure raptors and migratory birds nesting within the Project site. In addition, construction activities could disturb birds nesting within or adjacent to work areas, resulting in nest abandonment. Project construction activities that adversely affect the nesting success of raptors and migratory birds or result in the mortality of individual birds constitutes a violation of State and federal laws and is considered a significant impact under CEQA.

The burrowing owl is a California Department of Fish and Wildlife (CDFW) species of concern. It is typically found in dry open areas with few trees and short grasses; it is also found in vacant lots near human habitation. It uses uninhabited mammal burrows for roosts and nests. It primarily feeds on large insects and small mammals but will also eat birds and amphibians. The Project site contained suitable open habitat with soils suitable for burrowing; however, no burrows of adequate size were observed during the survey, but California ground squirrels (*Otospermophilus beecheyi*) which are a commonly associated species were observed on site. One burrowing owl record was identified within five miles of the Project site (CNDDB). The presence of suitable habitat and the documented records within vicinity of the Project resulted in this species having a moderate potential to occur on the Project site.

In order to minimize construction disturbance to active migratory bird nests and special status bird species, the following mitigation measures shall be implemented:

Project Specific Mitigation Measures

> **BIO-1:** Tree removal within the reorganization lands study area shall be performed outside the nesting period of raptors (trees should be removed from September 1 – January 31). If trees must be removed during the nesting period (February 1 – August 31) the project proponent shall submit a nesting raptor survey prepared by a qualified biologist to the City of Fresno prior to issuance of a grading permit.
>
> **BIO-2:** Prior to approval of entitlements or issuance of grading permits on the reorganization lands outside of VTM 6241, a qualified biologist shall evaluate each proposal on a project-level basis prior to issuance of a grading permit.

Implementation of Mitigation Measures **BIO-1** and **BIO-2** will reduce potential impacts to nesting birds and any other special status avian species to a less than significant level and will ensure compliance with State and federal laws protecting these resources.

Project-Related Impacts to Special Status Plant Species

Three special status plant species have been documented in the Project vicinity, including Hartweg's golden

Sunburst (*Pseudobahia bahiifolia*), San Joaquin adobe sunburst (*Pseudobahia peirsonii*), and Sanford's arrowhead (*Sagittaria sanfordii*). As explained in **Table 3-7**, all of the aforementioned plant species are absent from the Project area or unlikely to occur onsite, predominantly due to past and ongoing disturbance and/or the absence of suitable habitat. Therefore, the implementation of the Project will have no effect on individual plants or regional populations of these special status plant species. Mitigation measures are not warranted.

Mitigation Measures

No mitigation is warranted.

Project-Related Impacts to Special Status Animal Species Absent From, or Unlikely to Occur on the Project Site

The Biological Habitat Assessment determined there are seven regionally occurring special status species are known to occur within the Project area: Fresno kangaroo rat (*Dipodomys nitratoides exilis*), least Bell's vireo (*Vireo bellii pusillus*), San Joaquin kit fox (*Vulpes macrotis mutica*), Swainson's hawk (*Buteo swainsoni*), Tricolored blackbird (*Agesaius tricolor*), burrowing owl (*Athene cunicularia*) and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). Of the seven regionally occurring special status species, all are considered absent within the Project area due to past or ongoing disturbance and/or absence of suitable habitat(refer to **Table 3-6**). Since it is highly unlikely that these species would occur onsite, implementation of the Project should have no impact on any special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

Mitigation Measures

No mitigation is warranted.

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

b) No Impact. According to the CNDDB, there are no recorded natural communities of special concern with potential to occur within the Project area or vicinity. Additionally, no natural communities of special concern were observed during the biological survey. Therefore, implementation of the Project will have no impact on riparian habitat, or any other sensitive natural communities.

Mitigation Measures

No mitigation is warranted.

c) Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

c) No Impact. A query of the National Wetland Inventory (NWI) Map by Argonaut Ecological determined no waters, wetlands, ponds, or rivers occur within the Project Area, including within the proposed VTM 6241. The Mill Ditch, located adjacent to the south of the Project was determined not to be a stream or creek within the NWI mapping, and as such was determined not to be state or federally protected. The biological assessment concluded that there are no state or federally protected wetlands that have the potential to be impacted by the Project, therefore, no impact will occur as a result of the Project.

Mitigation Measures

No mitigation is warranted.

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

d) Less Than Significant Impact with Mitigation Incorporated. A wildlife corridor is defined as a linear landscape element which serves as a linkage between historically connected habitats/natural areas and is meant to facilitate movement between these natural areas. Although the Biological Habitat Assessment did not identify any wildlife movement corridors on site, the Project site potentially provides wildlife movement opportunities in the form of the ditches. The banks of Mill Ditch could function marginally as wildlife movement corridors, although intensive agricultural cultivation practices and frequent human disturbance in the vicinity would make that unlikely. Therefore, with the implementation of Mitigation Measures **BIO-1** and **BIO-2**, impacts will be less than significant.

Mitigation Measures

Refer to **MM BIO-1** and **BIO-2**.

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

e) Less Than Significant Impact. The City of Fresno has no adopted ordinance related to tree preservation. Several mature trees within the Project area may provide suitable nesting habitat for raptors. The General Plan, Open Space Element policies promote the preservation of mature trees when possible. However, VTM 6241 does not contain mature trees and the remaining land included in the annexation is not yet planned for development. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation is warranted.

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

f) No Impact. The Project site is not within an approved or adopted Habitat Conservation Plan, Natural Conservation Plan, or any other State or local habitat conservation plan. There would be no impact.

Mitigation Measures

No mitigation is warranted.

3.6 Cultural Resources

Cultural Resources					
Would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	☐	☒	☐	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c)	Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

3.6.1 Environmental Setting and Baseline Conditions

Cultural Resources field surveys were conducted by Michael Lawson, Peak & Associates, Inc. on the Project site on May 1, 2019. A report entitled *Cultural Resource Assessment for the Metzler Reorganization Area and Tentative Tract 6241 Development, Fresno County, California* dated September 12, 2019 (**Appendix C**) included a record search conducted through the Southern San Joaquin Valley Archaeological Information Center (SSJVAIC) of the California Historical Resources Information at California State University, Bakersfield (CSUB). The records search determined there are no known or recorded sites within a 0.0125-mile radius of the Project area.

Within the areas proposed for disturbance (VTM 6241), the report states that the rectangular parcel is bounded by an unnamed ditch to the west and private property to north and south. The parcel is flat and has a history of agricultural use. It is currently plowed and fallow, with no buildings or structures present. The soil is loamy sand, high in granitic components, and medium brown in coloration. Little variation was noted throughout the survey. Visibility of the ground surface within the parcel was excellent at the time of survey.

Field survey methodology included ten to fifteen meter parallel transects with occasional overlapping where exceptional visibility occurred or slight undulation in surface occurred. Where warranted, there was occasional subsurface investigation by trowel.

Peak & Associates, Inc. reported that no cultural resources were observed during the investigation. There are no resources eligible for the California Register of Historical Resources within VTM 6241 area. No sites have been recorded in the remainder of the lands proposed for reorganization according to the recent records search through the Southern San Joaquin Valley Information Center. Historic United States Geological Survey (USGS) quadrangles show one building in the northern part of the reorganization area along Clinton Road that is more than 50 years in age and will require recordation and evaluation when and if that parcel is proposed for development. Surveys will need to be conducted of the other lands in the reorganization area for the presence of cultural resources.

3.6.2 Impact Assessment

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?

a) Less than Significant Impact with Mitigation Incorporated. The Cultural Resources report prepared by Peak & Associates, Inc. included field surveys conducted on May 1, 2019 and a cultural resources records search provided by the SSJVAIC at CSUB (dated September 9, 2019). The Fresno Historic Review Preservation Committee completed their review of the application on February 10, 2020. Using aerial imagery, the Historical Committee concluded that because the estimated construction date of properties within the annexation area were greater than 50 years of age, the potential existed for resources of historical significance to be present. However, the field study conducted by Peak & Associates did not yield any visible historical resources within the boundary of VTM 6241. Therefore, it is recommended that other areas of the Project excluding VTM 6241 be evaluated by a qualified professional prior to disturbance. With incorporation of the Project would have a less than significant impact on potentially eligible historical resources.

Project Specific Mitigation Measures

> **CULT-1:** Prior to issuance of demolition permits, development, or approval of entitlements for development within the remainder of the Clinton-Armstrong No. 3 Reorganization (excepting VTM 6241), structures meeting the threshold for consideration of historic designation shall be evaluated by a qualified professional to make a determination of eligibility for inclusion in the Historical Register.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

b) Less than Significant Impact with Mitigation Incorporated. No prehistoric sites were found during field surveys conducted on May 1, 2019, nor as a result of the record search provided by the SSJVAIC, including within VTM 6241.. Other areas of the Project area that are not subject to disturbance at this time will be surveyed prior to disturbance. The Cultural Resources report determined there is a slight possibility that a resource may be unearthed during Project activities. Therefore, with incorporation of **MM CULT-2**, impacts to archaeological resources that may potentially exist on site will be less than significant.

Project Specific Mitigation Measures

> **CULT-2:** Should archaeological remains or artifacts be unearthed during any stage of Project activities, work in the area of discovery shall cease until the area is evaluated by a qualified archaeologist. If mitigation is warranted, the Project proponent shall abide by recommendations of the archaeologist.

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

c) Less Than Significant Impact with Mitigation Incorporated. There is no evidence or record that the Project has the potential to be an unknown burial site or the site of buried human remains. However, in the unlikely event of such a discovery, mitigation shall be implemented. With incorporation of **MM CULT-3**, impacts resulting from the discovery of remains interred on the Project site would be less than significant.

Project Specific Mitigation Measures

> **CULT-3:** In the event that any human remains are discovered on the Project site, the Fresno County Coroner must be notified of the discovery (California Health and Safety Code, Section 7050.5) and all activities in the immediate area of the find or in any nearby area reasonably suspected to overlie

adjacent human remains must cease until appropriate and lawful measures have been implemented. If the Coroner determines that the remains are not recent, but rather of Native American origin, the Coroner shall notify the Native American Heritage Commission (NAHC) in Sacramento within 24 hours to permit the NAHC to determine the Most Likely Descendent of the deceased Native American.

3.7 Energy

Energy					
Would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

3.7.1 Environmental Setting and Baseline Conditions

Pacific Gas and Electric (PG&E) supplies electricity and natural gas to the Project area. PG&E obtains its power through hydroelectric, thermal (natural gas), wind, and solar generation of purchases. PG&E continually produces new electric generation and natural gas sources and implements continuous improvements to gas lines throughput its service areas to ensure the provision of services to residents. New construction would be subject to Titles 20 and 24 of the California Code of Regulations (CCR) which each serve to reduce demand for electrical energy by implementing energy-efficient standards for residential, as well as non-residential buildings.

The Project was routed to PG&E for review and comment. As of March 3, 2020, PG&E had no response.

State Regulations

Assembly Bill 32 (AB 32), known as the Global warming Solutions Act of 2006 was signed into law in September 2006. AB 32 established a comprehensive program to reduce GHGs from all sources resulting in energy reduction among other benefits.

The California Building Standards Code (CCR, Title 24, Part 2), establishes building codes in California. CCR Title 24, Part 6 herein referred to as Title 24, establishes the standards for building energy in California. Title 24 applies to all buildings that are heated and/or mechanically cooled and are defined under the California Building Code as A, B, E, H, N, R, or S occupancies. Title 24, the Building Energy Efficiency Standards, which became effective on January 1, 2017 are applicable to residential construction.

California's Renewables Portfolio Standard was established in 2002 by Senate Bill 1078 with the initial requirement that 20 percent of electricity retail sales must be served by renewable sources by 2017. The program was accelerated by Senate Bill 350 (SB 350) and Senate Bill 100 (SB 100).

SB 350, signed into law in October 2015, established new clean energy, clean air, and GHG reduction goals for 2030. It established tiered increases to the Renewable Portfolio Standard, increasing the goal to 40 percent renewable energy usage by 2024, 45 percent by 2027, and 50 percent by 2030.

SB 100, signed into law in September 2018, increased the required Renewable Energy Portfolio Standard. SB 100 requires the total kilowatt-hours of energy sold by electricity retailers to their end-use customers to consist of at least 50 percent renewable resources by 2026, 60 percent renewable resources by 2030, and 100 percent renewable resources by 2045. In addition, SB 100 includes a state policy that eligible renewable resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers. Under SB 100, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

The City of Fresno implements the following policies that are applicable to the Project relative to energy consumption:

Chapter 3, Urban Form, Land Use, and Design

LU-5-c **Medium Density Residential Uses.** Promote medium density residential uses to maximize efficient use of residential property through a wide range of densities.

Chapter 7, Resource Conservation and Resilience

RC-8a **Existing Standards and Programs**. Existing Standards and Programs. Continue existing beneficial energy conservation programs, including adhering to the California Energy Code in new construction and major renovations.

RC-8b **Energy Reduction Targets**. Strive to reduce per capita residential electricity use to 1,800 kWh per year and non-residential electricity use to 2,700 kWh per year per capita by developing and implementing incentives, design and operation standards, promoting alternative energy sources, and cost-effective savings.

Commentary: These targets represent 28 and 30 percent reductions respectively, from the 2010 rate of consumption.

RC-8c **Energy Conservation in New Development**. Consider providing an incentive program for new buildings that exceed California Energy Code requirements by fifteen percent.

RC-8d **Incentives**. Establish an incentive program for residential developers who commit to building all of their homes to ENERGY STAR performance guidelines.

RC-8h **Solar Assistance.** Identify and publicize information about financial mechanisms for private solar installations and provide over-the-counter permitting for solar installations meeting specified standards, which may include maximum size (in kV) of units that can be so approved.

3.7.2 Impact Assessment

a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

a) Less Than Significant Impact. The Project would comply with Building Energy Efficiency Standards included in Title 24 of the California Code of Regulations, which requires new residential development to incorporate energy efficiency standards into Project designs. In addition, the Project would implement General Plan policies. The Project proposes the construction of medium density residences to use land in a manner that emphasizes conservation, successful adaptation to climate and changing resource conditions, and performance effectiveness in the use of energy, water, land, buildings, natural resources, and fiscal resources required for the long-term sustainability of Fresno. The planned land uses require design that provides for walkable and pedestrian-scaled developments and efficient use of resources (LU-5-c). The General Plan provides for the implementation of incentives, design and operations standards that promote alternative energy sources and cost-effective savings (Policies RC-8-a, RC-8-b, RC-8-c, RC-8-d, and RC-8-h). The City maintains the Fresno Green Handbook[12] and utilizes the Fresno Green Residential checklist to ensure compliance.

Natural gas for the Project and the surrounding area are provided by PG&E. The Project site does not currently have a demand for natural gas usage so the Project would result in an increase in natural gas usage. However, PG&E has indicated it can meet the increased demand for natural gas with its existing facilities and through engaging in Energy Efficiency (EE) programs. PG&E's EE programs include services to customers such as evaluating consumption options, equipment retrofits, and rebates among other EE programs. As a result of its EE programs PG&E forecasts a trend in savings in natural gas consumption from approximately 2 billion cubic feet (bcf) to approximately 27 bcf in 2030.[13] This overall trend in reduced natural gas consumption would result in new projects, including the subject Project, having reduced impacts related to natural gas consumption.

Current regulations for construction equipment, heavy-duty equipment, and earthmoving equipment used in construction contributes to reductions in energy as well as reduction in pollutant emissions. California implemented its In-Use Off-Road Diesel Fueled Fleets regulations (off-road regulation) which applies to all self-propelled off-road diesel vehicles 25 horsepower or greater and most two-engine vehicles. The Small Off-Road Engines program was implemented by California to apply to categories of outdoor powered equipment and specialty vehicles often used in construction.

Through compliance with energy reduction standards and regulations aimed at reducing consumption of transportation related energy consumption, as well as the electricity provider's energy reduction programs, the Project will have less than significant impacts in energy usage due to Project implementation and its impacts related to wasteful, inefficient, or unnecessary energy consumption overall, would be less than significant.

Mitigation Measures

No mitigation is warranted.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

b) Less Than Significant Impact. Project design, construction and operation would comply with the City's Green Handbook, a guide for builders to achieve sustainability. The Green Handbook is a component of the City of Fresno's Strategy for Achieving Sustainability. The Green Handbook's standards are supported by the City's General Plan policies and regulated through Title 24 building code requirements, such as energy efficient building materials and appliances. Compliance with these applicable policies would support a decrease in energy consumption and GHG emissions enabling the Project to contribute to sustainable community goals and the goals of AB 32. The Project would not conflict with any of the applicable plans including Title 24, AB 32, SB 32, SB 350, and SB 100, therefore the Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and would be less than significant.

Mitigation Measures

No mitigation is warranted

[12] (City of Fresno, CA, October 2009)
[13] (California Gas and Electric Utilities, 2020)

3.8 Geology and Soils

Geology and Soils				
Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the most recently adopted Uniform Building Code creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

3.8.1 Environmental Setting and Baseline Conditions

3.8.1.1 Geology and Soils

The Project is located in central Fresno County, in the southern section of California's Great Valley Geomorphic Province, or Central Valley. The Sacramento Valley makes up the northern third and the San Joaquin Valley makes up the southern two-thirds of the geomorphic province. Both valleys are watered by large rivers flowing west from the Sierra Nevada Range, with smaller tributaries flowing east from the Coast Ranges. Most of the surface of the Great Valley is covered by Quaternary (present day to 1.6 million years ago) alluvium. The sedimentary formations are steeply upturned along the western margin due to the uplifted Sierra Nevada Range.[14] From the time the Valley first began to form, sediments derived from erosion of igneous and metamorphic rocks and consolidated marine sediments in the surrounding mountains have been transported into the Valley by streams.

Project specific soils characteristics are described in **Table 3-8**.

Table 3-8 Project Soil Characteristics

Project Soil Characteristics			
Map unit name	Rating	Acres in Project	Percent of Project
Greenfield sandy loam, 0–3 percent slopes	Well drained	6.2	8.1%
Ramona loam	Well drained	67.2	87.5%
Ramona loam, hard substratum	Well drained	3.4	4.4%
	Totals for Project Area	**76.9**	**100.00%**

3.8.1.2 Faults and Seismicity

Most of Fresno is situated within an area of relatively low seismic activity and is not located within a known active earthquake fault zone. The Project is not located within an Alquist-Priolo Earthquake Fault Zone and there are no known active faults within the City of Fresno. The nearest major fault is the San Andreas Fault, located approximately 72 miles southwest of the Project site. The San Andreas fault is the dominant active tectonic feature of the Coast Ranges and represents the boundary of the North American and Pacific plates. An unnamed fault is located approximately 55 miles west-southwest of the Project and the Nunez Fault is approximately 57 miles southwest.

3.8.1.3 Liquefaction

The potential for liquefaction, which is the loss of soil strength due to seismic forces, is dependent on soil types and density, the groundwater table, and the duration and intensity of ground shaking. Although no specific liquefaction hazard areas have been identified in Fresno County, this potential is recognized throughout the San Joaquin Valley where unconsolidated sediments and a high-water table coincide. Soil types along the Valley floor are not generally conducive to liquefaction because they are generally too coarse. Furthermore, the average depth to groundwater within the City of Fresno is approximately 85 to 95 feet which also minimizes liquefaction potential.

3.8.1.4 Soil Subsidence

Subsidence occurs when a large land area settles due to over-saturation or extensive withdrawal of groundwater, oil, or natural gas. These areas are typically composed of open-textured soils, high in silt or clay content, which become saturated. Although some areas in Fresno County have experienced subsidence due

[14] (Harden, 1998)

to groundwater overdraft, the City of Fresno's elevation has remained relatively unchanged. Soils of the Project site are listed in Table 3-8**.** Soils onsite represent a low risk of subsidence.

3.8.1.5 Dam and Levee Failure

Hundreds of dams and reservoirs have been built in California for water supply, flood control, hydroelectric power, and recreational uses. The storage capacity of these dams varies across the State from large reservoirs with capacities exceeding millions of acre-feet (AF) to small reservoirs with capacities from hundreds to thousands of AF. Depending on the season, water from these reservoirs is released into the river system of the State and eventually reaches the Pacific Ocean. The Kings River, which flows approximately 16 miles east, is the primary river in the vicinity. The Kings River is impounded by a dam which forms the one million acre-feet Pine Flat reservoir, approximately 28 miles east of the Project site. If Pine Flat dam were to fail, a large portion of Fresno County, including the City of Fresno, would be inundated with water.

3.8.2 Impact Assessment

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

a-i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

a-ii) Strong seismic ground shaking?

a-i and ii) Less Than Significant Impact. The Project site and its vicinity are located in an area traditionally characterized by relatively low seismic activity. The site is not located in an Alquist-Priolo Earthquake Fault Zone as established by the Alquist-Priolo Fault Zoning Act (Section 2622 of Chapter 7.5, Division 2 of the California Public Resources Code). The nearest fault of any kind to the Project is an unnamed fault approximately 55 miles west-southwest of the Project site. Nunez Fault is approximately 57 miles southwest and the San Andreas Fault, creeping section is approximately 72 miles southwest.

Although there are no known earthquake faults within the vicinity of the Project, and strong ground shaking is unlikely, construction of the proposed residential structures would comply with the most recent seismic standards as set forth in the California Building Standards Code. Compliance with these standards would ensure potential impacts related to strong seismic ground shaking would be less than significant.

Mitigation Measures

No mitigation is warranted

a-iii) Seismic-related ground failure, including liquefaction?

a-iii) Less Than Significant Impact. Liquefaction occurs when loose, water-saturated sediments lose strength and fail during strong ground shaking. Although no specific liquefaction hazard areas have been identified in the City of Fresno, nor in Fresno County, this potential is recognized throughout the San Joaquin Valley where unconsolidated sediments and a high-water table coincide. Soil data and site characteristics were obtained from the United States Department of Agriculture Natural Resources Conservation Service soil survey of the Project area. A listing of Project soil characteristics is provided in Table 3-8**.** Soils within the Project area are well drained, representing a low risk for liquefaction or seismic-related ground failure. In addition, the average depth to groundwater within the City of Fresno is approximately 85 to 95 feet which further reduces potential for liquefaction. Furthermore, as mentioned above in Impact Assessments VI-a-i and VI-a-ii, strong seismic ground shaking is unlikely to occur. Any impacts related to seismic-related ground failure, including liquefaction, would be less than significant.

Mitigation Measures

No mitigation is warranted

a-iv) Landslides?

a-iv) No Impact. Landslides usually occur in locations with steep slopes and unstable soils. The Project is located on the Valley floor where no major geologic landforms exist, and the topography is essentially flat and level. The nearest foothills are approximately 16 miles east-northeast. Therefore, the Project site has minimal-to-no landslide susceptibility, and there will be no impact.

Mitigation Measures

No mitigation is warranted

VII-b) Would the project result in substantial soil erosion or the loss of topsoil?

b) Less Than Significant Impact. Earthmoving activities associated with the Project would include excavation, trenching, grading, and construction over an area of approximately 19.38 acres within VTM 6241. These activities could expose soils to erosion processes however, the extent of erosion would vary depending on slope steepness/stability, vegetation/cover, concentration of runoff, and weather conditions. Dischargers whose projects disturb one (1) or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the Statewide General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ). Construction activity subject to this permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation, and construction of linear underground or overhead facilities associated with residential construction, but does not include regular maintenance activities performed to restore the original lines, grade, or capacity of the overhead or underground facilities. The Construction General Permit requires the development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Since the Project site has relatively flat terrain with a low potential for soil erosion and would comply with the State Water Resources Control Board (SWRCB) requirements, the Project's impacts would be less than significant.

Mitigation Measures

No mitigation is warranted

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

c) Less Than Significant Impact. As discussed in Section a-ii and a-iv above, the potential for landslide or liquefaction is considered unlikely. Lateral spreading, subsidence, and collapse both on-site and off-site are also considered unlikely or less than significant for reasons previously discussed in these sections. Furthermore, the aforementioned physical properties of these soils make subsidence, liquefaction, lateral spreading, or other ground failure unlikely. Any impacts would be less than significant.

Mitigation Measures

No mitigation is warranted

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the most recently adopted Uniform Building Code creating substantial direct or indirect risks to life or property?

d) No Impact. The soils types within the Project area consist of approximately three soils types as listed in **Table 3-8.** These soils types can be described as loamy and are characterized as being well-drained and have a low shrink-swell potential and a low plasticity index characteristic. These soils types are not classified as expansive soil types in Chapter 18 of the California Building Code, the most recently adopted building code that replaced the Uniform Building Code in California. Therefore, the soils within the Project area would have no impact related to expansive soils.

Mitigation Measures

No mitigation is warranted

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

e) No Impact. The Project would be required to connect to the City's sewer system. Septic installation or alternative wastewater disposal systems are not necessary for the Project. There will be no impact.

Mitigation Measures

No mitigation is warranted

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

f) Less Than Significant Impact. No known paleontological resources exist within the Project area. The Project site has previously been subject to farming and crop production. Previous disking and site grading activities onsite have not uncovered any paleontological resources. Construction activities associated with the Project are not expected to be conducted significantly below grade, at a level where they would have the potential to disturb any previously unknown paleontological resources or geologic features. Impacts would be less than significant.

Mitigation Measures

No mitigation is warranted

3.9 Greenhouse Gas Emissions

Greenhouse Gas Emissions				
Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

3.9.1 Environmental Setting and Baseline Conditions

The Project is located in the San Joaquin Valley Air Basin (SJVAB or air basin). The San Joaquin Valley Air Pollution Control District (SJVAPCD) provides *Guidance for Land-Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA*.[15]

The *Air Quality and Greenhouse Gas Analysis Report, Wilson Premier Homes Tract 6241, Fresno, California January 20, 2020)* (**Appendix A**) was prepared by Mitchell Air Quality Consulting. The report was prepared in order to evaluate whether GHG emissions generated by the development of the properties would cause significant impacts in our ability to achieve goals to reduce climate change. The reports included as **Appendix A** provide an in-depth discussion detailing the effects of climate change and commonly identified GHG emissions and sources of the emissions that form the Project's environmental setting and establish its baseline conditions. The report also provides detail of the framework under which GHG emissions are regulated and by which its impacts are assessed. The essential conclusions of the reports are summarized in this analysis.

An individual project cannot generate enough GHG emissions to cause a discernible change in global climate. However, the Project would participate in the potential for global climate change by its incremental contribution of GHGs. When combined with the cumulative increase of all other sources of GHGs the Project's incremental contributions constitute potential influences on global climate change.

The reference gas for global warming potential is carbon dioxide (CO_2). To describe the degree to which a given GHG may impact global warming, the carbon dioxide equivalent (CO_2e) is used and quantified in metric tons ($MTCO_2e$). A carbon dioxide equivalent is the mass emissions of an individual GHG, multiplied by its global warming potential.

The City of Fresno has not adopted its own GHG emissions thresholds for determining significance, however, the Greenhouse Gas Reduction Plan includes procedures for projects that are not able to use streamlining provisions of the plan. The plan requires projects that need a General Plan amendment to demonstrate consistency with state reduction targets by preparing a quantitative analysis that shows that reductions from business as usual (BAU) would exceed 21.7 percent in 2020. The use of a quantitative analysis to demonstrate consistency with state reduction targets is an appropriate method of evaluating

[15] (San Joaquin Valley Air Pollution Control District, 2009)

conformance with the adopted Climate Action Plans. The City implements the following policies that are applicable to the Project for purposes of reducing GHG emissions:

Chapter 3, Urban Form, Land Use, and Design

RC-5-c **GHG Reduction through Design and Operations**. Increase efforts to incorporate requirements for GHG emission reductions in land use entitlement decisions, facility design, and operational measures subject to City regulation through the following measures and strategies:

- Require energy and water audits and upgrades for water conservation, energy efficiency, and mass transit, pedestrian, and bicycle amenities at the time of renovation, change in use, change in occupancy, and change in ownership for major projects meeting review thresholds specified in an implementing ordinance.
- Incorporate the City's "Guidelines for Ponding Basin/Pond Construction and Management to Control Mosquito Breeding" as conditions of approval for any project using an on-site stormwater basin to prevent possible increases in vector-borne illnesses associated with global climate change.

RC-5-d **SCS and CAP Conformity Analysis**. Ensure that the City includes analysis of a project's conformity to an adopted regional Sustainable Community Strategy or Alternative Planning Strategy (APS), an adopted Climate Action Plan (CAP), and any other applicable City and regional greenhouse gas reduction strategies in affect at the time of project review.

RC-5-e **Ensure Compliance**. Ensure ongoing compliance with GHG emissions reduction plans and programs by requiring that air quality measures are incorporated into projects' design, conditions of approval, and mitigation measures.

RC-5-f **Toolkit**. Provide residents and project applicants with a "toolkit" of generally feasible measures that can be used to reduce GHG emissions, including educational materials on energy-efficient and "climate-friendly" products.

RC-5-g **Evaluate Impacts with Models**. Continue to use computer models such as those used by SJVAPCD to evaluate greenhouse gas impacts of plans and projects that require such review.

3.9.1.1 Short-Term Construction-Generated Emissions

Methodology utilized by Mitchell Air Quality Consulting assumed VTM 6241 was to begin construction in August 2020 with full buildout completed in December 2022. The Project was assumed to be completed in two phases. The CalEEMod default construction schedule was extended by 185 days for each phase to match the anticipated construction schedule provided by the applicant. Because the expected schedule and the default schedule differ, the equipment in the building construction phase was adjusted to retain the default horsepower-hours. Total GHG emissions generated during all phases of construction are presented in **Table 3-9** and **Table 3-10** below:

Table 3-9 Construction Greenhouse Gas Emissions – VTM 6241

Construction Greenhouse Gas Emissions[16]	
Year	Annual Emissions ($MTCO_2e$)
2020	120.78
2021	422.36
2022	295.05
Total	844.45
Amortized over 30 years	28.15

3.9.1.2 Long-Term Operational Emissions

Operational or long-term emissions occur over the life of the Project. Sources of emissions may include motor vehicles, energy usage, water usage, waste generation, and area sources, such as landscaping activities. First occupancy of VTM 6241 was assumed by Mitchell Air Quality Consulting to occur by April 2021. The Project's operational emissions are listed in **Table 3-10**.

Table 3-10 Operational Greenhouse Gas Emissions 2020 – VTM 6241

Operational Greenhouse Gas Emissions[17]			
Source	Emissions ($MTCO_2e$ per Year)		
	BAU	2020[18]	Reduction (%)
Area	190.87	201.27	46.9
Energy	895.43	579.3	35.3
Mobile	2,774.33	1,875.10	32.4
Waste	116.95	87.72	25.0
Water	52.80	27.92	47.1
Amortized Operational Emissions	28.15	28.15	0.0
Total	*4,058.54*	*2,699.69*	*33.5*
Reduction from BAU		*1,358.85*	–
Percent Reduction		*33.5%*	–
Reduction Goal (CARB Threshold)		*29.0%*	–
Reduction Goal (City of Fresno Threshold)		*21.7%*	
Are Emissions Significant		*No*	

a. *Includes both regulation and design features*
b. *Emissions were quantified using the CalEEmod, Version 2016.3.2. Refer to Appendix A for modeling results and assumptions. Totals may not sum due to rounding.*

[16] (Mitchell Air Quality Consulting, January 29, 2020), Table 14
[17] (Mitchell Air Quality Consulting, January 29, 2020), Table 16
[18] With regulation and Project Design Features.

3.9.2 Impact Assessment

3.9.2.1 Thresholds of Significance

A project would be considered to have a significant impact to climate change if it would:

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or,
b. Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

In accordance with SJVAPCD's *CEQA Greenhouse Gas Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects,*[19] proposed projects complying with Best Performance Standards (BPS) would be determined to have a less-than-significant impact. Projects not complying with BPS would be considered less than significant if operational GHG emissions would be reduced or mitigated by a minimum of 29 percent, in comparison to BAU (year 2004) conditions. In addition, project-generated emissions complying with an approved plan or mitigation program would also be determined to have a less-than-significant impact. With respect to BAU, it should be noted that the City requires that reductions be quantified from BAU in the year 2020, therefore tables above indicate year 2020.

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

a) Less Than Significant Impact. The City's Greenhouse Gas Reduction Plan requires that projects requiring a General Plan amendment demonstrate consistency with state reduction targets by preparing a quantitative analysis that demonstrates reductions from BAU would exceed 21.7 percent in 2020.[20] It is also appropriate for comparative purposes that other new projects, such as this Project demonstrate reductions by preparing a quantitative analysis. The Scoping Plan implemented to enact the requirements of the CARB's California Global Warming Solutions Act (Assembly Bill 32) (hereafter referenced as Scoping Plan), called for reductions from BAU in excess of 29 percent in 2020. The Project's year 2020 emissions, that include reductions gained from both regulation and Project design features, are quantified in **Table 3-10**. The Project generated emissions would be 2,699.69 $MTCO_{2e}$ for year 2020, an approximately 33.5% reduction from BAU.

Using the quantification method, the SJVAPCD, *Guidance for Valley Land Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* states that projects determined to have reduced or mitigated GHG emissions by 29%, consistent with targets established in the Scoping Plan, would be considered to have a less than significant impact.[21] The Project also exceeds Fresno's reduction goal of 21.7% below 2020 BAU. As such, the Project would have less than significant impacts.

Mitigation Measures

No mitigation is warranted

[19] (San Joaquin Valley Air Pollution Control District, 2009)
[20] (Mitchell Air Quality Consulting, January 29, 2020), page 64
[21] (San Joaquin Valley Air Pollution Control District, 2009)

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

b) Less Than Significant Impact. Numerous plans, policies, and regulations have been adopted as a result of the enactment of AB 32. The most relevant plans within the City of Fresno include: the SJVAPCD Climate Change Action Plan (CCAP); City of Fresno General Plan; and City of Fresno Greenhouse Gas Reduction Plan, applicable information from the latter two were previously discussed in this Section. Regionally, the SJVAPCD adopted its CCAP in August 2008 to assist the district in achieving the AB 32 targets. As demonstrated in this report, the Project is consistent with the reduction targets set forth in the Scoping Plan and the City's Greenhouse Gas Reduction Plan. Therefore, the Project as proposed is in compliance with the CCAP as well as Fresno's adopted plans and will not conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

Mitigation Measures

No mitigation is warranted

3.10Hazards and Hazardous Materials

Hazards and Hazardous Materials					
Would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☒	☐
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g)	Expose people or structures, either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒

3.10.1 Environmental Setting and Baseline Conditions

3.10.1.1 Hazardous Materials

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites. Government Code (GC) Section 65962.5 requires the California Environmental Protection Agency (CalEPA) to develop at least annually an updated Cortese List. The Department of Toxic Substances Control (DTSC) is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List. DTSC's EnviroStor database provides DTSC's component of Cortese List data. In addition to the EnviroStor database, the SWRCB Geotracker database provides information on regulated hazardous waste facilities in California, including underground storage tank cases and non-underground storage tank cleanup programs, including Spills-Leaks-Investigations-Cleanups sites, Department of Defense sites, and Land Disposal program. A search of the Department of Toxic Substance Control, *EnviroStor* database and the SWRCB Geotracker performed on January 7, 2020 determined that there is an active cleanup site at the northeast corner of Fowler and McKinley Avenues in preparation for a proposed elementary school there. The cleanup site is not located within the Project area. Otherwise, there are no known active hazardous waste generators or hazardous material spill sites within the Project area or its immediate vicinity.

3.10.1.2 Airports

The Project is located approximately 1.5 miles south/southeast of the Fresno Yosemite International Airport. The Project is located outside of all of the identified airport protection zones within the Fresno County, Airport Land Use Compatibility Plan (ALUCP), however most of the Project area is within the Traffic Pattern Zone (TPZ) of the airport. The TPZ includes all other portions of regular traffic patterns for the airport based upon the CFR, Part 77, Conical Surface for the airport. The aircraft accident safety risk level is considered to be low within the TPZ.[22]

3.10.1.3 Emergency Response Plan

The City's Emergency Preparedness Officer is responsible for ensuring that Fresno's emergency response plans are up-to-date and implemented properly. The Emergency Preparedness Officer facilitates cooperation between City departments and other local, state and federal agencies, including Fresno County. The Fresno County Office of Emergency Services coordinates the development and maintenance of the Fresno County Operational area Master Plan.

3.10.1.4 Sensitive Receptors

Sensitive receptors within the Project's vicinity consist of residential development that surrounds the Project site and Temperance-Kutner Elementary School located at 1448 N. Armstrong Avenue, approximately one mile southeast of the Project site. No other identified concentrations of sensitive receptors, such as hospitals or nursing homes, are within the Project's vicinity.

Applicable General Plan Policies include:

Chapter 9, Noise and Safety

NS-1-c **Generally Acceptable Exterior Noise Exposure Range**. Establish the exterior noise exposure of greater than 65 dB Ldn or CNEL to be generally unacceptable for residential and other noise sensitive uses for noise generated by sources in Policy NS-1-a, and study alternative less noise-sensitive uses for these areas if otherwise appropriate. Require appropriate noise reducing mitigation measures as determined by a site specific acoustical analysis to comply with the generally desirable or generally acceptable exterior noise level and the required 45 dB interior noise level standards set in Table 9-2 as conditions of permit approval.

NS-1-p **Airport Noise Compatibility**. Implement the land use and noise exposure compatibility provisions of the adopted Fresno Yosemite International Airport Land Use Compatibility Plan, the Fresno-Chandler Executive Airport Master and Environs Specific Plan, and the Sierra Sky Park Land Use Policy Plan to assess noise compatibility of proposed uses and improvements within airport influence and environs areas.

[22] (Fresno County, December 2018)

3.10.2 Impact Assessment

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

a–c) Less Than Significant Impact. The Project site is located approximately one-mile northwest of Temperance-Kutner Elementary School. In addition, the Project is adjacent to existing rural residential development. Construction of the Project will involve the use of hazardous materials associated with construction equipment, such as diesel fuel, lubricants, and solvents. However, the contractor will implement a SWPPP and will comply with all California Occupational Safety and Health Administration (Cal/OSHA) regulations regarding regular maintenance and inspection of equipment, spill prevention, and spill remediation in order to reduce the potential for incidental release of pollutants or hazardous substances onsite. Furthermore, any potential accidental hazardous materials spills during construction are the responsibility of the contractor to remediate in accordance with industry best management practices and State and county regulations. The operational phase of the Project will not involve the use or transport of hazardous materials. Impacts will be less than significant.

Mitigation Measures

No mitigation is warranted

d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

d) No Impact. The Project does not involve land that is listed as a hazardous materials site pursuant to Government Code Section 65962.5 and is not included on a list compiled by the Department of Toxic Substances Control. A search of the *EnviroStor* database and the SWRCB Geotracker performed on January 7, 2020 determined that that there is an active cleanup site at the northeast corner of Fowler and McKinley Avenues in preparation for a proposed elementary school there. Otherwise, there are no known active hazardous waste generators or hazardous material spill sites within the Project site or immediate surrounding vicinity. There will be no impact.

Mitigation Measures

No mitigation is warranted

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

e) Less Than Significant Impact. The Project is located approximately 1.5 miles southeast of the Fresno Yosemite International Airport. The Fresno Chandler Downtown Airport is located approximately 8 miles west/southwest of the Project. The Project is located outside of all of the identified airport protection zones of the Fresno Yosemite Airport, but is within the TPZ of the airport. The ALUCP determined that the aircraft accident safety risk level is considered to be low within the TPZ.[23] Construction and implementation of the Project would not be a safety hazard for people residing or working in the area. Further, on ____, the Fresno County Airport Land Use Commission provided a written ALUC Consistency Determination, stating that the Commission approved a "Finding of Consistency with the ALUCP" for the Project subject to the Project obtaining a Federal Aviation Administration (FAA) determination. On ___ ___-AWP-9981-OE).

In noise measurements taken by First Carbon Solutions for the City's MEIR prepared for its General Plan and Development Code Update, the intersection of N. Clovis Avenue, between E. Olive and E. McKinley, was determined to have ambient noise levels of approximately 66.3 dBA L_{eq},[24] These noise measurements, which were taken at a distance of approximately 1.5 miles from the Project, would have included ambient noise generated by the airport. In addition to noise attenuation achieved by distance, sound levels generated by airport noise that may affect people residing or working within the Project area would also be shielded by natural or human-made features and noise barriers such as buildings located between the Project site and the airport as well as building construction for those residing within the Project area. The amount of shielding provided by these natural or human-made features and noise barriers would depend on the frequency of airport noise and specific distance from the noise source. However, it is reasonable to assume that with incorporation of shielding provided by natural or human-made features and noise barriers, and distance, impacts of excessive noise that would be generated by the airport would be reduced below 65 dBA $L_{eq,}$ the level considered to be of significance for outside noise levels as provided in General Plan, Noise and Safety Element, Policy No. NS-1-c. Interior noise levels for people residing within residences would further be mitigated to levels of insignificance by building construction materials.

The Project is not anticipated to exacerbate noise levels related to airport noise and therefore, impacts from safety hazards and excessive noise created by the airport would be less than significant.

Mitigation Measures

No mitigation is warranted

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

f) Less Than Significant Impact. The Project involves the construction and development of a residential subdivision. Construction traffic associated with the Project would be minimal and temporary. Construction would take place over an approximate three-year span. Operational traffic will consist of vehicle trips associated with residential development. Temporary road closures, detours, or lane diversions may be necessary for connection of utilities and development of residential streets during construction. Disturbances to traffic patterns, such as a potential lane diversion, will be temporary and minimal in nature as there will be alternate routes available. Therefore, Project-related impacts to emergency evacuation routes or emergency response routes on local roadways would be considered less than significant.

Mitigation Measures

No mitigation is warranted

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

g) No Impact. According to Cal Fire's Fire Hazard Safety Zone Maps[25] the nearest wildland, which has a moderate fire risk, is located approximately 16 miles east of the Project site. Given the absence of wildlands in

[23] (Fresno County, December 2018)
[24] (City of Fresno, 2014)
[25] (California Department of Forestry & Fire Protection, 2020)

the vicinity, implementation of the Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. There would be no impact.

Mitigation Measures

No mitigation is warranted

3.11 Hydrology and Water Quality

Hydrology and Water Quality					
	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☒	☐
	i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
	ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or offsite;	☐	☐	☒	☐
	iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
	iv) impede or redirect flood flows?	☐	☐	☒	☐
d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

3.11.1 Environmental Setting and Baseline Conditions

The City of Fresno overlies the Kings Subbasin of the San Joaquin Valley Groundwater Basin (SJV Basin). The Kings Subbasin underlies Fresno, Kings, and Tulare Counties and has a surface area of 976,000 acres (1,530 square miles). The Kings Subbasin has not been adjudicated. The Department of Water Resources (DWR) classified the Kings Basin as being in a state of critical overdraft in its Bulletin 118-80.[26]

The San Joaquin Valley Basin comprises the southern portion of the Great Central Valley of California, and is bounded to the north by the Sacramento-San Joaquin Delta and Sacramento Valley, to the east by the Sierra Nevadas, to the south by the San Emigdio and Tehachapi Mountains, and to the west by the Coast Ranges.

[26] (City of Fresno, June 2016)

The Kings Subbasin, located within the southern half of the San Joaquin Valley Basin, is bounded to the north by the San Joaquin River, to the east by the alluvium-granite rock interface of the Sierra Nevada foothills, and to the west by the Delta-Mendota and Westside Subbasins. The Kings Subbasin is bounded to the south by the northern boundary of the Empire West Side Irrigation District, the southern fork of the Kings River, the southern boundary of the Laguna Irrigation District, the northern boundary of the Kings County Water District, and the western boundary of Stone Corral Irrigation District.

3.11.1.1 Hydrology

Like much of the Kings Subbasin, groundwater levels beneath the City were relatively shallow at 25 feet below ground surface (ft bgs) in 1940[27] for example, prior to the start of World War II. After the war, the State, including the City, began growing at a rapid rate. For the period from 1959 to 1968 it was reported groundwater levels declined at a rate of 2.8 ft/yr (feet per year).[28] The water supply utilized to meet the demands from this growth was groundwater which was readily available from the underlying seemingly abundant and productive aquifer. The City continues to rely on the groundwater aquifer, monitoring groundwater levels continuously.

The City is limited with its current surface water treatment capacities. Therefore, one of the primary objectives for the City is to maximize the use of available surface water treatment supplies to reduce overall reliance on groundwater and bring its use into balance by the year 2025. The City began operations of its first surface water treatment facility in 2004.

3.11.1.2 Water Quality

As reported in the City's 2015 Urban Water Management Plan (UWMP), groundwater within the Kings Subbasin generally meets primary and secondary drinking water standards for municipal water use and is described as being a bicarbonate-type water, including calcium, magnesium, and sodium as the dominant ions. Generally, total dissolved solids (TDS) concentrations rarely exceed 600 mg/L, and typically range from 200 to 700 mg/L. However, the groundwater basin is threatened by chemical contaminants that affect the City's ability to fully use the groundwater basin resources without some type of wellhead treatment in certain areas. Many different types of chemical pollutants have contaminated portions of the Kings Subbasin underlying the City's water service area. Some of the major contaminant plumes include 1,2-Dibromo-3-Chloropropane, ethylene dibromide, trichloropropane, other VOCs such as trichloroethylene and tetrachloroethylene, methyl tertiary butyl ether, nitrate, manganese, radon, chloride, and iron. The City has received settlements in a number of lawsuits related to these contaminants and has constructed wellhead treatment systems and implemented blending plans for a number of wells.[29]

The City of Fresno, Water Division's summary report included in the 2017 Consumer Confidence Report indicates that no violations of maximum contaminate levels were found in sampling conducted 2016–2017. The 2017 Water Quality Monitoring Program sampled constituents for the California Primary Standards for Unregulated Contaminants, Micro Biological Contaminants, and Lead and Copper.[30]

[27] (Fresno City Water Department, 1940)
[28] (City of Fresno, 1969), pp 6–17
[29] (City of Fresno, June 2016)
[30] (City of Fresno, 2017)

3.11.2 Impact Assessment

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

a) Less Than Significant Impact. The Fresno Metropolitan Flood Control District (FMFCD) has plans for the construction of a permanent flood control retention basin south of VTM 6241, however the FMFCD basin is not anticipated to be completed prior to the start of construction within VTM 6241. In the interim, surface runoff from VTM 6241will be accommodated by a temporary detention basin, maintained by the property owner and located within the boundary of VTM 6241. Upon completion of FMFCD's basin, all surface runoff from VTM 6241 will be directed to the FMFCD retention basin located south of VTM 6241.

In compliance with state regulations, all development within the Project area would be required to comply with state regulations adopted to reduce groundwater degradation. The RWQCB requires the preparation of a SWPPP for projects that exceed specified size limits. The Project would be required to obtain RWQCB approval of its SWPPP prior to construction. Therefore, the Project would have a less than significant impact through implementation of the planned detention basin, compliance with the requirements of the FMFCD, and through compliance with adopted SWPPP regulations.

Mitigation Measures

No mitigation is warranted

b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project would impede sustainable groundwater management of the basin?

b) Less Than Significant Impact. The proposed 225-lot subdivision is within the City's water service area. According to the USGS, each person uses 80–100 gallons of water each day. With a combined total of 225 dwelling units, and an average 3.07 persons per household (691 persons), the Project would be expected to use approximately 69,100 gallons of water per day under normal operation, including domestic and landscape irrigation. This equates to approximately 77 acre-feet per year (AFY). Although the Project will utilize groundwater for domestic purposes, the amount of water use is not considered significant and will not significantly lower the groundwater table of the aquifer or interfere substantially with the recharge of the underground aquifer.

The FMFCD has developed an urban drainage design concept that collects, drains, and retains surface water runoff for intentional groundwater recharge in ponding basins dispersed throughout the city. The Project proposes one such basin within VTM 6241.

The City's water supply derives from groundwater, imported water, surface water sources and limited amounts of recycled water. The City anticipates increasing its surface water treatment capacity from 175,600 AFY in 2015 to 198,500 AFY in 2035. The Southeast Surface Water Treatment Facility was completed in 2017 to reduce dependency on groundwater and alleviate groundwater depletion. The City's Recycled Water Master Plan (2010) indicates the City is planning to increase and/or provide tertiary treatment of wastewater for landscape and irrigation purposes in new growth areas and existing landscaped areas throughout the City's service area. According to the City's 2015 UWMP, the City anticipates reducing the usage of groundwater supplies from a ratio of 1:3 in 2015 to a ratio of 2:7 in 2035, representing a decline from 30.11% groundwater usage to 27.55% groundwater usage.[31] Projected groundwater supply use in the 2015 UWMP considered project buildout of the General Plan in 2035. Therefore, according to the City's UWMP the Project will not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project would impede sustainable groundwater management of the basin.

Mitigation Measures

No mitigation is warranted

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

(i) result in substantial erosion or siltation on- or off-site;
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or offsite;
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
(iv) impede or redirect flood flows?

d) Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundations?

c–d) Less Than Significant Impact. There are no streams or rivers onsite or in the immediate Project vicinity. The City's development standards provide that new projects design stormwater basins to adequately attenuate peak stormwater runoff discharge and provide site-specific grading plans to demonstrate that no drainage will be diverted onto adjacent properties. In order to minimize erosion and run-off during construction activities, a SWPPP must be implemented, and the contractor shall be required to comply with all Cal/OSHA regulations regarding regular maintenance and inspection of equipment, spill prevention, and spill remediation in order to reduce the potential for incidental release of pollutants or hazardous substances onsite. Impacts resulting from alterations to drainage patterns or the potential for inundation by seiche, tsunami, or mudflow will be less than significant.

Mitigation Measures

No mitigation is warranted

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

e) Less Than Significant Impact. Applicable water quality control plans for the City of Fresno are included within the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins. The City is currently in compliance with all facets of the water quality control plan.

The City is a member of the Fresno County Groundwater Sustainability Agency (GSA). In accordance with the Sustainable Groundwater Management Act (SGMA), GSAs located in areas in critical overdraft are required to submit Groundwater Sustainability Plans (GSPs) to the Department of Water Resources (DWR) by January 31, 2020. While DWR has no requirement for adoption of GSPs, the Fresno County GSA met the January 31, 2020 deadline and is currently in compliance with SGMA.

[31] (City of Fresno, June 2016), Computed using Table 4-15, Water Supplies

As water purveyor for the Project, it is anticipated that the Project will be subject to and held in compliance with the adopted GSP and all applicable plans. The Project will therefore have a less than significant impact.

Mitigation Measures

No mitigation is warranted

3.12 Land Use and Planning

Land Use and Planning					
	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Physically divide an established community?	☐	☐	☒	☐
b)	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

3.12.1 Environmental Setting and Baseline Conditions

The Project is currently within unincorporated Fresno County and is proposed for annexation into the Fresno city limits. The Project is designated Single Family Residential, Medium Density and Single Family Residential, Urban Neighborhood by the Fresno General Plan. The Project includes a General Plan Amendment from Single Family Residential, Urban Neighborhood to Residential, Medium Density on ±8.66 acres of the site. The Project also includes prezoning ±59.74 acres of the site from County AE-20 to City RS-5/UGM/ANX (Residential Single Family, Low Density/Urban Growth Management/Annexed Rural Residential Transitional Overlay) and prezoning the remaining ±19.38 acres from Fresno County AE-20 (Exclusive 20-acre Agricultural District) to City RS-5/UGM (Residential Single Family, Low Density/Urban Growth Management). Lands adjacent to the site consist of agricultural operations to the west and scattered rural residences to the north, south, and east.

General Plan land use designations and zone districts of the Project site and surrounding areas are illustrated on **Figure 2-4**. **Table 3-11** lists the current land uses, General Plan designations, and zoning of the Project Site and its surroundings.

Table 3-11 Existing Land Use, General Plan, and Zoning

Existing Land Use, General Plan, and Zoning			
Direction	Existing Land Use	General Plan	Zoning
Project Site	Agricultural operations	RM – Residential, Medium Density RUN – Residential, Urban Neighborhood	AE-20 (Existing) RS-5 (Proposed)
North	Rural residence, fallow ag land	RM – Residential, Medium Density	RS-5, Residential Single Family, Medium Density
South	Rural residences	CBP – Employment, Business Park	AE 20 Exclusive Agriculture
East	Rural residences and ag operations	RL – Residential, Low Density RML – Residential, Medium Low Density	AE 20 Exclusive Agriculture
West	Agricultural operations	RM – Residential Medium Density	RS-4, Residential Single Family, Medium Low Density

The Project is located within the McLane Community Plan for the Metropolitan Fresno-Clovis area, adopted by the Fresno City Council on May 15, 1979. The McLane Community plan envisioned a 20-year planning horizon. As the date has now exceeded the plan's 20-year horizon, many of the objectives, policies, and growth forecasts of the plan are outdated, and would therefore be superseded by the City's General Plan.

Applicable General Plan Policies include:

Chapter 3, Urban Form, Land Use, and Design

Urban Form

UF—1-a **Diverse Neighborhoods**. Support development projects that provide Fresno with a diversity of urban and suburban neighborhood opportunities.

UF—1-d **Range of Housing Types**. Provide for diversity and variation of building types, densities, and scales of development in order to reinforce the identity of individual neighborhoods, foster a variety of market-based options for living and working to suit a large range of income levels, and further affordable housing opportunities throughout the city.

UF—1-f **Complete Neighborhoods, Densities, and Development Standards**. Use Complete Neighborhood design concepts and development standards to achieve the development of Complete Neighborhoods and the residential density targets of the General Plan.

UF—14-a **Design Guidelines for Walkability**. Develop and use design guidelines and standards for a walkable and pedestrian-scaled environment with a network of streets and connections for pedestrians and bicyclists, as well as transit and autos.

UF—14-b **Local Street Connectivity**. Design local roadways to connect throughout neighborhoods and large private developments with adjacent major roadways and pathways of existing adjacent development. Create access for pedestrians and bicycles where a local street must dead end or be designed as a cul-de-sac to adjoining uses that provide services, shopping, and connecting pathways for access to the greater community area.

Land Use

LU-1-e **Annexation Requirements**. Adopt implementing policies and requirements that achieve annexations to the City that conform to the General Plan Land Use Designations and open space and park system, and are revenue neutral and cover all costs for public infrastructure, public facilities, and public services on an ongoing basis consistent with the requirements of ED-5-b.

LU-5-a **Low Density Residential Uses**. Promote low density residential uses only where there are established neighborhoods with semi-rural or estate characteristics.

LU-5-c **Medium Density Residential Uses**. Promote medium density residential uses to maximize efficient use of residential property through a wide range of densities.

LU-11-c **General Plan Consistency**. Pursue coordinated planning and development project reviews with relevant federal, State, and local public agencies to ensure consistency with this General Plan.

3.12.2 Impact Assessment

a) Would the project physically divide an established community?

a) Less Than Significant Impact. The Project involves the development of residential homes adjacent to existing rural residences in a developing area of the community. The area currently comprises both rural and urban development, the interface of which would not physically divide the community. The Project site is designated within the City's General Plan as Residential, Medium Density and Residential, Urban Neighborhood. The Project represents the logical expansion of urban development in an efficient manner that would encourage unification and expansion of the community. Implementation of the Project would provide additional housing and an expansion of infrastructure within the community. Therefore, the Project would have a less than significant impact associated with the physical division of established land uses in the community.

Mitigation Measures

No mitigation is warranted

b) Would the project cause a significant environmental conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

b) Less Than Significant Impact. The Project involves an annexation, a subdivision, and prezoning to allow for the development of low and medium density single family residences. The Project proposes prezoning from the AE-20 (Exclusive 20-acre Agricultural District) within the unincorporated area of Fresno County to the RS-5/UGM (Residential Single Family, Low Density/Urban Growth Management) zone district within the city limits. Pursuant to a Memorandum of Understanding between the City and the County, all development within the City's sphere of influence is evaluated in accordance with the City's General Plan designation. The applicable land use policy within the City of Fresno General Plan applicable to the proposed Residential, Medium Density designation would prevail. The Residential, Medium Density designation allows for 5.0 to 12 dwelling units per acre (du/acre). The Project proposes approximately 11.6 du/acre; therefore the Project is consistent with the General Plan and there would be no conflict with the adopted land use plan.

Environmental effects of the proposal were considered in the MEIR prepared for adoption of the General Plan. Consistency with applicable General Plan Polices is provided in **Table 3-12**.

Table 3-12 Project Consistency with Applicable General Plan Policies

Project Consistency with Applicable General Plan Policies		
Policy	Policy Short Name	Consistency Discussion
UF-1-a	Diverse Neighborhoods	Consistent with General Plan policy, the Project proposes to provide a diverse urban/suburban neighborhood density type.
UF-1-d	Range of Housing Types	Consistent with General Plan policy, the Project proposes a variation of building types and densities to offer a variety of market-based options that may suit a broad range of income levels and to provide additional affordable housing opportunities within the proposed subdivisions.
UF-1-f	Complete Neighborhoods, Densities, and Development Standards	Consistent with General Plan policy, the Project proposes to provide complete neighborhood design concepts that would include a bicycle and pedestrian path consistent with development standards and incorporate blending of

Project Consistency with Applicable General Plan Policies		
Policy	Policy Short Name	Consistency Discussion
		densities within the subdivision design.
UF-14-a	Design Guidelines for Walkability	Consistent with General Plan policy, the Project proposes to develop a bicycle and pedestrian path to provide for a walkable and pedestrian-scaled environment with a network of streets that offer connections to the paths for pedestrians and bicyclists, as well as providing access to transit stops and roadways.
UF-14-b	Local Street Connectivity	Consistent with General Plan policy, the Project proposes local roadways that provide interior connections throughout the subdivision to adjacent major roadways and pathways both existing and proposed by the Project. Access for pedestrians and bicycles is provided to adjoining uses that provide services and allow for shopping, as well as connections to the greater community area
LU-1-e	Annexation Requirements	Consistent with General Plan policy, annexations proposed as part of the Project conform to the existing General Plan Land Use Designations and offer open space within the Project. Costs of public infrastructure, public facilities, and public services has been addressed as part of the Project Conditions of Approval.
LU-5-c	Medium Density Residential Uses	Consistent with General Plan policy, Low Density development proposed as part of the Project would maximize the efficient use of the residential property by contributing to the goal of providing a range of densities.
LU-11-c	General Plan Consistency	Consistent with General Plan policy, the Project has included coordinated planning and development project review by with relevant federal, State, and local public agencies to ensure consistency with the General Plan.

As described, the Project is consistent with applicable General Plan policies and will not conflict with any applicable land use plan for either the City or the County, nor any specific plan, policy, or City regulations adopted for the purpose of avoiding or mitigating environmental effects and will have a less than significant impact.

Mitigation Measures

No mitigation is warranted

3.13Mineral Resources

Mineral Resources					
Would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
b)	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☒	☐

3.13.1 Environmental Setting and Baseline Conditions

The Project is located in central Fresno County, in the southern section of California's Great Valley Geomorphic Province, or Central Valley. Historically, Fresno County has been a leading producer of a variety of minerals including aggregate, fossil fuels, metals, and other materials used in construction or in industrial processes. Currently, aggregate, and petroleum are the City's most significant mineral resources.[32]

The City is located within the Fresno production-consumption region, which spans parts of Madera and Fresno Counties. The California Geological Survey, previously known as California Department of Conservation Division of Mines and Geology, analyzed this region for the presence of aggregate resources in a 1988 mineral land classification report[33] and a subsequent 1999 update.[34] In each of these reports the California Geological Society classified the Fresno region according to the presence or absence of significant aggregate deposits. The land classification is presented in the form of Mineral Resource Zones (MRZs). Most of city of Fresno, outside of the San Joaquin and Kings River Resource Areas has an MRZ-3 designation and may contain economically recoverable mineral resources. MRZ-3 represents areas containing mineral deposits the significance of which cannot be evaluated from data available to the California Geological Society.

3.13.2 Impact Assessment

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

a and b) Less Than Significant Impact. The Project is located in an MRZ-3 zone, however, soil types present on the Project site, as listed in **Table 3-8**, are not considered to be economically viable soils. Locally important mineral resources in the City are generally located in the San Joaquin and Kings River Resource Areas. There are no known current or historic mineral resource extraction or recovery operations in the Project vicinity nor are there any known significant mineral resources onsite. Impacts related to mineral resources would be less than significant.

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[32] (Fresno County, Accessed January 8, 2020)
[33] (California Department of Conservation, 1988)
[34] (California Department of Conservation, 1999)

Mitigation Measures

No mitigation is warranted

3.14Noise

Noise					
Would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b)	Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c)	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

3.14.1 Environmental Setting and Baseline Conditions

Except for Temperance-Kutner Elementary School, located approximately one mile southeast, the Project is not located in the vicinity of noise sensitive land uses. The Project is located approximately 1.5 miles south/southeast of Fresno Yosemite International Airport and is within the TPZ of the airport as identified in the Fresno County ALUCP. State Route (SR) 180, located approximately one mile south/southwest is identified in the Fresno General Plan as a significant transportation noise source within the planning area.

3.14.2 Impact Assessment

a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

a and b) Less Than Significant Impact. The Project site is located in an area that creates a transition between urban development and rural land uses. The Project involves an annexation of land into the city and the construction and development of residential subdivisions. Residential development is not considered a significant noise generator. Established standards for noise are contained in both the City's Development Code and General Plan, with both establishing 65 A weighted decibels (dBA) as the normally acceptable exterior noise criteria.

Table 15-2506-B of the Development Code establishes standards for noise exposure from transportation noise sources. Table 15-2506-C Table 15-2506-B of the Development Code establishes land use compatibility for new development proposed near transportation sources. The Project is approximately 0.89 miles north of SR 180, identified in the General Plan as having noise levels ranging from 70 to 75 dBA for a distance of approximately 100 feet on either side of its corridor and from 65 to 70 dBA to a distance of approximately

500 feet outside of the corridor, with noise levels falling below 65 dBA further away from the highway alignment. The Project itself, the development of residences, is not considered a significant source of transportation noise. As such, the Project would be within acceptable noise standards.

Activities associated with construction could result in temporary elevated noise levels and groundborne vibration, with maximum construction noise levels ranging between 74 dBA to 89 dBA at 50 feet distance.[35] The construction noise is anticipated to be above acceptance standards. Typical construction equipment would include backhoes, tractors, air compressors, scrapers, pavers, concrete mixers, and numerous other miscellaneous tools and equipment. Construction of the Project would result in increased noise levels in the immediate vicinity. Implementation of usual and customary noise control measures, such as the installation of mufflers or engine casings, would result in noise reduction of 5–10 dBA per source. Shielding provided by natural or human-made features, noise barriers, and distance would further reduce construction noises for outside noise levels to acceptable noise levels of 65 dBA. Project generated construction noise would be short in duration. In addition, pursuant to Fresno Municipal Code, Chapter 10, Article 1, would be restricted to daylight hours.

Construction activities would be regulated by Fresno Municipal Code. Impacts related to the Project's generation of noise and groundborne vibration both during construction would be reduced by natural or human made barriers, distance, and through adherence to existing regulations. Impacts related to the Project's generation of noise during its operation would be considered less than significant without implementing regulations or mitigation.

Mitigation Measures

No mitigation is warranted

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

c) Less Than Significant Impact. The Project is located approximately 1.5 miles south/southeast of Fresno Yosemite International Airport. The Project site is within the TPZ of the airport as identified in the Fresno County ALUCP. The City also implements the Airport Environs (AE) overlay where necessary to protect life and property from potentially significant impacts of the Fresno Yosemite International, Fresno-Chandler Executive, and/or Sierra Sky Airports. Consistent with the ALUCP, the Project is not subject to an AE overlay.

The Project area is not located within the noise contour map for the Fresno Yosemite Airport in the General Plan. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation is warranted

[35] (U.S. Department of Transportation, 2019)

3.15 Population and Housing

Population and Housing					
	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b)	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.15.1 Environmental Setting and Baseline Conditions

As reported in the City's Housing Element, California Department of Finance population estimates indicate that the City had an average growth rate of 1.3 percent between the years 2000–2014. The Housing Element determined that recent development trends in the City reflect a high demand for residential development, which has resulted in developments that emphasize residential development over exclusively non-residential developments.[36] The City's Regional Housing Needs Assessment identified a need for 21,178 residential units of varying sizes, densities, and affordability types.[37]

3.15.2 Impact Assessment

a) Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

a) Less Than Significant Impact. Implementation of the Project would result in the construction of up to 225 medium density, single-family residential units. California Department of Finance's most recent estimate was approximately 3.07 persons per household for the City of Fresno, a population growth of approximately 691 persons within the Project.[38] The General Plan considered a buildout horizon for the year 2035 with a total General Plan population estimate of 970,000 people at full plan buildout. As of January 1, 2019, the City's population was 536,683.[39] The Project is consistent with the City of Fresno General Plan and in furtherance of the goals and objectives of the City's Housing Element. Construction of infrastructure serving the Project would indirectly extend infrastructure by providing connections to existing infrastructure, however said growth was considered in environmental analyses performed for adoption of the General Plan. As such, the Project will have less than significant impacts.

Mitigation Measures

No mitigation is warranted

[36] Fresno, City of, General Plan, Housing Element 2015–2023 pp. 3–11.
[37] Ibid. pp. 6–4.
[38] (California Department of Finance, 2020)
[39] (California Department of Finance)

b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

b) No Impact. The VTM 6241 subject property does not contain any existing residences and therefore, will not displace any housing or people.

Mitigation Measures

No mitigation is warranted

3.16 Public Services

Public Services					
	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
	Fire protection?	☐	☐	☒	☐
	Police protection?	☐	☐	☒	☐
	Schools?	☐	☐	☒	☐
	Parks?	☐	☐	☒	☐
	Other public facilities?	☐	☐	☒	☐

3.16.1 Environmental Setting and Baseline Conditions

Fire Protection: The closest existing Fire Department is Station No. 10, generally located 1.8 miles northwest of the Project site.

Police Protection: The closest existing City of Fresno Police Department is generally located 5 miles southwest of the Project site. The City has a joint-powers agreement with the City of Clovis for both police and fire protection and a Clovis Police station is located approximately 4 miles northwest of the Project site.

Schools: The Project is located in the Clovis Unified School District. Temperance-Kutner Elementary School is located approximately one mile southeast of the Project.

Parks: Al Radka Park is located approximately 0.82 miles southwest, and Melody Park is located approximately 0.91 miles northwest of the Project.

Landfills: The American Avenue Disposal Site located in Kerman, Ca serves the majority of the City of Fresno. The Clovis Landfill currently serves the unincorporated area and is located approximately 12 miles north of the Project.

3.16.2 Impact Assessment

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire and police protection, schools, parks, and other public facilities?

a) Less Than Significant Impact.

Fire Protection: On February 26, 2020, the Fresno City Fire Department completed its review of the Project with conditions. The Fire Department's review indicated that with incorporation of minor site map revisions, to VTM 6241 is within acceptable restrictions for fire response, as the Project is within 3-miles of Fire Station No. 10. No additional need for fire facilities was noted. The Fire Department review also included requirements for new fire hydrants and provided specifications for required fire flows. Subject to Fire Department review and with incorporation of the fire related conditions, the Project will have a less than significant impact on fire service facilities and will not warrant the need for new or physically altered fire facilities to maintain acceptable service ratios and meet performance objectives.

Police Protection: The closest existing City of Fresno Police Department is located at 1617 S. Cedar Avenue, approximately 5 miles southwest of the Project site. The City has a joint-powers agreement with the City of Clovis for police service. While the Project may result in the need for additional police staff, the police facility is adequate in size to support additional officers and within a distance that would allow the department to maintain acceptable response times. Therefore, the Project will have a less than significant impact on police facilities and will not warrant the need for new or physically altered police facilities to maintain acceptable service ratios and meet performance objectives.

Schools: The Project is located in the Clovis Unified School District. Opportunity to comment on the need for additional school facilities was offered to the school district. On February 6, 2020, the district provided a letter detailing the schools that would serve the Project and the capacity of each of the schools as listed in **Table 3-13**:

Table 3-13 Project School Capacity

Project School Capacity							
	Students/	Student Generation		Capacity Analysis			
School/Grades	Dwelling Unit[40]	Dwelling Units	Students	Capacity	Current Enrollment	Enrollment w/ Project	Impacted (Y/N?)
Boris Elementary (K–6)	0.5	225	113	875	704	817	N
Reyburn Intermediate (7–8)	0.5	225	113	1,600	1,491	1,604	Y
Clovis East H.S. (9–12)	0.2	225	45	3,100	2,567	2,612	N

The District indicated that because of projected growth in the area, it had plans for construction of new school facilities. As a result of the projected growth, the District advised that boundaries may also be adjusted to accommodate the growth. Although Reyburn Intermediate School could potentially exceed its

[40] California Department of Education 2019 student generation rates.

current capacity by approximately 4 students, said students could be accommodated by adjustments within the capacity of other available schools in the area. In addition, the developer would be required to pay school facility development impact fees to offset its impacts. In consideration of current district capacity and the developer's responsibility to pay school facility fees, the Project will have a less than significant impact on school facilities.

Parks: The Project is located less than one mile from two existing public parks. The City of Fresno has established Park Land Dedication and Reservation requirements (Fresno Ordinance 15-3701) and Developer Dedication or Construction of Facilities (Fresno Ordinance Section 12-4.705). Park land dedication/reservation would require either dedication, reservation, or payment of in-lieu fees equal to 0.00933 acres for each residential unit for a total Project requirement of ±2.1 acres. Park Facilities require construction or payment of in-lieu fees equal to 0.001884 acres per residential unit for a total Project requirement of ±0.42. To satisfy their Park Facilities requirement, the Project proposes to construct neighborhood pocket parks within its boundaries, providing approximately 1.4 acres of open space. The pocket parks would offset the open space and recreational needs of the Project. The Project developer would be required to pay in-lieu fees to meet its Park Land Dedication and Reservation requirements. As the Project includes construction of park facilities and payment of in-lieu fees to offset its impacts, the Project will have a less than significant impact on park and recreational facilities and will not warrant the need for new or physically altered park and recreational facilities to meet performance objectives.

Landfills: The American Avenue Disposal Site located in Kerman, Ca is the primary landfill serving the majority of the City of Fresno. The American Avenue Disposal Site was permitted in the year 2000 with a permitted capacity of 32,700,000 cubic yards. As of 2005[41] the landfill had a remaining capacity of 29,358,535 cubic yards. The landfill has a maximum permitted throughput of 2,200 tons/day and an estimated closure year of 2031.[42] A typical residence disposes of approximately 12.23 pounds of solid waste each day.[43] The 225 residences proposed by the Project would generate approximately 1,240 cubic yards of waste per year, representing approximately 0.04% of the landfill's capacity at the landfill's estimated closure date. Assuming the current maximum daily throughput of solid waste were committed to the landfill each day through its closure date, the Project's incremental contribution of 13,640 cubic yards of solid waste would not result in the need for new or physically altered landfill facilities to meet service objectives.

Table 3-14 Solid Waste Data (Without & With Project)

Landfill Capacity		
Description	Cubic yards	% of Capacity
American Avenue Disposal Site Capacity	32,700,000	100%
American Avenue Disposal Site: Disposal Experienced Year 2000–2005	3,341,465	10%
Disposal Site: Annual Disposal at Permitted Throughput (Without Project)	803,000	3%
Project Estimated Annual Disposal	1,240	0.004%
Estimated Disposal at Permitted Throughput on Closure Date (Without Project)	24,090,000	74%
Project Estimated Disposal Year 2020–2031[44]	13,640	0.04%
Estimated Disposal (With Project)	24,103,640	74.04%

[41] Most recent date reported on Solid Waste Information System (SWIS) website.
[42] (CalRecycle, 2020)
[43] (Calrecycle, 2020), Estimated Solid Waste Generation Rates
[44] For illustration purposes, this estimate assumes full Project buildout (225 residences) to be completed in year 2022.

The Project would not result in physical changes that would require new or physically altered governmental facilities or create a need for new or physically altered governmental facilities. The Project would have a less than significant impact on service ratios, response times, or other performance objectives for Public Services as described above.

Mitigation Measures

No mitigation is warranted

3.17Recreation

Recreation					
	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

3.17.1 Environmental Setting and Baseline Conditions

The Project is within one mile of two existing community parks. The City of Fresno has numerous neighborhood parks located throughout the City and three regional parks serving the entire metropolitan area. Neighborhood parks within the Project's vicinity include Al Radka Park, located approximately 0.82 miles southwest; and Melody Park located approximately 0.91 miles northwest. More specifically described as follows:

- Al Radka Park: 5897 E. Belmont Avenue, encompasses approximately 15 acres and features barbecues, baseball/softball fields, children's play area, field lights, football/soccer field, parking lot, picnic tables, restrooms, shade structures, shaded tot lot.
- Melody Park: 5935 E. Shields Avenue, encompasses approximately 5 acres and features barbecues, baseball/softball fields, basketball courts, lighted tennis/hockey, children's play area, computer lab, football/soccer field, picnic tables, restrooms, skate park, and indoor kitchen/social hall.

Applicable General Plan Policies include:

Chapter 5, Parks, Open Space, and Schools

POSS-2-c **Review of Development Applications.** Coordinate review of all development applications (i.e., site plans, conditional use permits, and subdivision maps) in order to implement the parks and open space standards of this Plan.

- Require provision of appropriate open space areas in private projects, in the form of trails, enhanced landscaped setbacks, parks, and water features.

POSS-2-e **Open Space Dedication for Residential Development.** Ensure new residential developments provide adequate land for parks, open space, landscaping, and trails through the dedication of land or otherwise providing for Pocket Parks, planned trails, and other recreational space, maintained by an HOA, CFD, or other such entity.

POSS-3-d **Sidewalks to Connect Neighborhoods.** Sidewalks should be designed for internal neighborhood circulation, and to connect neighborhoods to other residential areas, parks, community trails, shopping, and major streets.

POSS-4-b **Operation and Maintenance Financing.** Continue to require new residential development to form lighting and landscaping maintenance districts or community facility districts or ensure other means of financing to pay for park operations and maintenance.

3.17.2 Impact Assessment

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

a) Less Than Significant Impact. The City of Fresno maintains a parks standard of three acres of parkland for each 1,000 residents. The Project is located less than one mile from two existing public community or regional parks. As previously discussed in Section 3.16, the City of Fresno has established Park Land Dedication and Reservation requirements (Fresno Ordinance 15-3701) and requires Developer Dedication or Construction of Facilities (Fresno Ordinance Section 12-4.705). Park land dedication/reservation would require either dedication, reservation, or payment of in-lieu fees equal to 0.00933 acres for each residential unit for a total Project requirement of 2.09 acres. Park Facilities require construction or payment of in-lieu fees equal to 0.001884 acres per residential unit for a total Project requirement of 0.42. To satisfy their Park Facilities requirement, the Project proposes to develop approximately 1.4 acres of open space within its boundaries. The pocket parks would offset the Project's impacts related to the use of existing neighborhood and regional parks and other recreational facilities. The Project developer would be required to pay in-lieu fees to meet its Park Land Dedication and Reservation requirements. As the Project includes construction of park facilities and payment of in-lieu fees to offset its impacts, the Project will have a less than significant impact on the physical deterioration of park and recreational facilities and would not contribute to the acceleration of such deterioration.

Mitigation Measures

No mitigation is warranted

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

b) Less Than Significant Impact. In accordance with City of Fresno Ordinance Nos. 15-3701 and 12-4.705, the Project is responsible for both dedication and construction of park land and park facilities. In compliance with the ordinance, the Project proposes the development of open space areas as described in Section XVI-a within the Project boundaries. Impacts related to the construction of the pocket parks are included in the physical impacts evaluated as part of the Project. However, in addition to construction of park facilities, the Project may also be responsible for the payment of in-lieu fees for park land dedication/reservation.

In addition, consistent with General Plan Policy POSS-4-b, the Public Works Department provided a memorandum dated February 12, 2020 outlining maintenance requirements for Community Facilities associated with the Project. To offset the impacts of recreational facilities as a result of the Project, the Developer shall provide maintenance services either by a mechanism approved by the Public Works Department or by annexing to the City of Fresno's Community Facilities District. Therefore, impacts related to the construction or expansion of recreational facilities will be less than significant.

Mitigation Measures

No mitigation is warranted

3.18Transportation

Transportation/Traffic				
Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☒	☐	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)??	☐	☐	☐	☒
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

3.18.1 Environmental Settings and Baseline Conditions

The City of Fresno General Plan, Mobility and Transportation Element is intended to provide a comprehensive program of transportation planning through policies for all modes of transportation. The General plan establishes Traffic Impact Zones to ensure projects provide transportation infrastructure in accordance with plans. The Project is located within Traffic Impact Zone III (TIZ-III).[45] TIZ-III generally represents areas near or outside the City limits but within the SOI with the goal of maintaining a peak hour Level of Service (LOS) standard of "D" or better for all intersections and roadway segments. A Traffic Impact Study (TIS) is required for all development projected to generate 100 or more peak hour new vehicle trips. The County of Fresno has established LOS "C" for traffic congestion on county roads outside of the City's sphere of influence.

A report entitled *Revised Traffic Impact Analysis for Tentative Tract 6241, located at the Southwest Quadrant of Armstrong Avenue and Clinton Avenue*, December 12, 2019 (**Appendix D**) (hereafter referred to as the "TIS") was prepared by JLB Traffic Engineering, Inc (JLB) to evaluate the Project's impacts on transportation and traffic. The studies focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. Trip generation rates for the Project were obtained by JLB from the 10th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers. VTM 6241 was determined to generate a maximum of 2,133 daily trips, 167 AM peak hour trips and 224 PM peak hour trips.[46]

Though the Project is located within the McLane Community Plan area, the plan was adopted in 1979 for a 20-year planning horizon. As the plan is 20 years out of date, the City's General Plan takes precedence.

[45] (City of Fresno, 2014)
[46] (JLB Traffic Engineering, Inc., December 12, 2019)

Applicable General Plan Policies include:

Chapter 4, Mobility and Transportation

MT-4-b **Bikeway Improvements.** Establish and implement property development standards to assure that projects adjacent to designated bikeways provide adequate right-of-way and that necessary improvements are constructed to implement the planned bikeway system shown on Figure MT-2 to provide for bikeways, to the extent feasible, when existing roadways are reconstructed; and alternative bikeway alignments or routes where inadequate right-of-way is available.

MT-4-c **Bikeway Linkages.** Provide linkages between bikeways, trails and paths, and other regional networks such as the San Joaquin River Trail and adjacent jurisdiction bicycle systems wherever possible.

MT-5-b **Sidewalk Requirements.** Assure adequate access for pedestrians and people with disabilities in new residential developments per adopted City policies, consistent with the California Building Code and the Americans with Disabilities Act.

MT-5-c **New Subdivision Design.** Do not approve new single-family residential subdivisions with lots that front and access onto a major roadway, unless the City Traffic Engineer determines that no other feasible alternative means of vehicle access can be provided and that sufficient design measures can be implemented, such as an on-site driveway turnaround, landscaped buffering, or an on-street parking lane to assure a desirable and enduring residential environment.

MT-6-g **Path and Trail Development**. Require all projects to incorporate planned multi-purpose path and trail development standards and corridor linkages consistent with the General Plan, applicable law and case-by-case determinations as a condition of project approval.

3.18.1 Impact Assessment

a) Would the project conflict with a plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

a) Less Than Significant Impact with Mitigation Incorporated. The Project estimates 167 AM peak hour trips and 224 PM peak hour vehicle trips. In accordance with the policies of Fresno's Mobility and Transportation Element, a TIS was prepared to evaluate Project impacts and to make recommendations for mitigation where appropriate. Thus, through compliance with the applicable policies, the Project is consistent with the plans, ordinances, and policies that address the complete circulation system.

For land use projects, such as the Project, the criteria for consistency with adopted plans, policies, and ordinances would be to determine if a project would exceed an established threshold of significance. The threshold of significance established for projects located within TIZ-III is LOS "D". Accordingly, 8-hour and 4-hour traffic signal warrants were prepared by JLB for the Project for currently unsignalized intersections within the Project's vicinity. The TIS prepared for VTM 6241 considered the following traffic scenarios: 1) Existing traffic conditions; 2) Existing plus Project traffic conditions; 3) Near term plus Project traffic conditions; 4) Cumulative Year 2035 No Project traffic conditions; and 5) Cumulative Year 2035 plus Project traffic conditions. Each TIS concluded that the Project's contribution to exceedance of the established thresholds of LOS "D" within TIZ-III could be mitigated through Project contributions of its equitable Fair Share[47] of future roadway improvements as outlined below:

Table 3-15 Project's Fair Share of Future Roadway Improvements – VTM 6241

Project's Fair Share of Future Roadway Improvements[48]					
ID	Intersection	Existing Traffic Volumes (AM Peak)	Cumulative Year 2035 plus Project Traffic Volumes (AM Peak)	2035 Project Only Trips (AM Peak)	Project's Fair Share (%)
1	Armstrong Avenue / Clinton Avenue	994	2,458	58	3.96
2	Temperance Avenue / Clinton Avenue	1,433	4,699	9	0.28
5	Armstrong Avenue / McKinley Avenue	744	2,317	78	4.96
6	Fowler Avenue / Floradora Avenue	804	2,534	15	0.87
7	Armstrong Avenue / Floradora Avenue	821	2,078	49	3.90
8	Armstrong Avenue / Olive Avenue	1,348	2,994	49	2.98
9	Temperance Avenue / Olive Avenue	1,419	4,552	18	0.57
10	Armstrong Avenue / Belmont Avenue	1,019	2,783	32	1.81
11	Temperance Avenue / Belmont Avenue	1,339	4,357	20	0.66
12	Fowler Avenue / Olive Avenue	1,541	2,328	28	3.56

In general, the City's requirements for all development projects include: 1) The provision of a minimum two points of vehicular access to major streets for any phase of development; 2) major and local street dedications; 3) street improvements, including but not limited to construction of concrete curbs, gutters, pavement, underground street lighting systems; 4) payment of applicable impact fees (including, but not limited to, the Traffic Signal Mitigation Impact fee (TSMI), Fresno Major Street Impact fee, and the Regional Transportation Mitigation Fee. Payment for the Project's Fair Share of the City's development requirements through implementation of **MM TR-1**, Project impacts on traffic conditions pursuant to CEQA Guidelines Section 15064.3(b) would be less than significant.

On February 27, 2020, the City's Traffic Engineering Operations and Planning Division provided Conditions of Approval recommending the Project pay the current traffic signal mitigation fees based on its trip generation rates, said fees include payment of Citywide Regional Street Fees and Fresno Major Street Impact Fee (New Growth Area), among other fees applicable to mitigation of the Project's impacts to transportation and traffic. The applicable fees would provide for the construction of traffic signals as recommended in the traffic impact analysis.

[47] JLB Traffic Engineering, Inc.: Project Fair Share = ((2035 Project Only Trips)/(Cumulative Year 2035 + Project Traffic Volumes – Existing Traffic Volumes)) x 100
[48] (JLB Traffic Engineering, Inc., December 12, 2019)

Project Specific Mitigation Measures

TR-1: In accordance with timelines outlined in the Project Conditions of Approval, the Project shall implement and incorporate recommendations from the *Revised Traffic Impact Analysis for Tentative Tract 6241, Located at the Southwest Quadrant of Armstrong Avenue and Clinton Avenue* (December 12, 2019), by paying its fair share of traffic improvements and/or additional traffic mitigating conditions outlined in the traffic analysis and Public Works Department Conditions of Approval letters dated February 27, 2020.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3 Subdivision (b)?

b) No Impact. CEQA Guidelines Section 15064.3(b) establishes criteria for analyzing transportation impacts. The City of Fresno has elected to not adopt CEQA Guidelines Section 15064.3(b), therefore this subdivision is not applicable to the proposed Project

Mitigation Measures

No mitigation is warranted

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

d) Would the project result in inadequate emergency access?

c and d) Less Than Significant Impact. The Project has been reviewed by the Public Works Department and the Fire Department to ensure that the Project would not increase hazards due to dangerous curves, incompatible uses, or inadequate emergency access. The Public Works Department has appropriately conditioned the Project to ensure that curve radii, street widths and transitions conform to safety standards, and to ensure that street signalization appropriately addresses traffic generated by the Project and traffic patterns in the area.

Mitigation Measures

No mitigation is warranted

3.19 Tribal Cultural Resources

Tribal Cultural Resources				
Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☒	☐	☐
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

3.19.1 Consultation with California Native American Tribes

Public Resources Code Section 21080.3.1, et seq. (codification of AB 52, 2013-14)) requires that a lead agency, within 14 days of determining that it will undertake a project, must notify in writing any California Native American Tribe traditionally and culturally affiliated with the geographic area of the project if that Tribe has previously requested notification about projects in that geographic area. The notice must briefly describe the project and inquire whether the Tribe wishes to initiate request formal consultation. Tribes have 30 days from receipt of notification to request formal consultation. The lead agency then has 30 days to initiate the consultation, which then continues until the parties come to an agreement regarding necessary mitigation or agree that no mitigation is needed, or one or both parties determine that negotiation occurred in good faith, but no agreement will be made.

Pursuant to PRC § 21080.3., the City of Fresno has received letters from the Dumna Wo Wah and Table Mountain Rancheria of California Tribal Governments officially requesting notification. No other tribes have requested notification.

3.19.2 Impact Assessment

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

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

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

a-i and ii) Less Than Significant Impact with Mitigation Incorporated. On December 27, 2019, the City sent Notification of a Decision to Undertake a Project/Consultation Opportunity to the Dumna Wo Wah Tribal Government and Table Mountain Rancheria of California, via certified mail/return receipt. The notification included a map of the area, and a description of the Project. In accordance with the law, the letter provided 30 days from receipt of the letter to request consultation in writing. On ___, 2020, the City of Fresno received response from the Table Mountain Rancheria Tribal Government Office declining participation. No response was received from the Dumna Wo Wah Tribal Government Office. Therefore, no requests for consultation were made for the Project. As a result, less than significant impacts to tribal resources are expected. **MM CULT-2**, described above in **Section 3.6**, is recommended in the unlikely event cultural materials or human remains are unearthed during excavation or construction.

Mitigation Measures

Refer to **MM CULT-2**

3.20 Utilities and Service Systems

Utilities and Service Systems					
Would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d)	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reductions goals?	☐	☐	☒	☐
e)	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

3.20.1 Environmental Setting and Baseline Conditions

3.20.1.1 Water Supply

As previously stated in **Section 3.11**, the City's water supply derives from groundwater, imported water, surface water sources, and limited amounts of recycled water.

3.20.1.2 Wastewater Collection and Treatment

Wastewater would be collected via City maintained sewer lines and transmitted to facilities operated by the City's Department of Public Works. The Project will be served by the North Fresno Wastewater Treatment Facility (NFWTF). The NFWTF has a permitted capacity of 0.71 million gallons per day (mgd) average monthly flow and 1.07 mgd maximum daily flow.

3.20.1.3 Solid Waste Disposal

Solid waste generated by the Project would be disposed at the American Avenue Sanitary Landfill, located in Kerman, Ca. The landfill has a maximum permitted capacity of 32,700,000 cubic yards with last reported remaining capacity of 29,358,535 cubic yards. The landfill has an estimated closure date for August 2031.[49]

[49] (CalRecycle, 2020)

The landfill currently has sufficient capacity to serve the Project. The Project is not anticipated to generate solid waste in excess of state or local standards.

3.20.2 Impact Assessment

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

a and b) Less Than Significant Impact. The City implements a City-wide program for completion of incremental expansions to facilities for planned water supply, sewer treatment, and stormwater drainage. The City's Department of Public Utilities (DPU) has conditioned the Project to require the installation of a 16-inch water main crossing the Mill Ditch canal and extension of water mains to provide service to the subdivisions and payment of Water Capacity Fees to offset the Project's incremental water usage. In addition, the DPU requires two independent sources of water for each subdivision. The two-source requirement may be accomplished through any combination of water main extensions, construction of supply wells, or other acceptable sources of water supply approved by the Assistant Public Utilities Director.

The City has sufficient water supplies available to serve the Project and its existing commitments during normal, dry, and multiple dry years. The Project must comply with the requirements of the Department of Public Works and the Department of Public Utilities for the construction of water, wastewater, and storm water drainage infrastructure.

PG&E, the natural gas and electric service provider for the area, incrementally expands and updates its service system as needed to serve its users. Accordingly, the telecommunications providers in the area incrementally expand and update their service systems in response to usage and demand. The developer will be responsible for planning and installing wastewater collection and water delivery systems, as well as electrical and telecommunications service infrastructure. In addition, the developer be responsible for the payment of development impact fees to off-set potential impacts to these facilities resulting in less than significant impacts.

Mitigation Measures

No mitigation is warranted

c) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

c) Less Than Significant Impact. The Project will be served by the North Fresno Wastewater Treatment Facility (NFWTF). The NFWTF has a permitted capacity of 0.71 million gallons per day (mgd) average monthly flow and 1.07 mgd maximum daily flow. The NFWTF has adequate capacity to serve the Project in addition to its existing commitments, therefore the Project will have a less than significant impact.

Mitigation Measures

No mitigation is warranted

d) Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

d and e) Less Than Significant Impact. Solid waste generated by the Project would be disposed at the American Avenue Sanitary Landfill, located in Kerman, Ca. The landfill has a maximum permitted capacity of 32,700,000 cubic yards, with last reported remaining capacity of 29,358,535 cubic yards. The landfill has an estimated closure date for August 2031.[50] The landfill currently has sufficient capacity to serve the Project. The Project is not anticipated to generate solid waste in excess of state or local standards.

Applicable reduction statues, State mandated AB 939, requires California jurisdictions to achieve a 50 percent reduction in the amount of waste sent to landfills. The Project would be provided with green, gray, and blue bins to allow residents to sort waste in furtherance of waste reduction efforts. The City issues fines for violations as a result of cross-contamination for improper disposal or use of the bins. The Project would be expected to comply with these reduction statutes and regulations. Consequently, the Project would have a less than significant impact.

Mitigation Measures

No mitigation is warranted

[50] (CalRecycle, 2020)

3.21Wildfire

Wildfire					
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b)	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrollable spread of wildfire?	☐	☐	☐	☒
c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

3.21.1 Environmental Setting and Baseline Conditions

The Project is located in the City of Fresno. The California Office of the State Fire Marshall (Cal Fire) adopted Fire Hazard Severity Zone Maps for State Responsibility Areas in November 2007. In addition, Cal Fire creates Very High Fire Hazard Severity Zone Maps for Local responsibility area lands. *G*overnment Code Section 51179 states, "A local agency shall designate, by ordinance, very high fire hazard severity zones in its jurisdiction within 120 days of receiving recommendations from the director pursuant to subdivisions (b) and (c) of Section 51178. A local agency shall be exempt from this requirement if ordinances of the local agency, adopted on or before December 31, 1992, impose standards that are equivalent to, or more restrictive than, the standards imposed by this chapter.

The Project is not designated as a State responsibility Area. The City of Fresno does not classify the Project site as a Very High Fire Hazard Severity Zone.[51]

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones:

a) Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

b) Would the project, due to slope, prevailing winds, or other factors exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from wildfire or the uncontrolled spread of wildfire?

[51] (California Department of Forestry & Fire Protection, 2020)

c) Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

d) Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

a–d) No Impact. The Project is located in an area of low fire risk, and is not located in or near a State responsibility Area nor near land classified by either Cal Fire or the City of Fresno as a Very High Fire Hazard Severity Zone.[52] The nearest State Responsibility Area is approximately 18 miles to the north/northeast of the Project site. Additionally, the site is approximately 19 miles from the nearest Very High Fire Hazard Severity Zone classification. As the Project is not subject to wildfire, it would have no impact on adopted emergency response plans or emergency evacuation plans relevant to the risk of wildfire. The Project area does not generally experience strong prevailing winds and experiences less than 2% slope. As the Project site is relatively flat and not located in or near a State responsibility Area nor land classified by either Cal Fire or the City of Fresno as a Very High Fire Hazard Severity Zone, it is not subject to the risk of downslope or downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes. Therefore, there would be no impacts.

Mitigation Measures

No mitigation is warranted

[52] (California Department of Forestry & Fire Protection, 2020)

3.22CEQA Mandatory Findings of Significance

Mandatory Findings of Significance					
Would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

a) Less than Significant Impact with Mitigation Incorporated. The analysis conducted in this Initial Study/Mitigated Negative Declaration results in a determination that the Project, with incorporation of mitigation measures, will have a less than significant effect on the environment. The potential for impacts to agricultural resources, biological resources, cultural resources, transportation, and tribal cultural resources from the implementation of the proposed Project will be less than significant with the incorporation of the mitigation measures discussed in this analysis. Accordingly, the proposed Project will involve no potential for significant impacts through the degradation of the quality of the environment, the reduction in the habitat or population of fish or wildlife, including endangered plants or animals, the elimination of a plant or animal community or example of a major period of California history or prehistory

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

b) Less Than Significant Impact with Mitigation Incorporated. CEQA Guidelines Section 15064(i) States that a Lead Agency shall consider whether the cumulative impact of a project is significant and whether the effects of the project are cumulatively considerable. The assessment of the significance of the cumulative effects of a project must, therefore, be conducted in connection with the effects of past projects, other current projects, and probable future projects. The proposed Project would include an annexation, prezone, and subdivisions for purposes of allowing the development of a new residential subdivisions and associated infrastructure to connect the subdivisions to the City of Fresno. The Project site was anticipated for urbanization with the development of the City's General Plan. Therefore, implementation of the Project would not result in significant cumulative impacts and all potential impacts would be reduced to less than significant through the implementation of mitigation measures and basic regulatory requirements incorporated into Project design.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

c) Less than Significant Impact. The analysis conducted in this Initial Study results in a determination that the Project would have a less than a substantial adverse effect on human beings, either directly or indirectly.

3.23Determination: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

Printed Name/Position

Chapter 4 Mitigation Monitoring and Reporting Program

This Mitigation Monitoring and Reporting Program (MMRP) has been formulated based upon the findings of the Initial Study/Mitigated Negative Declaration (IS/MND) for Plan Amendment Application No. P19-06286, Prezone Application No. P19-06286, Annexation Application No. P19-06018, Planned Development Permit Application No. P19-00369, and Vesting Tentative Tract Map No. 6241. The MMRP lists mitigation measures recommended in the IS/MND for the Project and identifies monitoring and reporting requirements.

Table 4-1 presents the mitigation measures identified for the proposed Project. Each mitigation measure is numbered with a symbol indicating the topical section to which it pertains, a hyphen, and the impact number. For example, **AIR-2** would be the second mitigation measure identified in the Air Quality analysis of the IS/MND.

The first column of **Table 4-1** identifies the mitigation measure. The second column, entitled "When Monitoring is to Occur," identifies the time the mitigation measure should be initiated. The third column, "Frequency of Monitoring," identifies the frequency of the monitoring of the mitigation measure. The fourth column, "Agency Responsible for Monitoring," names the party ultimately responsible for ensuring that the mitigation measure is implemented. The last columns will be used by the City to ensure that individual mitigation measures have been complied with and monitored.

Table 4-1 Mitigation Monitoring and Reporting Program

Mitigation Monitoring and Reporting Program					
Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
Agricultural Resources					
AG-1. Prior to recordation of final maps, the Project proponent shall mitigate for the loss of prime and locally important farmland by one of the following at the discretion of the Planning Department: A) recording a restrictive covenant or deed on portions of the property having said designations; B) paying In-Lieu Fees as determined by the Planning Department; C) contributing to an established Mitigation Bank; or D) other comparable mitigation as approved by the Planning Department.	Prior to recordation of Final map	One time prior to recordation	City of Fresno	Planning Approval	
Biological Resources					
BIO-1. Tree removal within the reorganization lands study area shall be performed outside the nesting period of raptors (trees should be removed from September 1 – January 31). If trees must be removed during the nesting period (February 1 – August 31) the project proponent shall submit a nesting raptor survey prepared by a qualified biologist to Fresno County Planning Department prior to issuance of a grading permit.	Prior to issuance of a grading permit	One time prior to issuance of grading permit	City of Fresno	Submittal of a report	
BIO-2. Prior to approval of entitlements or issuance of grading permits on the reorganization lands outside of Tract 6241, a qualified biologist shall evaluate each proposal on a project-level basis prior to issuance of a grading permit.	Prior to issuance of a grading permit	One time prior to issuance of grading permit	City of Fresno	Submittal of a report	
Cultural Resources					
CULT-1: Prior to issuance of demolition permits, development, or approval of entitlements for development	Prior to issuance of a demolition	One time prior to	City of Fresno	Submittal of a report	

Mitigation Monitoring and Reporting Program					
Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
within the remainder of the Clinton-Armstrong No. 3 Reorganization (excepting VTM 6241), structures meeting the threshold for consideration of historic designation shall be evaluated by a qualified professional to make a determination of eligibility for inclusion in the Historical Register.	permit, development, or entitlements	issuance of grading permit			
CULT-2. Should archaeological remains or artifacts be unearthed during any stage of Project activities, work in the area of discovery shall cease until the area is evaluated by a qualified archaeologist. If mitigation is warranted, the Project proponent shall abide by recommendations of the archaeologist.	During construction	Upon occurrence	City of Fresno	Submittal of a report upon occurrence	
CULT-3. In the event that any human remains are discovered on the Project site, the Fresno County Coroner must be notified of the discovery (California Health and Safety Code, Section 7050.5) and all activities in the immediate area of the find or in any nearby area reasonably suspected to overlie adjacent human remains must cease until appropriate and lawful measures have been implemented. If the Coroner determines that the remains are not recent, but rather of Native American origin, the Coroner shall notify the Native American Heritage Commission (NAHC) in Sacramento within 24 hours to permit the NAHC to determine the Most Likely Descendent of the deceased Native American.	During construction	Upon occurrence	Fresno County Coroner	Submittal of a report upon occurrence	
Transportation					
TR-1. In accordance with timelines outlined in the Project Conditions of Approval, the Project shall implement and incorporate recommendations from the *Revised Traffic Impact Analysis for Tentative Tract 6241, Located at the Southwest Quadrant of Armstrong Avenue and Clinton Avenue* (December 12, 2019), by paying its fair share of traffic improvements and/or additional traffic mitigating conditions outlined in the traffic analysis and Public Works Department Conditions of Approval letters dated	Prior to recording a final map	One time only	City of Fresno	Proof of payment	

Mitigation Monitoring and Reporting Program					
Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
February 27, 2020.					
Tribal Cultural Resources					
Refer to **MM CULT-2**	During construction	Upon occurrence	Fresno County Coroner	Submittal of a report upon occurrence	

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Appendix A:

Air Quality and Greenhouse Gas Report Vesting Tentative Tract Map No. 6241

Appendix B:

Biological Habitat Assessment

Appendix C:

Cultural Resource Assessment for the Metzler Reorganization-Annexation Area and Vesting Tentative Tract 6241

Appendix D:

Traffic Impact Analysis: Vesting Tentative Tract 6241

Mitchell Air Quality Consulting

Air Quality and Greenhouse Gas Analysis Report
Wilson Premier Homes Tract No. 6241
City of Fresno, California

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Contact: Jeff Harris,
Chief Operating Officer

Prepared by:
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Senior Air Quality Scientist

January 29, 2020

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ACRONYMS AND ABBREVIATIONS

μg/m^3	micrograms per cubic meter
AB	Assembly Bill
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BAU	Business as Usual
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CEQA	California Environmental Quality Act
CO	carbon monoxide
CO_2	carbon dioxide
District	San Joaquin Valley Air Pollution Control District
DPM	diesel particulate matter
EMFAC	EMission FACtors Model
EPA	United States Environmental Protection Agency
Fresno COG	Fresno Council of Governments
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
GHG Rx	Greenhouse Gas Reduction Exchange
GHG(s)	greenhouse gas(es)
HAP	hazardous air pollutant
HRA	health risk assessment
IPCC	United Nations Intergovernmental Panel on Climate Change
MAQC	Mitchell Air Quality Consulting
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
$MTCO_2e$	metric tons of carbon dioxide equivalent
NO_X	nitrogen oxides
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppb	parts per billion
ppm	parts per million
ROG	reactive organic gases
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_X	sulfur oxides
VOC	volatile organic compounds

SECTION 1: EXECUTIVE SUMMARY

1.1—Purpose and Methods of Analysis

The following air quality and greenhouse gas (GHG) analysis was prepared to evaluate whether the estimated criteria air pollutants, toxic air contaminants (TACs), and GHG emissions generated from the development of Tract No. 6241 (project) would cause significant impacts to air resources in the project area. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). The methodology follows the Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) prepared by the San Joaquin Valley Air Pollution Control District (SJVAPCD or District) for quantification of emissions and evaluation of potential impacts to air resources (SJVAPCD 2015a) and the SJVAPCD's Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (SJVAPCD 2009).

1.2—Project Description

The project includes the construction and development of a 226-lot tentative subdivision (single-family homes) on a 19.83-acre site. The project is located on the west side of North Armstrong Avenue south of East Clinton Avenue outside the City of Fresno. The Assessor's Parcel Numbers (APNs) associated with the project site include 310-041-21 and 310-041-22. The overall project density is 12.42 dwelling units (DU) per acre. The project site is currently located in unincorporated Fresno County, within the City of Fresno's Sphere of Influence and will be annexed to the City of Fresno. The current City of Fresno General Plan designation is Medium Density Residential (5.0–12 DU/acre) and Urban Neighborhood Residential (16–30 DU/acre). The project site is currently zoned by the County of Fresno as Exclusive Agricultural (AE20).

The project's regional vicinity location is shown in Figure 1; an aerial view of the local vicinity is provided in Figure 2; and the Tentative Tract Map is provided in Figure 3.

1.3—Summary of Analysis Results

The following is a summary of the analysis results. As shown below, the project would result in less than significant impacts for all air quality and GHG impact criteria analyzed.

Impact AIR-1: The project would not conflict with or obstruct implementation of the applicable air quality plan. **Less than significant impact.**

Impact AIR-2: The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors). **Less than significant impact.**

Impact AIR-3: The project would not expose sensitive receptors to substantial pollutant concentrations. **Less than significant impact.**

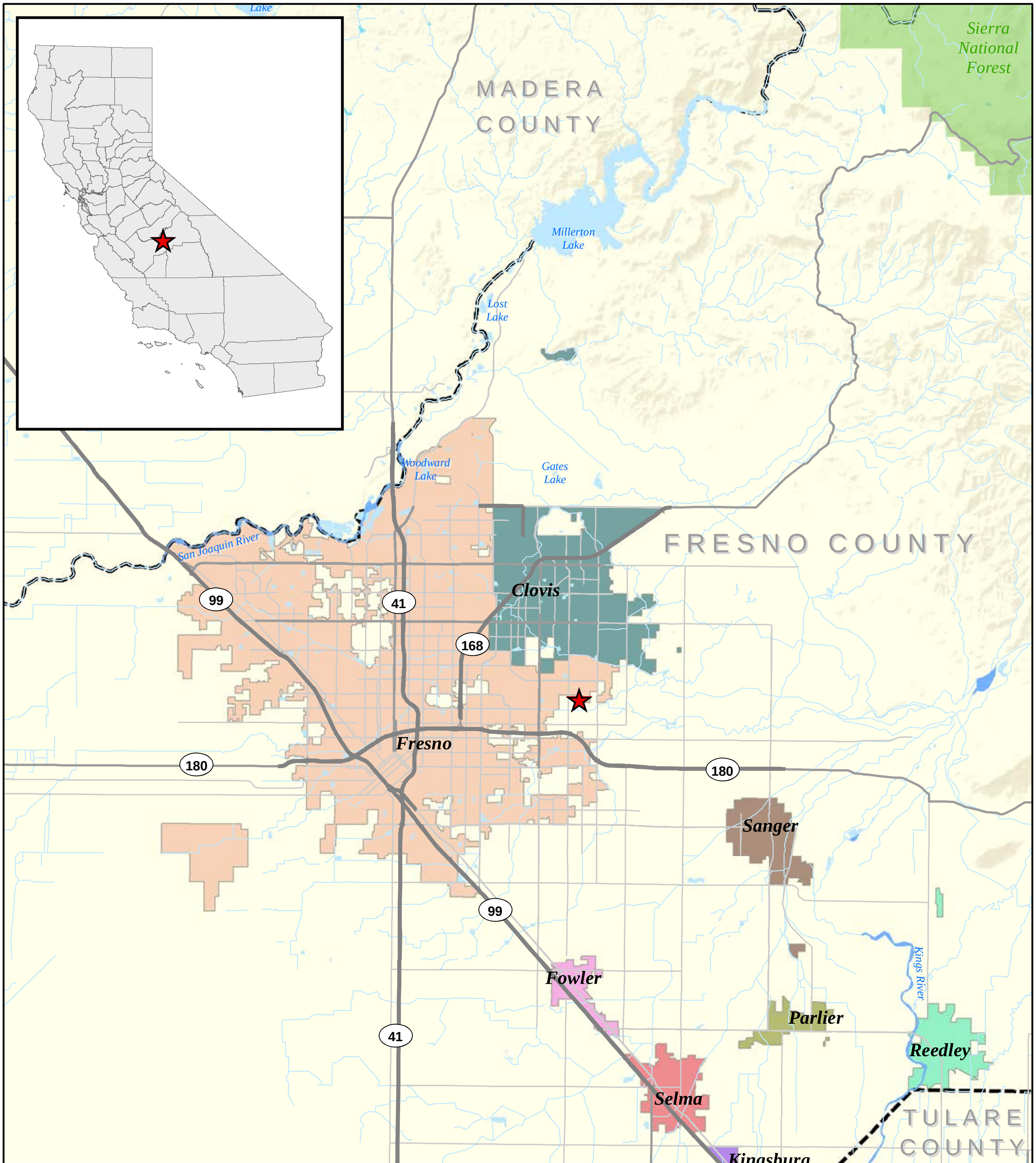
Impact AIR-4: The project would not create objectionable odors affecting a substantial number of people. **Less than significant impact.**

Impact GHG-1: The project would not generate direct or indirect greenhouse gas emissions that would result in a significant impact on the environment. **Less than significant impact.**

Impact GHG-2: The project would not conflict with any applicable plan, policy or regulation of an agency adopted to reduce the emissions of greenhouse gases. **Less than significant impact**.

1.4—Standard Conditions and Mitigation Measures Applied to the Project

No mitigation measures beyond compliance with mandatory regulations were required to demonstrate that the project would have less than significant for air quality, health risk, and GHG impacts.



Legend

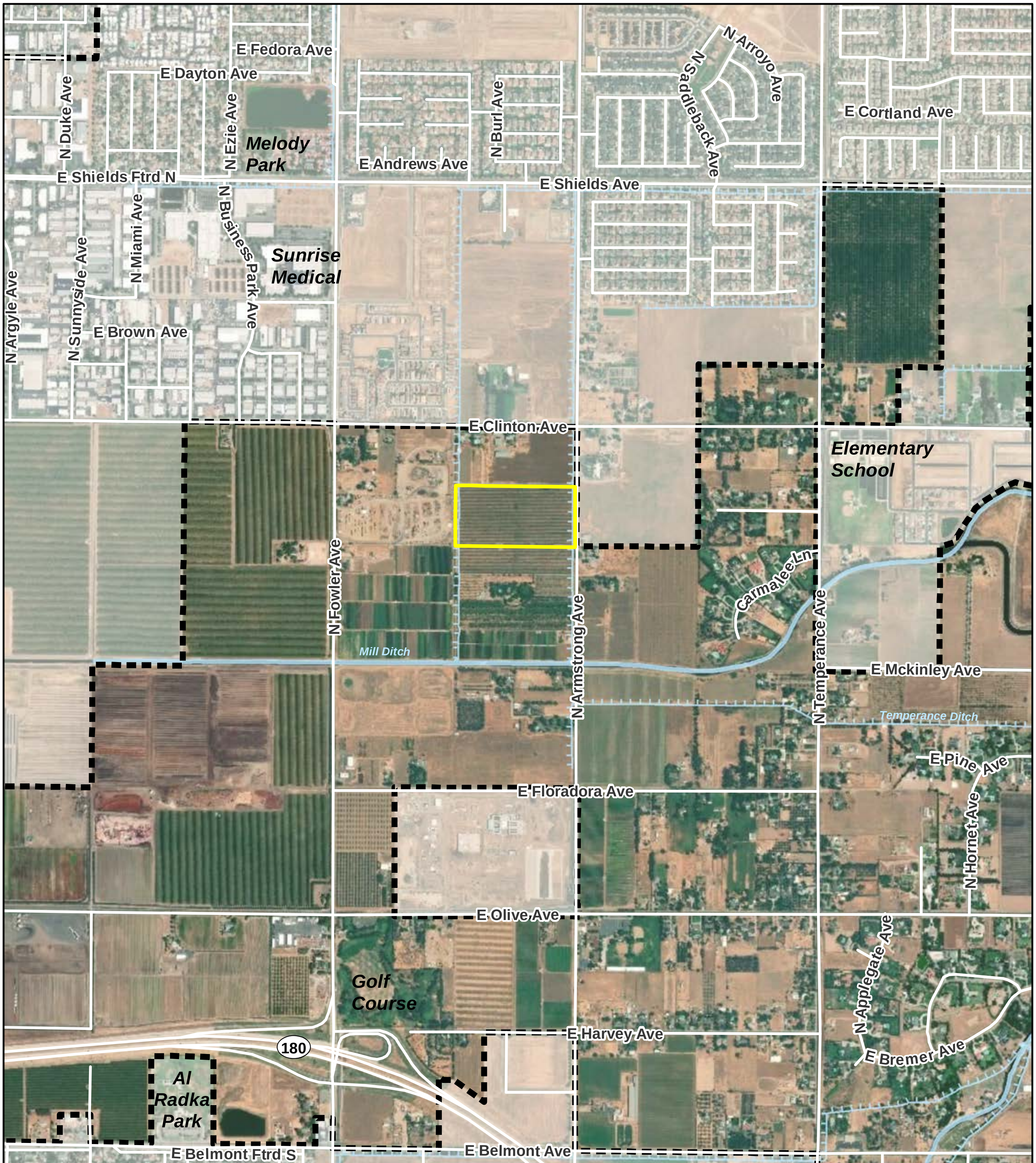
★ Project Location

County Boundary

Sources: Fresno County GIS; Open StreetMap; CalAtlas. USFS. Map date: May 29, 2019.

WILSON PREMIER HOMES, LP
AIR QUALITY AND GREENHOUSE GAS ANALYSIS REPORT
TRACT 6241

Figure 1. Regional Location Map



Legend

Wilson6241_ProjectBoundary

Fresno City Limits

Source: Fresno County; ArcGIS Online World Imagery Map Service. Map date: May 29, 2019.

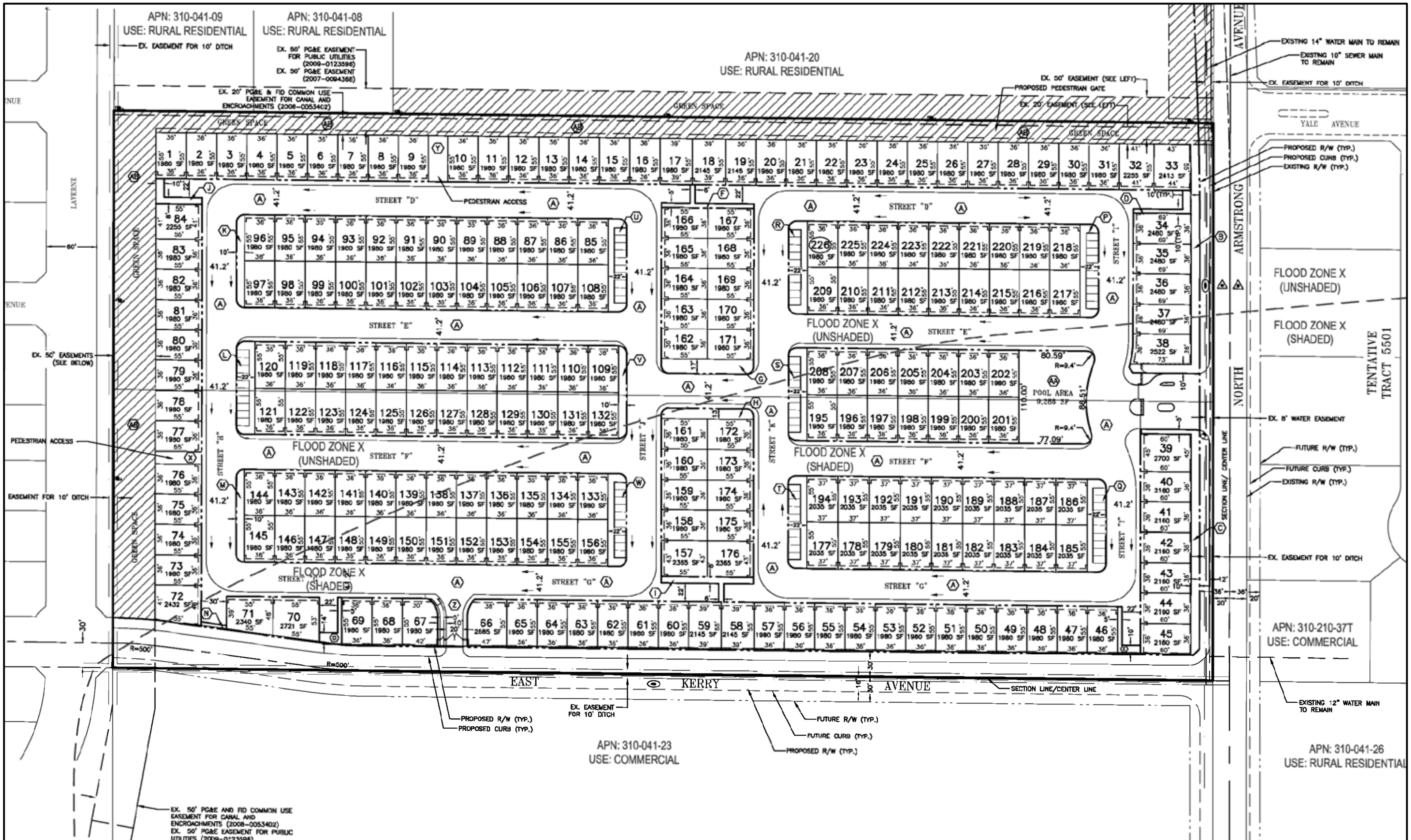
NORTH

0 600 1,200

Feet

WILSON PREMIER HOMES, LP
AIR QUALITY AND GREENHOUSE GAS ANALYSIS REPORT
TRACT 6241

Figure 2. Local Vicinity Map



NORTH

0 100 200

Feet

Source: Harbour & Associates, 4/4/19. Map date: May 29, 2019.

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AIR QUALITY AND GREENHOUSE GAS ANALYSIS REPORT
TRACT 6241

Figure 3. Tract Map

SECTION 2: AIR QUALITY SETTING

2.1—Environmental Setting

Air quality impacts are both local and regional. Regional and local air quality is impacted by topography, dominant airflows, atmospheric inversions, location, and season. The project is located in the San Joaquin Valley Air Basin (Air Basin), which experiences some of the most challenging environmental conditions for air quality in the nation. The following section describes these conditions as they pertain to the Air Basin. The information in this section is primarily from the SJVAPCD's GAMAQI (SJVAPCD 2015a).

2.1.1 - San Joaquin Valley Air Basin

Topography

The topography of a region is important for air quality because mountains can block airflow that would help disperse pollutants, and can channel air from upwind areas that transports pollutants to downwind areas. The SJVAPCD covers the entirety of the Air Basin. The Air Basin is generally shaped like a bowl. It is open in the north and is surrounded by mountain ranges on all other sides. The Sierra Nevada mountains are along the eastern boundary (8,000 to 14,000 feet in elevation), the Coast Ranges are along the western boundary (3,000 feet in elevation), and the Tehachapi Mountains are along the southern boundary (6,000 to 8,000 feet in elevation).

Climate

The climate is important for air quality because of differences in the atmosphere's ability to trap pollutants close to the ground, which creates adverse air quality; inversely, the atmosphere's ability to rapidly disperse pollutants over a wide area prevents high concentrations from accumulating under different climatic conditions. The Air Basin has an "inland Mediterranean" climate and is characterized by long, hot, dry summers and short, foggy winters. Sunlight can be a catalyst in the formation of some air pollutants (such as ozone); the Air Basin averages over 260 sunny days per year.

Inversion layers are significant in determining pollutant concentrations. Concentration levels can be related to the amount of mixing space below the inversion. Temperature inversions that occur on the summer days are usually encountered 2,000 to 2,500 feet above the valley floor. In winter months, overnight inversions occur 500 to 1,500 feet above the valley floor.

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. The mountains surrounding the Air Basin form natural horizontal barriers to the dispersion of air contaminants. The wind generally flows south-southeast through the valley, through the Tehachapi Pass and into the Mojave Desert Air Basin portion of Kern County. As the wind moves through the Air Basin, it mixes with the air pollution generated locally, generally transporting air pollutants from the north to the south in the summer and in a reverse flow in the winter.

The winds and unstable air conditions experienced during the passage of winter storms result in periods of low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the San Joaquin Valley floor. This creates strong, low-level temperature inversions and very stable air conditions, which can lead to Tule fog. Wintertime conditions favorable to fog formation are also conditions favorable to high concentrations of $PM_{2.5}$ and PM_{10}.

2.2—Regulatory Setting

Air pollutants are regulated to protect human health and for secondary effects such as visibility and building soiling. The Clean Air Act of 1970 tasks the United States Environmental Protection Agency (EPA) with setting air quality standards. The State of California also sets air quality standards, which are in some cases more stringent than federal standards, in addition to addressing additional pollutants. The following section describes these federal and state standards and the health effects of the regulated pollutants.

2.2.1 - Clean Air Act

Congress established much of the basic structure of the Clean Air Act (CAA) in 1970, and made major revisions in 1977 and 1990. Six common air pollutants (also known as criteria pollutants) are addressed in the CAA: particulate matter, ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. The EPA labels these pollutants as criteria air pollutants because they are regulated by developing human health-based and/or environmentally based criteria (science-based guidelines), which sets permissible levels. The set of limits based on human health are called primary standards. Another set of limits intended to prevent environmental and property damage are called secondary standards (EPA 2014). The federal standards are called National Ambient Air Quality Standards (NAAQS). The air quality standards provide benchmarks for determining whether air quality is healthy at specific locations and whether development activities will cause or contribute to a violation of the standards. The criteria pollutants are:

- Ozone
- Nitrogen dioxide (NO_2)
- Lead
- Particulate matter (PM_{10} and $PM_{2.5}$)
- Carbon monoxide (CO)
- Sulfur dioxide

The federal standards were set to protect public health, including that of sensitive individuals; thus, the EPA is tasked with updating the standards as more medical research is available regarding the health effects of the criteria pollutants. Primary federal standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health (ARB 2016).

2.2.2 - California Clean Air Act

The California Legislature enacted the California Clean Air Act (CCAA) in 1988 to address air quality issues of concern not adequately addressed by the federal CAA at the time. California's air quality problems were and continue to be some of the most severe in the nation, and required additional actions beyond the federal mandates. The California Air Resources Board (ARB) administers California Ambient Air Quality Standards (CAAQS) for the 10 air pollutants designated in the CCAA. The 10 state air pollutants are the six federal standards listed above as well visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. The EPA authorized California to adopt its own regulations for motor vehicles and other sources that are more stringent than similar federal regulations implementing the CAA. Generally, the planning requirements of the CCAA are less stringent than the federal CAA; therefore, consistency with the CAA will also demonstrate consistency with the CCAA.

2.2.3 - Toxic Air Contaminants

A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. There are no ambient air quality standards for TAC emissions. TACs are regulated in terms of health risks to individuals and populations exposed to the pollutants. The 1990 Clean Air Act Amendments significantly expanded the EPA's authority to regulate hazardous air pollutants (HAP). Section 112 of the Clean Air Act lists 187 hazardous air pollutants to be regulated by source category. Authority to regulate these pollutants was delegated to individual states. ARB and local air districts regulate TACs and HAPs in California.

2.2.4 - Air Pollutant Description and Health Effects

The federal and state ambient air quality standards, relevant effects, properties, and sources of the pollutants are summarized in Table 1.

Table 1: Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Ozone	1 Hour	0.09 ppm	—	Irritate respiratory system; reduce lung function; breathing pattern changes; reduction of breathing capacity; inflame and damage cells that line the lungs; make lungs more susceptible to infection; aggravate asthma; aggravate other chronic lung diseases; cause permanent lung damage; some immunological changes; increased mortality risk; vegetation and property damage.	Ozone is a photochemical pollutant as it is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between volatile organic compounds (VOC), NO_X, and sunlight. Ozone is a regional pollutant that is generated over a large area and is transported and spread by the wind.	Ozone is a secondary pollutant; thus, it is not emitted directly into the lower level of the atmosphere. The primary sources of ozone precursors (VOC and NO_X) are mobile sources (on-road and off-road vehicle exhaust).
	8 Hour	0.070 ppm	0.070 ppm[f]			
Carbon monoxide (CO)	1 Hour	20 ppm	35 ppm	Ranges depending on exposure: slight headaches; nausea; aggravation of angina pectoris (chest pain) and other aspects of coronary heart disease; decreased exercise tolerance in persons with peripheral vascular disease and lung disease; impairment of central nervous system functions; possible increased risk to fetuses; death.	CO is a colorless, odorless, toxic gas. CO is somewhat soluble in water; therefore, rainfall and fog can suppress CO conditions. CO enters the body through the lungs, dissolves in the blood, replaces oxygen as an attachment to hemoglobin, and reduces available oxygen in the blood.	CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). Sources include motor vehicle exhaust, industrial processes (metals processing and chemical manufacturing), residential wood burning, and natural sources.
	8 Hour	9.0 ppm	9 ppm			
Nitrogen dioxide[b] (NO_2)	1 Hour	0.18 ppm	0.100 ppm	Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; contribution to atmospheric discoloration; increased visits to hospital for respiratory illnesses.	During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides—NO_X (NO, NO_2, NO_3, N_2O, N_2O_3, N_2O_4, and N_2O_5). NO_X is a precursor to ozone, PM_{10}, and $PM_{2.5}$ formation. NO_X can react with compounds to form nitric acid and related small particles and result in PM-related health effects.	NO_X is produced in motor vehicle internal combustion engines and fossil fuel-fired electric utility and industrial boilers. Nitrogen dioxide (NO_2) forms quickly from NO_X emissions. NO_2 concentrations near major roads can be 30 to 100 percent higher than those at monitoring stations.
	Annual	0.030 ppm	0.053 ppm			

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfur dioxide[c] (SO_2)	1 Hour	0.25 ppm	0.075 ppm	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient sulfur dioxide levels. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.	Sulfur dioxide is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfur oxides (SO_X) include sulfur dioxide and sulfur trioxide. Sulfuric acid is formed from sulfur dioxide, which can lead to acid deposition and can harm natural resources and materials. Although sulfur dioxide concentrations have been reduced to levels well below state and federal standards, further reductions are desirable because sulfur dioxide is a precursor to sulfate and PM_{10}.	Human-caused sources include fossil-fuel combustion, mineral ore processing, and chemical manufacturing. Volcanic emissions are a natural source of sulfur dioxide. The gas can also be produced in the air by dimethylsulfide and hydrogen sulfide. Sulfur dioxide is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The sulfur dioxide levels in the State are well below the maximum standards.
	3 Hour	—	0.5 ppm			
	24 Hour	0.04 ppm	0.14 (for certain areas)			
	Annual	—	0.030 ppm (for certain areas)			
Particulate matter (PM_{10})	24 Hour	50 $\mu g/m^3$	150 $\mu g/m^3$	• Short-term exposure (hours/days): irritation of the eyes, nose, throat; coughing; phlegm; chest tightness; shortness of breath; aggravates existing lung disease, causing asthma attacks and acute bronchitis; those with heart disease can suffer heart attacks and arrhythmias. • Long-term exposure: reduced lung function; chronic bronchitis; changes in lung morphology; death.	Suspended particulate matter is a mixture of small particles that consist of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM_{10} refers to particulate matter that is between 2.5 and 10 microns in diameter (1 micron is one-millionth of a meter). $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter, about one-thirtieth the size of the average human hair.	Stationary sources include fuel or wood combustion for electrical utilities, residential space heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal; and recycling. Mobile or transportation-related sources are from vehicle exhaust and road dust. Secondary particles form from reactions in the atmosphere.
	Mean	20 $\mu g/m^3$	—			
Particulate matter ($PM_{2.5}$)	24 Hour	—	35 $\mu g/m^3$			
	Annual	12 $\mu g/m^3$	12.0 $\mu g/m^3$			
Visibility-reducing particles	8 Hour	See note below[d]				

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfates	24 Hour	25 µg/m^3	—	(a) Decrease in ventilatory function; (b) aggravation of asthmatic symptoms; (c) aggravation of cardio-pulmonary disease; (d) vegetation damage; (e) degradation of visibility; (f) property damage.	The sulfate ion is a polyatomic anion with the empirical formula SO_4^{2-}. Sulfates occur in combination with metal and/or hydrogen ions. Many sulfates are soluble in water.	Sulfates are particulates formed through the photochemical oxidation of sulfur dioxide. In California, the main source of sulfur compounds is combustion of gasoline and diesel fuel.
Lead[e]	30-day	1.5 µg/m^3	—	Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction, behavior disorders, mental retardation, neurological impairment, learning deficiencies, and low IQ.	Lead is a solid heavy metal that can exist in air pollution as an aerosol particle component. Leaded gasoline was used in motor vehicles until around 1970. Lead concentrations have not exceeded state or federal standards at any monitoring station since 1982.	Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering.
	Quarter	—	1.5 µg/m^3			
	Rolling 3-month average	—	0.15 µg/m^3			
Vinyl chloride[e]	24 Hour	0.01 ppm	—	Short-term exposure to high levels of vinyl chloride in the air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.	Vinyl chloride, or chloroethene, is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. In 1990, ARB identified vinyl chloride as a toxic air contaminant and estimated a cancer unit risk factor.	Most vinyl chloride is used to make polyvinyl chloride plastic and vinyl products, including pipes, wire and cable coatings, and packaging materials. It can be formed when plastics containing these substances are left to decompose in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites.
Hydrogen sulfide	1 Hour	0.03 ppm	—	High levels of hydrogen sulfide can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause	Hydrogen sulfide (H_2S) is a flammable, colorless, poisonous gas that smells like rotten eggs.	Manure, storage tanks, ponds, anaerobic lagoons, and land application sites are the primary sources of hydrogen sulfide.

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
				headache, nausea, vomiting, and cough. Long exposure can cause pulmonary edema.		Anthropogenic sources include the combustion of sulfur-containing fuels (oil and coal).
Volatile organic compounds (VOC)		There are no state or federal standards for VOCs because they are not classified as criteria pollutants.		Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, the kidneys, and the central nervous system. Many VOCs have been classified as toxic air contaminants.	Reactive organic gases (ROG), or VOCs, are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROG and VOCs, the two terms are often used interchangeably.	Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} and lower visibility.
Diesel particulate matter (DPM)		There are no ambient air quality standards for DPM.		Some short-term (acute) effects of DPM exposure include eye, nose, throat, and lung irritation, coughs, headaches, light-headedness, and nausea. Studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Human studies on the carcinogenicity of DPM demonstrate an increased risk of lung cancer, although the increased risk cannot be clearly attributed to diesel exhaust exposure.	DPM is a source of $PM_{2.5}$—diesel particles are typically 2.5 microns and smaller. Diesel exhaust is a complex mixture of thousands of particles and gases that is produced when an engine burns diesel fuel. Organic compounds account for 80 percent of the total particulate matter mass, which consists of compounds such as hydrocarbons and their derivatives, and polycyclic aromatic hydrocarbons and their derivatives. Fifteen polycyclic aromatic hydrocarbons are confirmed carcinogens, a number of which are found in diesel exhaust.	Diesel exhaust is a major source of ambient particulate matter pollution in urban environments. Typically, the main source of DPM is from combustion of diesel fuel in diesel-powered engines. Such engines are in on-road vehicles such as diesel trucks, off-road construction vehicles, diesel electrical generators, and various pieces of stationary construction equipment.

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources

Notes:

ppm = parts per million (concentration) μg/m^3 = micrograms per cubic meter Annual = Annual Arithmetic Mean 30-day = 30-day average Quarter = Calendar quarter

[a] Federal standard refers to the primary national ambient air quality standard, or the levels of air quality necessary, with an adequate margin of safety to protect the public health. All standards listed are primary standards except for 3 Hour SO_2, which is a secondary standard. A secondary standard is the level of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[b] To attain the 1-hour NO_2 national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb) (0.100 ppm).

[c] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[d] Visibility-reducing particles: In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

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

[f] The EPA Administrator approved a revised 8-hour ozone standard of 0.07 ppb on October 1, 2015. The new standard went into effect 60 days after publication of the Final Rule in the Federal Register. The Final Rule was published in the Federal Register on October 26, 2015 and became effective on December 28, 2015.

Source of effects, properties, and sources: South Coast Air Quality Management District 2007; California Environmental Protection Agency 2002; California Air Resources Board 2016a; U.S. Environmental Protection Agency 2003, 2009a, 2009b, 2010, 2011, 2012a and 2012b; National Toxicology Program 2011 and 2016.

Source of standards: California Air Resources Board 2013a.

Several pollutants listed in Table 1 are not addressed in this analysis. Analysis of lead, hydrogen sulfide, sulfates, and vinyl chloride are not included in this report because no new sources of these pollutant emissions are anticipated with the project. Visibility-reducing particles are not explicitly addressed in this analysis because particulate matter is addressed as PM_{10} and $PM_{2.5}$.

Toxic Air Contaminants Health Effects

A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. There are no ambient air quality standards for TAC emissions. TACs are regulated in terms of health risks to individuals and populations exposed to the pollutants. The 1990 Clean Air Act Amendments significantly expanded the EPA's authority to regulate hazardous air pollutants. Section 112 of the Clean Air Act lists 187 hazardous air pollutants to be regulated by source category. Authority to regulate these pollutants was delegated to individual states. ARB and local air districts regulate TACs and hazardous air pollutants in California.

Exposures to TACs emissions can have both chronic long-term (over a year or longer) and acute short-term (over a period of hours) health impacts. The TACs of greatest concern are those that cause serious health problems or affect many people. Health problems can include cancer, respiratory irritation, nervous system problems, and birth defects. Some health problems occur very soon after a person inhales a TAC. These immediate effects may be minor, such as watery eyes, or they may be serious, such as life-threatening lung damage. Other health problems may not appear until many months or years after a person's first exposure to the TAC. Cancer is one example of a delayed health problem.

A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. The California Almanac of Emissions and Air Quality—2009 Edition (ARB 2009) presents the relevant concentration and cancer risk data for the ten TACs that pose the most substantial health risk in California based on available data. The ten TACs are acetaldehyde, benzene, 1.3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter (DPM).

Some studies indicate that DPM poses the greatest health risk among the TACs listed above. A 10-year research program (ARB 1998) demonstrated that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. In addition to increased risk of lung cancer, exposure to diesel exhaust can have other health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause a cough, headaches, lightheadedness, and nausea. Diesel exhaust is a major source of fine particulate pollution as well, and studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems.

DPM differs from other TACs in that it is not a single substance, but a complex mixture of hundreds of substances. Although DPM is emitted by diesel-fueled, internal combustion engines, the composition of the emissions varies, depending on: engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TACs, however, no ambient monitoring data are available for DPM because no routine measurement method currently exists. The ARB has made preliminary concentration estimates based on a DPM exposure method. This method uses the ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of DPM.

Health risks attributable to the top 10 TACs listed above are available from the ARB as part of its California Almanac of Emissions and Air Quality. As shown therein for data collected at the First Street air monitoring station in Fresno, cancer risks attributable to all of the listed TACs above with the exception of DPM have declined about 70 percent from the mid-1990s to 2007. Risks associated with DPM emissions are provided only for the year 2000 and have not been updated in the Almanac. Although more recent editions of the Almanac do not provide estimated risk, they do provide emission inventories for DPM for later years. The 2013 Almanac provides emission inventory trends for DPM from 2000 through 2035. The same Almanac reports that DPM emissions were reduced in the SJVAB from 16 tons per day in 2000 to 11 tons per day in 2010, a 31 percent decrease. DPM emissions in the San Joaquin Valley are projected to decrease to 6 tons per day by 2015, a 62 percent reduction from year 2000 levels. ARB predicts a reduction to three tons per day by 2035, which would be an 81 percent reduction from year 2000 levels. Continued implementation of the ARB's Diesel Risk Reduction Plan is expected to provide continued reductions in DPM through 2020 and beyond through regulations on this source (ARB 2013b).

Asbestos

Asbestos is the name given to a number of naturally occurring fibrous silicate minerals that have been mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95 percent of all asbestos contained in buildings in the United States. Exposure to asbestos is a health threat; exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest, and abdominal cavity), and asbestosis (a non-cancerous lung disease that causes scarring of the lungs). Exposure to asbestos can occur during demolition or remodeling of buildings that were constructed prior to the 1977 ban on asbestos for use in buildings. Exposure to naturally occurring asbestos can occur during soil-disturbing activities in areas with deposits present. No naturally occurring asbestos is located near the project site.

2.3—Existing Air Quality Conditions

The local air quality can be evaluated by reviewing relevant air pollution concentrations near the project area. Table 2 summarizes 2015 through 2017 published monitoring data, which is the most recent three-year period available. Data was obtained from the closest air monitoring station with data available. The table displays data from the Clovis-North Villa Avenue monitoring station (located approximately 4.0 miles northwest of the project site), which is the closest monitoring station to the project site. The data show that during the past few years, the project area has exceeded the standards for ozone (state and national), PM_{10} (state), and $PM_{2.5}$ (national). The data in the table reflect the concentration of the pollutants in the air, measured using air monitoring equipment. This differs from emissions, which are calculations of a pollutant being emitted over a certain period. No recent monitoring data for Fresno County or the San Joaquin Valley Air Basin was available for CO or SO_2. Generally, no monitoring is conducted for pollutants that are no longer likely to exceed ambient air quality standards.

Table 2: Air Quality Monitoring Summary

Air Pollutant	Averaging Time	Item	2015	2016	2017
Ozone[1]	1 Hour	Max 1 Hour (ppm)	**0.116**	**0.113**	**0.138**
		Days > State Standard (0.09 ppm)	18	26	13
Ozone[1]	8 Hour	Max 8 Hour (ppm)	**0.098**	**0.095**	**0.100**
		Days > State Standard (0.07 ppm)	51	63	50
		Days > National Standard (0.070 ppm)	50	62	47
Carbon monoxide (CO)	8 Hour	Max 8 Hour (ppm)	ND	ND	ND
		Days > State Standard (9.0 ppm)	ND	ND	ND
		Days > National Standard (9 ppm)	ND	ND	ND
Nitrogen dioxide (NO_2)[1]	Annual	Annual Average (ppm)	0.010	ID	0.010
	1 Hour	Max 1 Hour (ppm)	0.0590	0.0498	0.0588
		Days > State Standard (0.18 ppm)	0	0	0
Sulfur dioxide (SO_2)	Annual	Annual Average (ppm)	ND	ND	ND
	24 Hour	Max 24 Hour (ppm)	ND	ND	ND
		Days > State Standard (0.04 ppm)	ND	ND	ND
Inhalable coarse particles (PM_{10})[1]	Annual	Annual Average (µg/m^3)	**33.7**	**32.7**	**36.2**
	24 hour	24 Hour (µg/m^3)	**101.3**	**74.9**	**99.4**
		Days > State Standard (50 µg/m^3)	50.3	61.3	ID
		Days > National Standard (150 µg/m^3)	0	0	0
Fine particulate matter ($PM_{2.5}$)[1]	Annual	Annual Average (µg/m^3)	**13.0**	11.6	**13.6**
	24 Hour	24 Hour (µg/m^3)	**80.7**	**50.4**	**69.5**
		Days > National Standard (35 µg/m^3)	15.4	8.2	19.2

Notes:
> = exceed; ppm = parts per million; µg/m^3 = micrograms per cubic meter
ID = insufficient data; ND = no data; max = maximum
Bold = exceedance
State Standard = California Ambient Air Quality Standard
National Standard = National Ambient Air Quality Standard
[1] Clovis-North Villa Avenue
Source: California Air Resources Board 2017a: Clovis-North Villa Avenue Station.

The health impacts of the various air pollutants of concern can be presented in a number of ways. The clearest of these is comparable with the state and federal ozone standards. If concentrations are below the standard, it is safe to say that no health impact would occur to anyone. When concentrations exceed the standard, impacts will vary based on the amount by which the standard is exceeded. The EPA developed the Air Quality Index (AQI) as an easy-to-understand measure of health impacts compared with concentrations in the air. Table 3 provides a description of the health impacts of ozone at different concentrations.

Table 3: Air Quality Index and Health Effects from Ozone

Air Quality Index/ 8-hour Ozone Concentration	Health Effects Description
AQI 51–100—Moderate Concentration 55–70 ppb	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
	Health Effects Statements: Unusually sensitive individuals may experience respiratory symptoms.
	Cautionary Statements: Unusually sensitive people should consider limiting prolonged outdoor exertion.
AQI 101–150—Unhealthy for Sensitive Groups Concentration 71–85 ppb	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
	Health Effects Statements: Increasing likelihood of respiratory symptoms and breathing discomfort in active children and adults and people with respiratory disease, such as asthma.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.
AQI 151–200—Unhealthy Concentration 86–105 ppb	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
	Health Effects Statements: Greater likelihood of respiratory symptoms and breathing difficulty in active children and adults and people with respiratory disease, such as asthma; possible respiratory effects in general population.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.
AQI 201–300—Very Unhealthy Concentration 106–200 ppb	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
	Health Effects Statements: Increasingly severe symptoms and impaired breathing likely in active children and adults and people with respiratory disease, such as asthma; increasing likelihood of respiratory effects in general population.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.
Source: Air Now 2016.	

The AQI for the 8-hour ozone standard was changed to reflect the current NAAQS of 70 parts per billion (ppb). Based on the AQI scale for the 8-hour ozone standard, the project area experienced no days in the last three years that would be categorized as very unhealthy (AQI 201–250), and as many as 159 days that were unhealthy (AQI 151–200) or unhealthy for sensitive groups (AQI 101–150), violating the 70-ppb standard as measured at the Clovis-North Villa Avenue monitoring station. The highest reading was 100 parts per billion (ppb) in 2017 (AQI 187), compared with the 105-ppb cutoff point for unhealthy (AQI 200). The most days over the standard were 62 days in 2016.

The other nonattainment pollutant of concern is $PM_{2.5}$. An AQI of 100 or lower is considered moderate and would be triggered by a 24-hour average concentration of 12.1 to 35.4 µg/m^3. An AQI of 101 to 105 or 35.5-55.4 µg/m^3 is considered unhealthful for sensitive groups. When concentrations reach this amount, it is considered an exceedance of the federal $PM_{2.5}$ standard. The monitoring station nearest the project (Clovis-North Villa Avenue) exceeded the standard on approximately 43 days in the three-year period spanning from 2015 to 2017. People with respiratory or heart disease, the elderly and children are the groups most at risk. Unusually sensitive people should consider reducing prolonged or heavy exertion. The AQI of 151 to 200 is classified as unhealthy for everyone. This AQI classification is triggered when $PM_{2.5}$ concentration ranges from 55.4 to 150.4 µg/m^3. At this concentration, there is increasing likelihood of respiratory symptoms in sensitive individuals, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease, and in the elderly. People with respiratory or heart disease, the elderly, and children should limit prolonged exertion. Everyone else should reduce prolonged or heavy exertion. The highest concentration recorded at the Clovis-North Villa Avenue monitoring station in the last three years was 80.7 µg/m^3 (AQI 164) in 2015. At this concentration, increased aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly, and increased respiratory effects in general population would occur. People with respiratory or heart disease, the elderly, and children should avoid prolonged exertion; everyone else should limit prolonged exertion when the AQI exceeds this level. The relationship of the AQI to health effects in shown Table 4.

Table 4: Air Quality Index and Health Effects of Particulate Pollution

Air Quality Index/ $PM_{2.5}$ Concentration	Health Effects Description
AQI 51–100—Moderate Concentration 12.1–35.4 µg/m^3	**Sensitive Groups**: Some people who may be unusually sensitive to particle.
	Health Effects Statements: Unusually sensitive people should consider reducing prolonged or heavy exertion.
	Cautionary Statements: Unusually sensitive people: Consider reducing prolonged or heavy exertion. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier.
AQI 101–150—Unhealthy for Sensitive Groups Concentration 35.5–55.4 µg/m^2	**Sensitive Groups**: Sensitive groups include people with heart or lung disease, older adults, children, and teenagers.
	Health Effects Statements: Increasing likelihood of respiratory symptoms in sensitive individuals, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease, and the elderly.

Table 4 (cont.): Air Quality Index and Health Effects of Particulate Pollution

Air Quality Index/ $PM_{2.5}$ Concentration	Health Effects Description
	If you have heart disease: Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.
AQI 151–200—Unhealthy Concentration 55.5–150.4 µg/m^3	**Sensitive Groups**: Everyone
	Health Effects Statements: Increased aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly; increased respiratory effects in general population.
	Cautionary Statements: Sensitive groups: Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling. Everyone else: Reduce prolonged or heavy exertion. Take more breaks during outdoor activities.
AQI 201–300—Very Unhealthy Concentration 150.5–250.4 µg/m^3	**Sensitive Groups**: Everyone
	Health Effects Statements: Significant aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly; significant increase in respiratory effects in general population.
	Cautionary Statements: Sensitive groups: Avoid all physical activity outdoors. Move activities indoors or reschedule to a time when air quality is better. Everyone else: Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling to a time when air quality is better.
Source: Air Now 2016.	

2.3.1 - Attainment Status

The EPA and the ARB designate air basins where ambient air quality standards are exceeded as “nonattainment” areas. If standards are met, the area is designated an “attainment” area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered “unclassified.” National nonattainment areas are further designated marginal, moderate, serious, severe, or extreme as a function of deviation from standards.

Each standard has a different definition, or “form” of what constitutes attainment, based on specific air quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the federal annual $PM_{2.5}$ standard is met if the three-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

The current attainment designations for the Air Basin are shown in Table 5. The Air Basin is designated nonattainment for ozone, PM_{10}, and $PM_{2.5}$.

Table 5: San Joaquin Valley Air Basin Attainment Status

Pollutant	State Status	National Status
Ozone—One Hour	Nonattainment/Severe	No Standard
Ozone—Eight Hour	Nonattainment	Nonattainment/Extreme
Carbon monoxide	Attainment/Unclassified	Merced, Madera, and Kings Counties are unclassified; others are in Attainment
Nitrogen dioxide	Attainment	Attainment/Unclassified
Sulfur dioxide	Attainment	Attainment/Unclassified
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment
Lead	Attainment	No Designation/Classification

Source of State status: California Air Resources Board (ARB 2013c).
Source of National status: U.S. Environmental Protection Agency (EPA 2016a).
Source of additional status information (SJVAPCD 2017a).

2.4—Air Quality Plans and Regulations

Air pollutants are regulated at the national, state, and air basin or county level, and each agency has a different level of regulatory responsibility: the EPA regulates at the national level, the ARB at the state level, and the SJVAPCD at the air basin level.

The EPA is responsible for national and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all State Implementation Plans, provides research and guidance for air pollution programs, and sets National Ambient Air Quality Standards—also known as the federal standards described earlier.

A State Implementation Plan (SIP) is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain federal standards. The SIP for the State of California is administered by the ARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. California's SIP incorporates individual federal attainment plans for regional air districts; specifically, an air district prepares their federal attainment plan, which is sent to ARB to be approved and incorporated into the California State Implementation Plan. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms. The ARB then submits the SIP to the EPA for approval. After reviewing submitted SIPs, the EPA proposes to approve or disapprove all or part of each plan. The public has an opportunity to comment on the EPA's proposed action. The EPA considers public input before taking final action on a state's plan. If EPA approves all or part of a SIP, those control measures are enforceable in federal court. If a state fails to submit an approvable plan or if the EPA disapproves a plan, the EPA is required to develop a federal implementation plan (FIP). The SIP approval process often takes several years. The most recent federally approved attainment plans for the SJVAPCD are the 2007 8-Hour Ozone Attainment Plan and the 2012 $PM_{2.5}$ Plan for the 2006 $PM_{2.5}$ standard.

Areas designated nonattainment must develop air quality plans and regulations to achieve standards by specified dates, depending on the severity of the exceedances. For much of the country, implementation of federal motor vehicle standards and compliance with federal permitting requirements for industrial sources are adequate to attain air quality standards on schedule. For many areas of California, however, additional state and local regulation is required to achieve the standards. Regulations adopted by California are described below.

2.4.1 - California Regulations

Low-Emission Vehicle Program

The ARB first adopted Low-Emission Vehicle (LEV) program standards in 1990. These first LEV standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represent continuing progress in emission reductions. As the State’s passenger vehicle fleet continues to grow and more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in the 1994 State Implementation Plan. In 2012, ARB adopted the LEV III amendments to California’s LEV regulations. These amendments, also known as the Advanced Clean Car Program include more stringent emission standards for model years 2017 through 2025 for both criteria pollutants and GHGs for new passenger vehicles (ARB 2012a).

On-Road Heavy-Duty Vehicle Program

The ARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. Section 1956.8, Title 13, California Code of Regulations contains California’s emission standards for on-road heavy-duty engines and vehicles, as well as test procedures. ARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program and others (ARB 2013b).

The regulation applies to nearly all privately and federally owned diesel-fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets operating low-use vehicles, fleets operating in selected vocations like agricultural and construction, and small fleets of three or fewer trucks (ARB 2015b).

ARB Truck and Bus Regulation

The latest amendments to the Truck and Bus regulation became effective on December 31, 2014. The amended regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent.

The regulation applies to nearly all privately and federally owned diesel-fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than

14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets operating low-use vehicles, fleets operating in selected vocations like agricultural and construction, and small fleets of three or fewer trucks (ARB 2015a).

ARB Regulation for In-Use Off-Road Diesel Vehicles

On July 26, 2007, the ARB adopted a regulation to reduce DPM and nitrous oxide (NO_X) emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. The regulation limits idling to no more than five consecutive minutes, requires reporting and labeling, and requires disclosure of the regulation upon vehicle sale. The ARB is enforcing that part of the rule with fines up to $10,000 per day for each vehicle in violation. Performance requirements of the rule are based on a fleet's average NO_X emissions, which can be met by replacing older vehicles with newer, cleaner vehicles or by applying exhaust retrofits. The regulation was amended in 2010 to delay the original timeline of the performance requirements, making the first compliance deadline January 1, 2014 for large fleets (over 5,000 horsepower), 2017 for medium fleets (2,501–5,000 horsepower), and 2019 for small fleets (2,500 horsepower or less).

ARB Regulation for Consumer Products

The ARB Consumer Products Regulation was last amended in January 2015. The ARB regulates the VOC content of a wide variety of consumer products sold and manufactured in California. The purpose of the regulation is to reduce the emission of ozone precursors, TACs, and GHG emissions in products that are used by homes and businesses. The regulated products include but are not limited to solvents, adhesives, air fresheners, soaps, aromatic compounds, windshield cleaners, charcoal lighter, dry cleaning fluids, floor polishes, and general cleaners and degreasers (ARB 2015b)

ARB Airborne Toxic Control Measure for Asbestos

In July 2001, the ARB approved an Air Toxic Control Measure for construction, grading, quarrying, and surface mining operations to minimize emissions of naturally occurring asbestos. The regulation requires application of best management practices to control fugitive dust in areas known to have naturally occurring asbestos and requires notification to the local air district prior to commencement of ground-disturbing activities. The measure establishes specific testing, notification and engineering controls prior to grading, quarrying, or surface mining in construction zones where naturally occurring asbestos is located on projects of any size. There are additional notification and engineering controls at work sites larger than one acre in size. These projects require the submittal of a "Dust Mitigation Plan" and approval by the air district prior to the start of a project.

Construction sometimes requires the demolition of existing buildings where construction occurs. The project includes no demolition. Asbestos is also found in a natural state, known as naturally occurring asbestos. Exposure and disturbance of rock and soil that naturally contain asbestos can result in the release of fibers into the air and consequent exposure to the public. Asbestos most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (serpentinite) and often contains chrysotile asbestos. In addition, another form of asbestos, tremolite, can be found associated with ultramafic rock, particularly near faults. Sources of asbestos emissions include unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits, or rock quarrying activities where ultramafic rock is present.

The ARB has an Air Toxic Control Measure for construction, grading, quarrying, and surface mining operations, requiring the implementation of mitigation measures to minimize emissions of asbestos-laden dust. The measure applies to road construction and maintenance, construction and grading operations, and quarries and surface mines when the activity occurs in an area where naturally occurring asbestos is likely to be found. Areas are subject to the regulation if they are identified on maps published by the Department of Conservation as ultramafic rock units or if the Air Pollution Control Officer or owner/operator has knowledge of the presence of ultramafic rock, serpentine, or naturally occurring asbestos on the site. The measure also applies if ultramafic rock, serpentine, or asbestos is discovered during any operation or activity. Review of the Department of Conservation maps indicates that no ultramafic rock has been found near the southeast Fresno area.

Diesel Risk Reduction Plan

The ARB's Diesel Risk Reduction Plan has led to the adoption of new state regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles to reduce DPM emissions by about 90 percent overall from year 2000 levels. The projected emission benefits associated with the full implementation of this plan, including federal measures, are reductions in DPM emissions and associated cancer risks of 75 percent by 2010, and 85 percent by 2020 (ARB 2000).

2.4.2 - San Joaquin Valley Air Pollution Control District

The District is responsible for controlling emissions primarily from stationary sources. The District, in coordination with the eight countywide transportation agencies, is also responsible for developing, updating, and implementing air quality attainment plans for the Air Basin. The District also has roles under CEQA.

Ozone Plans

The Air Basin is designated nonattainment of state and federal health-based air quality standards for ozone. To meet Clean Air Act requirements for the one-hour ozone standard, the District adopted an Extreme Ozone Attainment Demonstration Plan in 2004, with an attainment date of 2010. Although the EPA revoked the federal 1-hour ozone standard effective June 15, 2005 and replaced it with an 8-hour standard, the requirement to submit a plan for that standard remained in effect for the San Joaquin Valley.

The planning requirements for the 1-hour plan remain in effect until replaced by a federal 8-hour ozone attainment plan. On March 8, 2010, the EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan, including revisions to the plan, effective April 7, 2010. However, the Air Basin failed to attain the standard in 2010 and was subject to a $29 million Clean Air Act penalty. The penalty is being collected through an additional $12 motor vehicle registration surcharge for each passenger vehicle registered in the Air Basin that will be applied to pollution reduction programs in the region. The District also instituted a more robust ozone episodic program to reduce emissions on days with the potential to exceed the ozone standards. On July 18, 2016, the EPA published in the Federal Register a final action determining that the San Joaquin Valley has attained the 1-hour ozone national ambient air quality standard. This determination is based on the most recent three-year period (2012-2014) of sufficient, quality-assured, and certified data. The penalty fees remain in place pending submittal of a demonstration that the San Joaquin Valley will maintain the 1-hour standard for 10 years (EPA 2016b).

The EPA originally classified the Air Basin as serious nonattainment for the 1997 federal 8-hour ozone standard with an attainment date of 2013. On April 30, 2007, the District's Governing Board adopted the 2007 Ozone Plan, which contained analysis showing a 2013 attainment target to be infeasible. The 2007 Ozone Plan details the plan for achieving attainment on schedule with an "extreme nonattainment" deadline of 2024. At its adoption of the 2007 Ozone Plan, the District also requested a reclassification to extreme nonattainment. ARB approved the plan in June 2007, and the EPA approved the request for reclassification to extreme nonattainment on April 15, 2010.

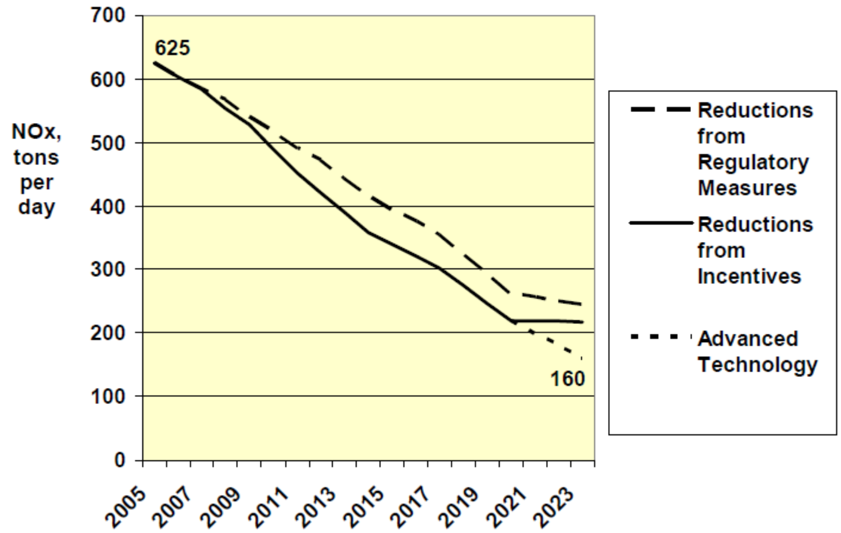
The 2007 Ozone Plan contains measures to reduce ozone and particulate matter precursor emissions to bring the Basin into attainment with the federal 8-hour ozone standard. The 2007 Ozone Plan calls for a 75 percent reduction of NO_X and a 25 percent reduction of reactive organic gases (ROG). Figure 4 displays the anticipated NO_X reductions attributed in the 2007 Ozone Plan (Source: 2007 Ozone Plan). The plan, with innovative measures and a "dual path" strategy, assures expeditious attainment of the federal 8-hour ozone standard for all Air Basin residents. The District Governing Board adopted the 2007 Ozone Plan on April 30, 2007. The ARB approved the plan on June 14, 2007. The 2007 Ozone Plan requires yet to be determined "Advanced Technology" to achieve additional reductions after 2021, in order to attain the standard at all monitoring stations in the Air Basin by 2024 as allowed for areas designated extreme nonattainment by the federal Clean Air Act.

The Air Basin is designated an extreme ozone nonattainment area for the EPA's 2008 8-hour ozone standard of 75 ppb. The District's Governing Board approved the 2016 Plan for the 2008 8-Hour Ozone Standard on June 16, 2016. The ARB approved the attainment demonstration plan for the San Joaquin Valley on July 21, 2016 and transmitted the plan to EPA on August 24, 2016. The comprehensive strategy in this plan will reduce NO_X emissions by over 60 percent between 2012 and 2031, and will bring the San Joaquin Valley into attainment of the EPA's 2008 8-hour ozone standard as expeditiously as practicable, no later than December 31, 2031. The 2016 Ozone Plan predicts attainment of the 2008 standard by 2031 (SJVAPCD 2018a). To ensure that the plan is approvable with the necessary contingencies, the plan includes a "Black Box" that will require implementation of new advanced technologies and controls prior to the 2031 deadline.

The EPA Administrator signed the Final Rule revising the 8-hour ozone standard to 70 ppm on October 1, 2015. The new standard will require the SJVAPCD to prepare a new attainment to achieve the more stringent emission level within 20 years from the effective date of designation (EPA 2018).

State ozone standards do not have an attainment deadline but require implementation of all feasible measures to achieve attainment at the earliest date possible. This is achieved through compliance with the federal deadlines and control measure requirements.

Figure 4: San Joaquin Valley NO_X Emissions Forecast



Particulate Matter Plans

The Air Basin was designated nonattainment of state and federal health-based air quality standards for PM_{10}. The Air Basin is also designated nonattainment of state and federal standards for $PM_{2.5}$.

To meet Clean Air Act requirements for the PM_{10} standard, the District adopted a PM_{10} Attainment Demonstration Plan (Amended 2003 PM_{10} Plan and 2006 PM_{10} Plan), which has an attainment date of 2010. The District adopted the 2007 PM_{10} Maintenance Plan in September 2007 to assure the San Joaquin Valley's continued attainment of the EPA's PM_{10} standard. The EPA designated the valley as an attainment/maintenance area for PM_{10} on September 25, 2008. Although the San Joaquin Valley has exceeded the standard since then, those days were considered exceptional events that are not considered a violation of the standard for attainment purposes.

The 2008 $PM_{2.5}$ Plan builds upon the comprehensive strategy adopted in the 2007 Ozone Plan to bring the Air Basin into attainment of the 1997 national standards for $PM_{2.5}$. The EPA has identified NO_X and SO_2as precursors that must be addressed in air quality plans for the 1997 $PM_{2.5}$ standards. The 2008 $PM_{2.5}$ Plan is a continuation of the District's strategy to improve the air quality in the Air Basin. The EPA issued final approval of the 2008 $PM_{2.5}$ Plan on November 9, 2011, which became effective on January 9, 2012. The EPA approved the emissions inventory, the reasonably available control measures/reasonably available control technology demonstration, reasonable further progress demonstration, attainment demonstration and associated air quality modeling, and the transportation conformity motor vehicle emissions budgets. The EPA also granted California's request to extend the attainment deadline for the San Joaquin Valley to April 5, 2015 and approved commitments to measures and reductions by the District and the ARB. Finally, it disapproved the State Implementation Plan's contingency provisions and issued a protective finding for transportation conformity determinations.

In December 2012, the District adopted the 2012 $PM_{2.5}$ Plan to bring the San Joaquin Valley into attainment of the EPA's 2006 24-hour $PM_{2.5}$ standard of 35 μg/m³. The ARB approved the District's 2012 $PM_{2.5}$ Plan for the 2006 standard at a public hearing on January 24, 2013 (SJVAPCD 2012). This plan seeks to bring the Valley into attainment with the standard by 2019, with the expectation that most areas will achieve attainment before that time.

The 2015 Plan for the 1997 $PM_{2.5}$ Standard approved by the District Governing Board on April 16, 2015—will bring the Valley into attainment of the EPA's 1997 $PM_{2.5}$ standard as expeditiously as practicable, but no later than December 31, 2020. The plan was required to request reclassification to Serious nonattainment and to extend the attainment date from 2018 to 2020 (SJVAPCD 2015b).

The 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard was adopted on September 15, 2016. This plan includes an attainment impracticability demonstration and request for reclassification of the Valley from Moderate nonattainment to Serious nonattainment (SJVAPCD 2017b).

The SJVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards on November 15, 2018. This plan provides a combined strategy to address the EPA federal 1997 annual $PM_{2.5}$ standard of 15 $\mu g/m^3$ and 24-hour $PM_{2.5}$ standard of 65 $\mu g/m^3$; the 2006 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$; and the 2012 annual $PM_{2.5}$ standard of 12 $\mu g/m^3$. This plan demonstrates attainment of the federal $PM_{2.5}$ standards as expeditiously as practicable (SJVAPCD 2018b).

SJVAPCD Rules and Regulations

The SJVAPCD rules and regulations that may apply to projects that will occur during buildout of the project include but are not limited to the following:

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

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

Rule 4641—Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations. The purpose of this rule is to limit VOC emissions from asphalt paving and maintenance operations. If asphalt paving will be used, then the paving operations will be subject to Rule 4641.

Rule 4901—Wood-Burning Fireplaces and Wood-Burning Heaters. The purposes of this rule are to limit emissions of carbon monoxide and particulate matter from wood-burning fireplaces, wood-burning heaters, and outdoor wood-burning devices, and to establish a public education program to reduce wood-burning emissions. All development that includes wood-burning devices are subject to this rule.

Rule 4902—Residential Water Heaters. In 2009, the District amended Rule 4902 to strengthen the rule by lowering the limit to 10 nanograms per joule (ng/J) for new or replacement water heaters, and to a limit of 14 ng/J for instantaneous water heaters. Retailer compliance dates ranged from 2010 to 2012, depending on the unit type.

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

Rule 9510—Indirect Source Review. This rule reduces the impact of NO_X and PM_{10} emissions from growth within the Air Basin. The rule places application and emission reduction requirements on development projects meeting applicability criteria in order to reduce emissions through on-site mitigation, off-site District-administered projects, or a combination of the two. This project has already complied with Rule 9510 because it would develop more than 50 residential dwelling units.

CEQA

The District has three roles under CEQA:

1. **Lead Agency:** Responsible for preparing environmental analyses for its own projects (adoption of rules, regulations, or plans) or permit projects filed with the District where the District has primary approval authority over the project.
2. **Responsible Agency:** The discretionary authority of a responsible agency is more limited than a lead agency; having responsibility for mitigating or avoiding only the environmental effects of those parts of the project which it decides to approve, carry out, or finance. The District defers to the lead agency for preparation of environmental documents for land use projects that also have discretionary air quality permits, unless no document is prepared by the lead agency and potentially significant impacts related to the permit are possible. The District regularly submits comments on documents prepared by lead agencies to ensure that District concerns are addressed.
3. **Commenting Agency:** The District reviews and comments on air quality analyses prepared by other public agencies (such as the project).

The District also provides guidance and thresholds for CEQA air quality and GHG analyses. The result of this guidance, as well as state regulations to control air pollution, is an overall improvement in the Air Basin. In particular, the District's 2015 GAMAQI states the following:

1. The District's Air Quality Attainment Plans include measures to promote air quality elements in county and city general plans as one of the primary indirect source programs. The general plan is the primary long-range planning document used by cities and counties to direct development. Since air districts have no authority over land use decisions, it is up to cities and counties to ensure that their general plans help achieve air quality goals. Section 65302.1 of the California Government Code requires cities and counties in the San Joaquin Valley to amend appropriate elements of their general plans to include data, analysis, comprehensive goals, policies, and feasible implementation strategies to improve air quality in their next housing element revisions.
2. The Air Quality Guidelines for General Plans (AQGGP), adopted by the District in 1994 and amended in 2005, is a guidance document containing goals and policy examples that cities and counties may want to incorporate into their General Plans to satisfy Section 65302.1. When adopted in a general plan and implemented, the suggestions in the AQGGP can reduce vehicle trips and miles traveled and improve air quality. The specific suggestions in

the AQGGP are voluntary. The District strongly encourages cities and counties to use their land use and transportation planning authority to help achieve air quality goals by adopting the suggested policies and programs.

2.4.3 - Local

County of Fresno

The project is located in unincorporated Fresno County. The County's applicable air quality policies from the Open Space and Conservation element are listed below.

County of Fresno Air Quality Goals and Policies

The County of Fresno's General Plan lists the following policies that are supportive of improved air quality and relevant to the project:

- **Policy OS-G.1:** The County shall develop standard methods for determining and mitigating project air quality impacts and related thresholds of significance for use in environmental documents. The County will do this in conjunction with the SJVAPCD and the cities in Fresno County.
- **Policy OS-G.2:** The County shall ensure that air quality impacts identified during the CEQA review process are fairly and consistently mitigated. The County shall require projects to comply with the County's adopted air quality impact assessment and mitigation procedures.
- **Policy OS-G.4:** The County shall consult with the SJVAPCD during CEQA review for projects that require air quality impact analysis and ensure that the SJVAPCD is on the distribution list for all CEQA documents.
- **Policy OS-G.13:** The County shall include fugitive dust control measures as a requirement for subdivision maps, site plans, and grading permits. This will assist in implementing the SJVAPCD's particulate matter less than ten microns (PM_{10}) regulation (Regulation VIII). Enforcement actions can be coordinated with the Air District's Compliance Division.
- **Policy OS-G.16:** The County shall encourage the installation of low-emission, EPA-certified fireplace inserts and/or wood stoves, pellet stoves, or natural gas heating appliances in lieu of normal open hearth fireplaces in new houses.

City of Fresno

The Fresno General Plan was adopted on December 18, 2014 (City of Fresno 2014a). The City's applicable air quality goals and policies from the Air Quality section are listed below.

City of Fresno Air Quality Goals and Policies

The City of Fresno's General Plan lists the following policies that are supportive of improved air quality:

- **Objective RC-4.** In cooperation with other jurisdictions and agencies in the San Joaquin Valley Air Basin, take necessary actions to achieve and maintain compliance with State and federal air quality standards for criteria pollutants.
- **RC-4-a Support Regional Efforts**. Support and lead, where appropriate, regional, State and federal programs and actions for the improvement of air quality, especially the SJVAPCD's

efforts to monitor and control air pollutants from both stationary and mobile sources and implement Reasonably Available Control Measures in the Ozone Attainment Plan.

- **RC-4-b Conditions of Approval**. Develop and incorporate air quality maintenance requirements, compatible with Air Quality Attainment and Maintenance Plans, as conditions of approval for General Plan amendments, community plans, Specific Plans, neighborhood plans, Concept Plans, and development proposals.
- **RC-4-c Evaluate Impacts with Models**. Continue to require the use of computer models used by SJVAPCD to evaluate the air quality impacts of plans and projects that require such environmental review by the City.
- **RC-4-d Forward Information**. Forward information regarding proposed General Plan amendments, community plans, Specific Plans, neighborhood plans, Concept Plans, and development proposals that require air quality evaluation, and amendments to development regulations to the SJVAPCD for their review of potential air quality and health impacts.
- **RC-4-k Electric Vehicle Charging**. Develop standards to facilitate electric vehicle charging infrastructure in both new and existing public and private buildings, in order to accommodate these vehicles as the technology becomes more widespread.
    1. The idling time of all construction equipment used in the plan area shall not exceed ten minutes when practicable.
    2. The hours of operation of heavy-duty equipment shall be minimized when practicable.
    3. All equipment shall be properly tuned and maintained in accord with manufacturer's specifications when practicable.
    4. When feasible, alternative fueled or electrical construction equipment shall be used at the project site.
    5. The minimum practical engine size for construction equipment shall be used when practicable.
    6. When feasible, electric carts or other smaller equipment shall be used at the project site.
    7. Gasoline-powered equipment shall be equipped with catalytic converters when practicable.

2.4.4 - Existing Sources of Toxic Emissions

No existing sources were identified that exceed ARB recommendations in its Air Quality Land Use Handbook for siting sensitive land uses impact the project.

2.4.5 - ARB Air Quality Land Use Handbook

Table 6 lists the following ARB advisory recommendations that address the issue of siting "sensitive land uses" near specific sources of air pollution (ARB 2005):

- High traffic freeways and roads
- Distribution centers
- Rail yards
- Ports
- Refineries
- Chrome plating facilities
- Dry cleaners
- Large gas dispensing facilities

The analysis examines the area around the site to determine if potential sources of TAC emissions may impact the project, based on the ARB recommended screening distances.

Table 6: Recommendations on Siting New Sensitive Land Uses

Source Category	Advisory Recommendations
Freeways and High-Traffic Roads	Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week). Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.
Rail Yards	Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.
Refineries	Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult with the local air district. Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.
Gasoline Dispensing Facilities	Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gas dispensing facilities.
Note: These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.	

SECTION 3: CLIMATE CHANGE SETTING

3.1—Climate Change

Climate change is a change in the average weather of the earth that is measured by alterations in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes occurring in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance, specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. In its Fourth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 degrees Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios (IPCC 2007a). The report also concluded that "[w]arming of the climate system is unequivocal," and that "[m]ost of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

An individual project cannot generate enough GHG emissions to cause a discernible change in global climate. However, the project participates in the potential for global climate change by its incremental contribution of GHGs—and when combined with the cumulative increase of all other sources of GHGs—constitute potential influences on global climate change.

3.1.1 - Consequences of Climate Change in California

In California, climate change may result in consequences such as the following (from CCCC 2006 and Moser et al. 2009):

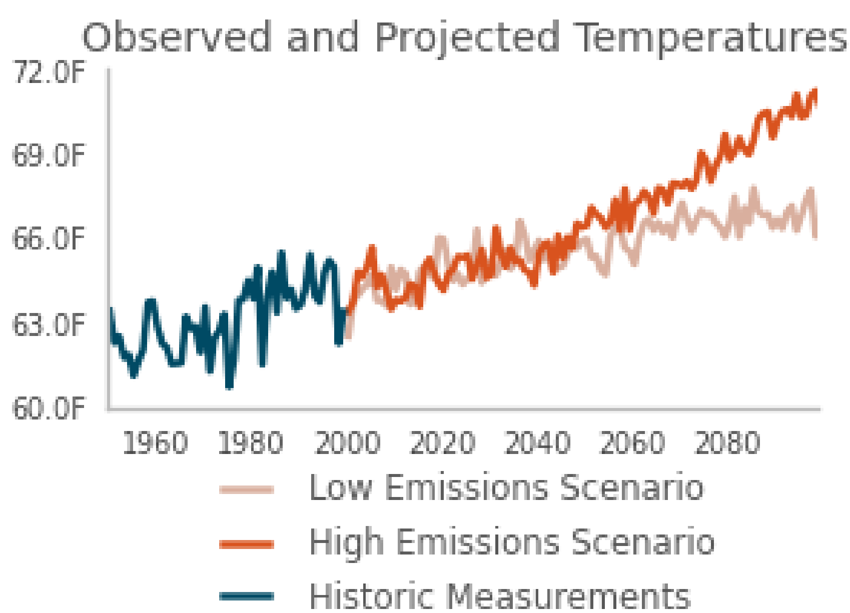
- **A reduction in the quality and supply of water from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.
- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21st century because more winter rain will stimulate the growth of more plant "fuel" available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.

- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- **A rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.
- **An increase in temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **A decrease in the health and productivity of California's forests.** Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.

Consequences of Climate Change in the Fresno Area

Figure 5 displays a chart of measured historical and projected annual average temperatures in the City of Fresno area. As shown in the figure, temperatures are expected to rise in the low and high GHG emissions scenarios. The results indicate that temperatures are predicted to increase by 3.7 degrees Fahrenheit (°F) under the low emission scenario and 6.5°F under the high emissions scenario (CalAdapt 2019).

Figure 5: Observed and Projected Temperatures for Climate Change in the Southeast Fresno Area



Source: CalAdapt 2019

Water Supply

The City of Fresno Water Division would provide water for the project. The City relies on groundwater and treated surface water for potable water supplies. The availability of surface water and the rate of groundwater recharge could decline if climate change were to result in reduced snowpack in the Sierra Nevada.

Wildfires

The project site is within an urbanizing area with limited fuels that would be subject to a wildfire. Foothill and mountain areas located to the north and east of the Fresno are subject to wildfire. The potential for increased temperatures and drought conditions due to climate change would result in increased risk from wildfire in those areas.

Human Health Effects of GHG Emissions

GHG emissions from development projects would not result in concentrations that would directly impact public health. However, the cumulative effects of GHG emissions on climate change have the potential to cause adverse effects to human health.

In its report, Global Climate Change Impacts in the U.S. (2009), the U.S. Global Change Research Program has analyzed the degree to which impacts on human health are expected to impact the United States.

Potential effects of climate change on public health include:

- Direct Temperature Effects: Climate change may directly affect human health through increases in average temperatures, which are predicted to increase the incidence of heat waves and hot extremes.
- Extreme Events: Climate change may affect the frequency and severity of extreme weather events, such as hurricanes and extreme heat and floods, which can be destructive to human health and well-being.
- Climate-Sensitive Diseases: Climate change may increase the risk of some infectious diseases, particularly those diseases that appear in warm areas and are spread by mosquitoes and other insects, such as malaria, dengue fever, yellow fever, and encephalitis.
- Air Quality: Respiratory disorders may be exacerbated by warming-induced increases in the frequency of smog (ground-level ozone) events and particulate air pollution (EPA 2009a).

Although there could be health effects resulting from changes in the climate and the consequences that can occur, inhalation of GHGs at levels currently in the atmosphere would not result in adverse health effects, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed in criteria pollutant analyses. At very high indoor concentrations (not at levels existing outside), carbon dioxide, methane, sulfur hexafluoride, and some chlorofluorocarbons can cause suffocation as the gases can displace oxygen (CDC 2010 and OSHA 2003).

3.2—Greenhouse Gases

Gases that trap heat in the atmosphere are referred to as GHGs. The effect is analogous to the way a greenhouse retains heat. Common GHGs include water vapor, carbon dioxide, methane, NO_X, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Natural processes and human activities emit GHGs. The presence of GHGs in the atmosphere affects the earth's temperature. It is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Climate change is driven by forcings and feedbacks. Radiative forcing is the difference between the incoming energy and outgoing energy in the climate system. Positive forcing tends to warm the surface while negative forcing tends to cool it. Radiative forcing values are typically expressed in watts per square meter. A feedback is a climate process that can strengthen or weaken a forcing. For example, when ice or snow melts, it reveals darker land underneath which absorbs more radiation and causes more warming. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. The global warming potential of a gas is essentially a measurement of the radiative forcing of a GHG compared with the reference gas, CO_2.

Individual GHG compounds have varying global warming potential and atmospheric lifetimes. CO_2, the reference gas for global warming potential, has a global warming potential of one. The global warming potential of a GHG is a measure of how much a given mass of a GHG is estimated to contribute to global warming. To describe how much global warming a given type and amount of GHG may cause, the carbon dioxide equivalent is used. The calculation of the carbon dioxide equivalent is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent reference gas, CO_2. For example, CH_4's warming potential of 21 indicates that CH_4 has 21 times greater warming effect than CO_2 on a molecule-per-molecule basis. A carbon dioxide equivalent is the mass emissions of an individual GHG multiplied by its global warming potential. GHGs defined by Assembly Bill (AB) 32 (see the Climate Change Regulatory Environment section for a description) include CO_2, CH_4, NO_X, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. They are described in Table 7. A seventh GHG, nitrogen trifluoride (NF_3), was added to Health and Safety Code section 38505(g)(7) as a GHG of concern. The global warming potential amounts are from IPCC Fourth Assessment Report (AR4). The new amounts have been incorporated into the CalEEMod 2016.3.2 used in this analysis.

Table 7: Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Nitrous oxide	Nitrous oxide (laughing gas) is a colorless GHG. It has a lifetime of 114 years. Its global warming potential is 298.	Microbial processes in soil and water, fuel combustion, and industrial processes.
Methane	Methane is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years. Its global warming potential is 25.	Methane is extracted from geological deposits (natural gas fields). Other sources are landfills, fermentation of manure, and decay of organic matter.

Table 7 (cont.): Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Carbon dioxide	Carbon dioxide (CO_2) is an odorless, colorless, natural GHG. Carbon dioxide's global warming potential is 1. The concentration in 2005 was 379 parts per million (ppm), which is an increase of about 1.4 ppm per year since 1960.	Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
Chlorofluorocarbons	These are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). Global warming potentials range from 124 to 14,800.	Chlorofluorocarbons were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987.
Perfluorocarbons	Perfluorocarbons have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Global warming potentials range from 7,390 to 12,200.	Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. It has a high global warming potential of 22,800.	This gas is man-made and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas.
Nitrogen trifluoride	Nitrogen trifluoride (NF_3) was added to Health and Safety Code section 38505(g)(7) as a GHG of concern. It has a high global warming potential of 17,200.	This gas is used in electronics manufacture for semiconductors and liquid crystal displays.

Sources: Compiled from a variety of sources, primarily Intergovernmental Panel on Climate Change 2007a and 2007b.

The State has begun addressing pollutants referred to as short-lived climate pollutants. Senate Bill (SB) 605, approved by the governor on September 14, 2014 required the ARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants by January 1, 2016. ARB was required to complete an emission inventory of these pollutants, identify research needs, identify existing and potential new control measures that offer co-benefits, and coordinated with other state agencies and districts to develop measures. The Short-Lived Climate Pollutant Strategy was approved by the ARB on March 24, 2017. The strategy calls for reductions of 50 percent from black carbon, 40 percent from methane, and 40 percent from HFCs from the 2030 Business as Usual (BAU) inventory for these pollutants (ARB 2017b).

The short-lived climate pollutants include three main components: black carbon, fluorinated gases, and methane. Fluorinated gases and methane are described in Table 7 and are already included in the California GHG inventory. Black carbon has not been included in past GHG inventories; however, ARB will include it in its comprehensive strategy (ARB 2015c).

Ozone is another short-lived climate pollutant that will be part of the strategy. Ozone affects evaporation rates, cloud formation, and precipitation levels. Ozone is not directly emitted, so its precursor emissions, volatile organic compounds (VOC) and oxides of nitrogen (NO_X) on a regional scale and CH_4 on a hemispheric scale will be subject of the strategy (ARB 2015c).

Black carbon is a component of fine particulate matter. Black carbon is formed by incomplete combustion of fossil fuels, biofuels, and biomass. Sources of black carbon within a jurisdiction may include exhaust from diesel trucks, vehicles, and equipment, as well as smoke from biogenic combustion. Biogenic combustion sources of black carbon include the burning of biofuels used for transportation, the burning of biomass for electricity generation and heating, prescribed burning of agricultural residue, and natural and unnatural wildfires. Black carbon is not a gas but an aerosol—particles or liquid droplets suspended in air. Black carbon only remains in the atmosphere for days to weeks, whereas other GHGs can remain in the atmosphere for years. Black carbon can be deposited on snow, where it absorbs sunlight, reduces sunlight reflectivity, and hastens snowmelt. Direct effects include absorbing incoming and outgoing radiation; indirectly, black carbon can also affect cloud reflectivity, precipitation, and surface dimming (cooling).

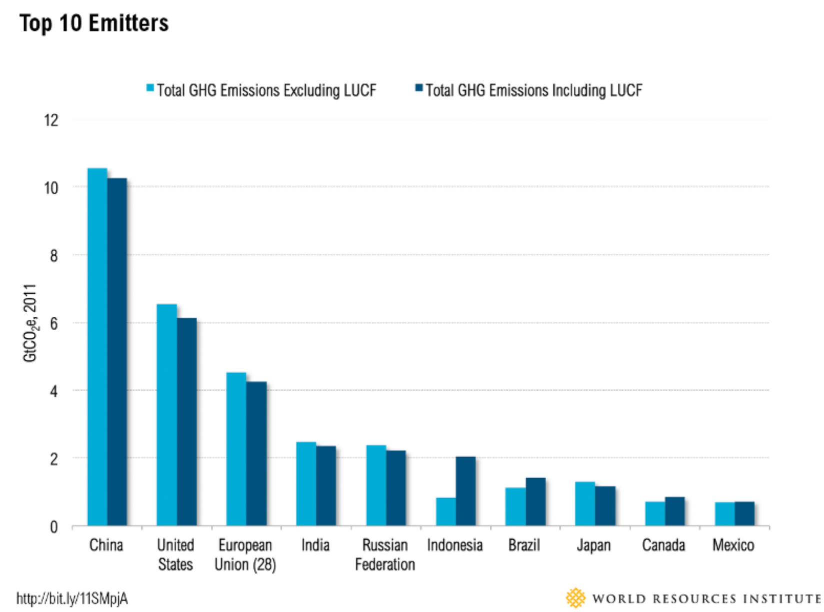
Global warming potentials for black carbon were not defined by the IPCC in its Fourth Assessment Report. The ARB has identified a global warming potential of 3,200 using a 20-year time horizon and 900 using a 100-year time horizon from the IPCC Fifth Assessment. Sources of black carbon are already regulated by ARB, and air district criteria pollutant and toxic regulations that control fine particulate emissions from diesel engines and other combustion sources (ARB 2015d). Additional controls on the sources of black carbon specifically for their GHG impacts beyond those required for toxic and fine particulates are not likely to be needed.

Water vapor is also considered a GHG. Water vapor is an important component of our climate system and is not regulated. Increasing water vapor leads to warmer temperatures, which causes more water vapor to be absorbed into the air. Warming and water absorption increase in a spiraling cycle. Water vapor feedback can also amplify the warming effect of other GHGs, such that the warming brought about by increased carbon dioxide allows more water vapor to enter the atmosphere (NASA 2015b).

3.2.1 - Emissions Inventories

An emissions inventory is a database that lists, by source, the amount of air pollutants discharged into the atmosphere of a geographic area during a given time period. Emissions worldwide were approximately 43,286 million metric tons of carbon dioxide equivalents ($MMTCO_2e$) in 2012. As shown in Figure 6, China was the largest GHG emitter with over 10 billion metric tons of CO_2e, and the United States was the second-largest GHG emitter with over 6 billion metric tons of CO_2e (WRI 2014).

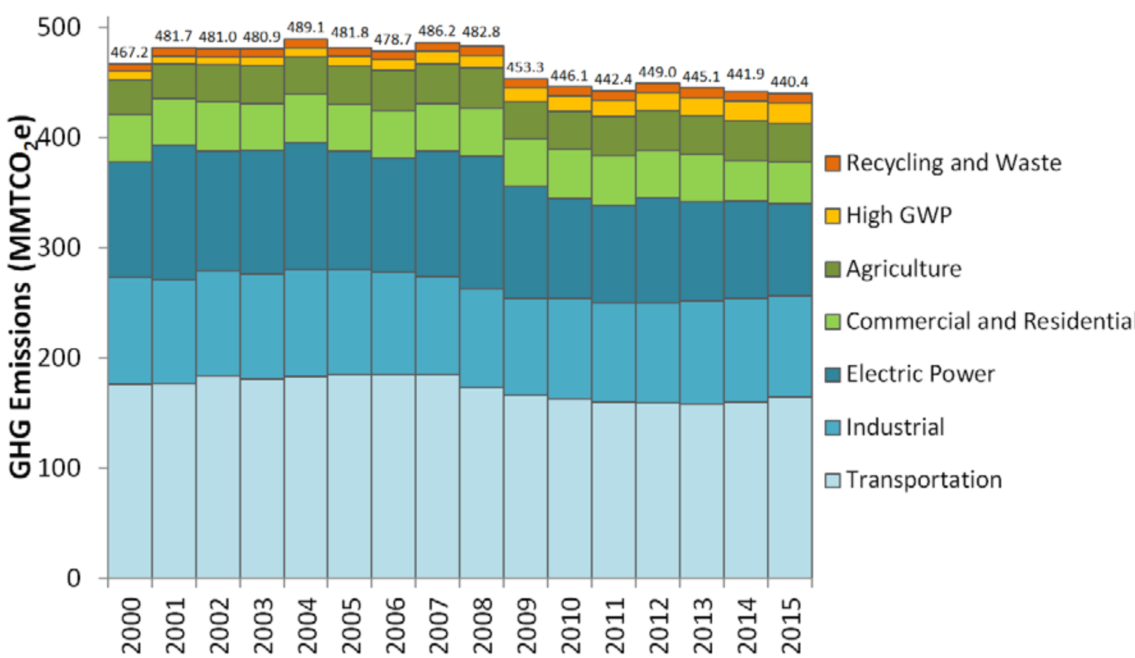
Figure 6: Greenhouse Gas Emissions by Geographic Area



Source: WRI 2014.

Figure 7 shows the contributors of GHG emissions in California between years 2000 and 2015 by Scoping Plan category. The main contributor was transportation. The second highest sector was industrial, which includes sources from refineries, general fuel use, oil and gas extraction, cement plants, and cogeneration heat output. ARB reported that California's GHG emissions inventory was 440.4 MMTCO$_2$e in 2015 (ARB 2016b).

Figure 7: Greenhouse Gas Emission Trends by Scoping Plan Category in California



Source: ARB 2016b.

3.3—Regulatory Environment

3.3.1 - International

International organizations, such as the ones discussed below, have made substantial efforts to reduce GHGs. Preventing human-induced climate change will require the participation of all nations in solutions to address the issue.

Intergovernmental Panel on Climate Change. In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change. The panel was tasked with assessing the scientific, technical, and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

United Nations Framework Convention on Climate Change (Convention). On March 21, 1994, the United States joined a number of countries around the world in signing the Convention. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

Kyoto Protocol. The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at average of five percent against 1990 levels over the five-year period from 2008–2012. The Convention (as discussed above) encouraged industrialized countries to stabilize emissions; however, the Protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities."

In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended American involvement in the Kyoto Protocol. In December 2009, international leaders met in Copenhagen to address the future of international climate change commitments post-Kyoto. No binding agreement was reached in Copenhagen; however, the Committee identified the long-term goal of limiting the maximum global average temperature increase to no more than 2°C above pre-industrial levels, subject to a review in 2015. The UN Climate Change Committee held additional meetings in Durban, South Africa in November 2011; Doha, Qatar in November 2012; and Warsaw, Poland in November 2013. The meetings are gradually gaining consensus among participants on individual climate change issues.

On September 23, 2014, more than 100 heads of state and government, along with leaders from the private sector and civil society met at the Climate Summit in New York hosted by the United Nations. At the Summit, heads of government, business, and civil society announced actions in areas that would have the greatest impact on reducing emissions, including: climate finance, energy, transport, industry, agriculture, cities, forests, and building resilience.

Paris Agreement. Parties to the United Nations Framework Convention on Climate Change (UNFCCC) reached a landmark agreement on December 12, 2015 in Paris, charting a fundamentally new course in the two-decade-old global climate effort. Culminating in a 4-year negotiating round, the new treaty ends the strict differentiation between developed and developing countries that characterized earlier efforts, replacing it with a common framework that commits all countries to put forward their best efforts and to strengthen those efforts in the years ahead. This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts, and undergo international review.

The agreement and a companion decision by parties were the key outcomes of the conference, known as the 21st session of the UNFCCC Conference of the Parties, or COP 21. Together, the Paris Agreement and the accompanying COP decision:

- Reaffirm the goal of limiting global temperature increase well below 2 degrees Celsius, while urging efforts to limit the increase to 1.5 degrees;
- Establish binding commitments by all parties to make "nationally determined contributions" (NDCs), and to pursue domestic measures aimed at achieving them;
- Commit all countries to report regularly on their emissions and "progress made in implementing and achieving" their NDCs, and to undergo international review;
- Commit all countries to submit new NDCs every five years, with the clear expectation that they will "represent a progression" beyond previous ones;
- Reaffirm the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too;
- Extend the current goal of mobilizing $100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025;
- Extend a mechanism to address "loss and damage" resulting from climate change, which explicitly will not "involve or provide a basis for any liability or compensation;"
- Require parties engaging in international emissions trading to avoid "double counting;" and
- Call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country's NDC (C2ES 2015a).

On June 1, 2017, President Trump announced the decision for the United States to withdraw from the Paris Climate Accord (White House 2017). The earliest possible effective withdrawal date by the United States cannot be before November 4, 2020. California remains committed to combating climate change through programs designed to reduce GHGs.

3.3.2 - Federal Regulations

Prior to the last decade, there were no concrete federal regulations of GHGs or major planning for climate change adaptation. Since then, federal activity has increased. The following are actions regarding the federal government, GHGs, and fuel efficiency.

Greenhouse Gas Endangerment. *Massachusetts v. EPA* (Supreme Court Case 05-1120) was argued before the United States Supreme Court on November 29, 2006, in which it was petitioned that the EPA regulate four GHGs, including carbon dioxide, under Section 202(a)(1) of the Clean Air Act. A decision was made on April 2, 2007, in which the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act. The Court held that the Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section “Clean Vehicles” below. After a lengthy legal challenge, the United States Supreme Court declined to review an Appeals Court ruling upholding the EPA Administrator findings (EPA 2009c).

Clean Vehicles. Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On April 1, 2010, the EPA and the Department of Transportation’s National Highway Safety Administration announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon; that is, if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards would cut CO_2 emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the National Highway Safety Administration issued final rules on a second-phase joint rulemaking, establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012 (EPA 2012b). The new standards for model years

2017 through 2025 apply to passenger cars, light-duty trucks, and medium duty passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of CO_2 in model year 2025, which is equivalent to 54.5 miles per gallon if achieved exclusively through fuel economy improvements.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses on September 15, 2011, which became effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that began in the 2014 model year and achieve up to a 20-percent reduction in CO_2 emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10-percent reduction for gasoline vehicles, and a 15-percent reduction for diesel vehicles by 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10-percent reduction in fuel consumption and CO_2 emissions from the 2014 to 2018 model years.

Mandatory Reporting of Greenhouse Gases. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA.

New Source Review. The EPA issued a final rule on May 13, 2010 that establishes thresholds for GHGs, which will define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these Clean Air Act permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the federal code of regulations, the EPA states:

> This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the Clean Air Act, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to greenhouse gas sources, starting with the largest greenhouse gas emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources, but excludes certain smaller sources from Prevention of Significant Deterioration and Title V permitting for greenhouse gas emissions until at least April 30, 2016.

The EPA estimates that facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities.

Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units. As required by a settlement agreement, the EPA proposed new performance standards for emissions of carbon dioxide for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatts would be required to meet an output based standard of 1,000 pounds of carbon dioxide per megawatt-hour, based on the performance of widely used natural gas combined cycle technology. President Trump signed the Executive Order on Energy Independence (E.O. 13783), which calls for a review of the Clean Power Plan. On October 16, 2017, the EPA issued the proposed rule Repeal of Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units an Energy Independence (EPA 2017).

Cap-and-Trade. Cap-and-trade refers to a policy tool where emissions are limited to a certain amount and can be traded, or provides flexibility on how the emitter can comply. There is no federal GHG cap-and-trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap-and-trade.

The Regional Greenhouse Gas Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps carbon dioxide emissions from power plants, auctions carbon dioxide emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008.

The Western Climate Initiative partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The partners are California, British Columbia, Manitoba, Ontario, and Quebec. Currently only California and Quebec are participating in the cap-and-trade program (C2ES 2015).

3.3.3 - California

Legislative Actions to Reduce GHGs

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation such as the landmark AB 32 California Global Warming Solutions Act of 2006 was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

AB 32. The California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. "Greenhouse gases" as defined under AB 32 include carbon dioxide, methane, NO_X, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. The ARB is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

> Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

The ARB approved the 1990 GHG emissions level of 427 $MMTCO_2e$ on December 6, 2007 (ARB 2007). Therefore, to meet the State's target, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. Emissions in 2020 in a BAU scenario were estimated to be 596 $MMTCO_2e$, which do not account for reductions from AB 32 regulations (ARB 2008a). At that rate, a 28 percent reduction was required to achieve the 427 $MMTCO_2e$ 1990 inventory. In October 2010, ARB prepared an updated 2020 forecast to account for the effects of the 2008 recession and slower forecasted growth. The 2020 inventory without the benefits of adopted regulation is now estimated at 545 $MMTCO_2e$. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels (ARB 2010a).

Progress in Achieving AB 32 Targets and Remaining Reductions Required

The State has made steady progress in implementing AB 32 and achieving targets included in Executive Order S-3-05. The progress is evident in updated emission inventories prepared by ARB, which showed that the State inventory dropped below 1990 levels for the first time in 2016 (ARB 2018a). The 2017 Scoping Plan Update includes projections indicating that the State will meet or exceed the 2020 target with adopted regulations (ARB 2017).

ARB 2008 Scoping Plan. The ARB's Climate Change Scoping Plan (Scoping Plan) contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 to comply with AB 32 (ARB 2008). The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 GHG target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets;

- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

In addition, the Scoping Plan differentiates between "capped" and "uncapped" strategies. Capped strategies are subject to the proposed cap-and-trade program. The Scoping Plan states that the inclusion of these emissions within the cap-and-trade program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. Uncapped strategies that will not be subject to the cap-and-trade emissions caps and requirements are provided as a margin of safety by accounting for additional GHG emission reductions (ARB 2008).

Cap-and-Trade Program. The Cap-and-Trade Program is a key element of the Scoping Plan. It sets a statewide limit on sources responsible for 85 percent of California's GHG emissions, and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The program is designed to provide covered entities the flexibility to seek out and implement the lowest cost options to reduce emissions. The program conducted its first auction in November 2012. Compliance obligations began for power plants and large industrial sources in January 2013. Other significant milestones include linkage to Quebec's cap-and-trade system in January 2014 and starting the compliance obligation for distributors of transportation fuels, natural gas, and other fuels in January 2015 (ARB 2015d).

The Cap-and-Trade Program provides a firm cap, ensuring that the 2020 statewide emission limit will not be exceeded. An inherent feature of the Cap-and-Trade program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are guaranteed only on an accumulative basis. As summarized by ARB in the First Update:

> The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative (ARB 2014b).

The Cap-and-Trade Program works with other direct regulatory measures and provides an economic incentive to reduce emissions. If California's direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program will be responsible for relatively more emissions reductions. Thus, the Cap-and-Trade Program assures that California will meet its 2020 GHG emissions reduction mandate:

> The Cap-and-Trade Program establishes an overall limit on GHG emissions from most of the California economy—the "capped sectors." Within the capped sectors, some of the reductions are being accomplished through direct regulations, such as improved building and appliance efficiency standards, the [Low Carbon Fuel Standard] LCFS, and the 33 percent [Renewables Portfolio Standard] RPS. Whatever additional reductions are needed to bring emissions within the cap is accomplished through price incentives posed by emissions allowance prices. Together, direct regulation and price incentives assure that emissions are brought down cost-effectively to the level of the overall cap. The Cap-and-Trade Regulation provides assurance that California's 2020 limit will be met because the regulation sets a firm limit on 85 percent of California's GHG emissions. In sum, the Cap-and-Trade Program will achieve aggregate, rather than site specific or project-level, GHG emissions reductions. Also, due to the regulatory architecture adopted by ARB in AB 32, the reductions attributed to the Cap-and-Trade Program can change over time depending on the State's emissions forecasts and the effectiveness of direct regulatory measures (ARB 2014b).

The ARB approved the First Update to the Scoping Plan (Update) on May 22, 2014. The Update identified the next steps for California's climate change strategy. The Update shows how California continues on its path to meet the near-term 2020 GHG limit, but also sets a path toward long-term, deep GHG emission reductions. The report established a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050.

AB 398. The Governor signed AB 398 on July 25, 2017 to extend the Cap-and-Trade Program to 2030. The legislation includes provisions to ensure that offsets used by sources are limited to 4 percent of their compliance obligation from 2021 through 2025 and 6 percent from 2026 through 2030. AB 398 also prevents Air Districts from adopting or implementing emission reduction rules from stationary sources that are also subject to the Cap-and-Trade Program (CAR 2017).

SB 32. The Governor signed SB 32 on September 8, 2016. SB 32 now gives ARB the statutory responsibility to include the 2030 target previously contained in Executive Order B-30-15 in the 2017 Scoping Plan Update. SB 32 states that "In adopting rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions authorized by this division, the state [air resources] board shall ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit no later than December 31, 2030." The 2017 Climate Change Scoping Plan Update addressing the SB 32 targets was adopted on December 14, 2017. The major elements of the framework proposed to achieve the 2030 target are as follows:

1. SB 350
    - Achieve 50 percent Renewables Portfolio Standard (RPS) by 2030.
    - Doubling of energy efficiency savings by 2030.
2. Low Carbon Fuel Standard (LCFS)
    - Increased stringency (reducing carbon intensity 18 percent by 2030, up from 10 percent in 2020).
3. Mobile Source Strategy (Cleaner Technology and Fuels Scenario)
    - Maintaining existing GHG standards for light- and heavy-duty vehicles.
    - Put 4.2 million zero-emission vehicles (ZEVs) on the roads.
    - Increase ZEV buses, delivery and other trucks.
4. Sustainable Freight Action Plan
    - Improve freight system efficiency.
    - Maximize use of near-zero emission vehicles and equipment powered by renewable energy.
    - Deploy over 100,000 zero-emission trucks and equipment by 2030.
5. Short-Lived Climate Pollutant (SLCP) Reduction Strategy
    - Reduce emissions of methane and hydrofluorocarbons 40 percent below 2013 levels by 2030.
    - Reduce emissions of black carbon 50 percent below 2013 levels by 2030.
6. SB 375 Sustainable Communities Strategies
    - Increased stringency of 2035 targets.
7. Post-2020 Cap-and-Trade Program
    - Declining caps, continued linkage with Québec, and linkage to Ontario, Canada.
    - ARB will look for opportunities to strengthen the program to support more air quality co-benefits, including specific program design elements. In Fall 2016, ARB staff described potential future amendments including reducing the offset usage limit, redesigning the allocation strategy to reduce free allocation to support increased technology and energy investment at covered entities and reducing allocation if the covered entity increases criteria or toxics emissions over some baseline.
8. 20 percent reduction in greenhouse gas emissions from the refinery sector.
9. By 2018, develop Integrated Natural and Working Lands Action Plan to secure California's land base as a net carbon sink (ARB 2017c).

SB 375—The Sustainable Communities and Climate Protection Act of 2008. SB 375 was signed into law on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Concerning CEQA, SB 375—as codified in Public Resources Code Section 21159.28—states that CEQA findings determinations for certain projects are not required to reference, describe, or discuss (1) growth-inducing impacts or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network if the project:

1. Is in an area with an approved Sustainable Communities Strategy or an alternative planning strategy that the ARB accepts as achieving the greenhouse gas emission reduction targets;
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies); and
3. Incorporates the mitigation measures required by an applicable prior environmental document.

The ARB has prepared the Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets. The update includes an increase in the 2035 target for Fresno County from 10 percent to 13 percent (ARB 2018).

AB 1493 Pavley Regulations and Fuel Efficiency Standards. California AB 1493, enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011 (ARB 2013d).

The standards were phased in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards resulted in an approximately 22 percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards resulted in about a 30 percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation, rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant (ARB 2013e).

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The rules will reduce pollutants from gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles, and hydrogen fuel cell cars. The regulations will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California (ARB 2011a).

SB 1368—Emission Performance Standards. In 2006, the State Legislature adopted SB 1368, which was subsequently signed into law by the governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the new law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. The California Public Utilities Commission adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 lbs. CO_2 per megawatt-hour (MWh).

SB 1078—Renewable Electricity Standards. On September 12, 2002, Governor Gray Davis signed SB 1078, requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Governor Schwarzenegger also directed the ARB (Executive Order S-21-09) to adopt a regulation by July 31, 2010, requiring the State's load serving entities to meet a 33 percent renewable energy target by 2020 The ARB approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23. In 2011, the state legislature adopted this higher standard in SB X1-2. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas.

SB 350—Clean Energy and Pollution Reduction Act of 2015. The legislature approved and the governor then signed SB 350 on October 7, 2015, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Provisions for a 50 percent reduction in the use of petroleum statewide were removed from the Bill because of opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024, and 25 percent by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the California Energy Commission (CEC), and local publicly owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electricity transmission markets and improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States (California Leginfo 2015).

SB 100- California Renewables Portfolio Standard Program. The Governor approved SB 100 on September 10, 2018. The legislation revised the Renewable Portfolio Standard goals to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. The bill would require that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030 (California Leginfo 2018).

SBX 7-7—The Water Conservation Act of 2009. The legislation directs urban retail water suppliers to set individual 2020 per capita water use targets and begin implementing conservation measures to achieve those goals. Meeting this statewide goal of 20 percent decrease in demand will result in a reduction of almost 2 million acre-feet in urban water use in 2020.

Executive Orders Related to GHG Emissions

California’s Executive Branch has taken several actions to reduce GHGs through the use of executive orders. Although not regulatory, they set the tone for the State and guide the actions of state agencies.

Executive Order S-3-05. On June 1, 2005, former California Governor Arnold Schwarzenegger announced through Executive Order S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce greenhouse gas emissions to 2000 levels.
- By 2020, reduce greenhouse gas emissions to 1990 levels.
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

Executive Order B-30-15. On April 29, 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor’s executive order aligns California’s GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris late 2015. The executive order sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050, and directs the ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of $MMTCO_2e$. The executive order also requires the State’s climate adaptation plan to be updated every three years and for the State to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this executive order is not legally enforceable against local governments and the private sector. Legislation that would update AB 32 to provide post-2020 targets was signed by the Governor in 2016. SB 32 includes a 2030 mandate matching the requirements of the Executive Order.

Executive Order S-01-07—Low Carbon Fuel Standard. The governor signed Executive Order S 01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the executive order established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to ARB for consideration as an "early action" item under AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

The Low Carbon Fuel Standard was subject to legal challenge in 2011. Ultimately, ARB was required to bring a new LCFS regulation to the Board for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. The Office of Administrative Law (OAL) approved the regulation on November 16, 2015 (ARB 2015e).

Executive Order S-13-08. Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the order, the 2009 California Climate Adaptation Strategy (California Natural Resources Agency 2009) was adopted, which is the ". . . first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order B-55-18. Executive Order B-55-18 issued by Governor Brown on September 10, 2018 establishes a new statewide goal to achieve carbon neutrality as soon as possible, but no later than 2045, and achieve and maintain net negative emissions thereafter. The executive order directs ARB to work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal (Brown 2018).

California Regulations and Building Codes

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat even with rapid population growth.

Title 20 Appliance Efficiency Regulations. California Code of Regulations, Title 20: Division 2, Chapter 4, Article 4, Sections 1601–1608: Appliance Efficiency Regulations regulates the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. Twenty-three categories of appliances are included in the scope of these regulations including lighting, air conditioning, and most home appliances. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the State and those designed and sold exclusively for use in recreational vehicles or other mobile equipment (CEC 2018a).

Title 24 Energy Efficiency Standards. California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The most current 2016 Building Energy Efficiency Standards went into effect on January 1, 2017 (CEC 2016). The 2019 Building Energy Efficiency Standards are scheduled to go into effect on January 1, 2020 (CEC 2018b).

Title 24 California Green Building Standards Code (California Code of Regulations Title 24, Part 11 code) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect January 1, 2011. The code is updated on a regular basis, with the most recent update consisting of the 2016 California Green Building Code Standards that became effective January 1, 2017. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they provide a minimum 50-percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State building code provides the minimum standard that buildings need to meet in order to be certified for occupancy, which is generally enforced by the local building official.

The California Green Building Standards Code (California Code of Regulations Title 24, Part 11 code) requires:

- **Short-term bicycle parking**. If a commercial project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for five percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- **Long-term bicycle parking**. For buildings with over 10 tenant-occupants, provide secure bicycle parking for five percent of tenant-occupied motorized vehicle parking capacity, with a minimum of one space (5.106.4.1.2).
- **Designated parking**. Provide designated parking in commercial projects for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- **Recycling by Occupants**. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of nonhazardous materials for recycling. (5.410.1).
- **Construction waste**. A minimum 50-percent diversion of construction and demolition waste from landfills, increasing voluntarily to 65 and 80 percent for new homes and 80-percent for commercial projects. (5.408.1, A5.408.3.1 [nonresidential], A5.408.3.1 [residential]). All (100

percent) of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled (5.408.3).

- **Wastewater reduction**. Each building shall reduce the generation of wastewater by one of the following methods:
  1. The installation of water-conserving fixtures or
  2. Using nonpotable water systems (5.303.4).
- **Water use savings**. Twenty percent mandatory reduction in indoor water use with voluntary goal standards for 30, 35, and 40 percent reductions (5.303.2, A5303.2.3 [nonresidential]).
- **Water meters**. Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day (5.303.1).
- **Irrigation efficiency**. Moisture-sensing irrigation systems for larger landscaped areas (5.304.3).
- **Materials pollution control**. Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particleboard (5.404).
- **Building commissioning**. Mandatory inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies (5.410.2).

Model Water Efficient Landscape Ordinance. The Model Water Efficient Landscape Ordinance (Ordinance) was required by AB 1881 Water Conservation Act. The bill required local agencies to adopt a local landscape ordinance at least as effective in conserving water as the Model Ordinance by January 1, 2010. Reductions in water use of 20 percent consistent with (SBX-7-7) 2020 mandate are expected for the ordinance. Governor Brown's Drought Executive Order of April 1, 2015 (EO B-29-15) directed DWR to update the ordinance through expedited regulation. The California Water Commission approved the revised ordinance on July 15, 2015, which became effective on December 15, 2015. New development projects that include landscaped areas of 500 square feet or more are subject to the ordinance. The update requires:

- More efficient irrigation systems
- Incentives for graywater usage
- Improvements in on-site stormwater capture
- Limiting the portion of landscapes that can be planted with high water use plants
- Reporting requirements for local agencies.

SB 97 and the CEQA Guidelines Update. Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states: "(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a)."

Section 21097 was also added to the Public Resources Code. This provided an exemption until January 1, 2010 for transportation projects funded by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006, or projects funded by the Disaster Preparedness and Flood Prevention Bond Act of 2006—in stating that the failure to analyze adequately the effects of GHGs would not violate CEQA. The Natural Resources Agency completed the approval process and the Amendments became effective on March 18, 2010. The Natural Resources Agency adopted additional amendments related to greenhouse gases in the 2019 CEQA Guidelines Update adopted on December 28, 2018.

The 2010 CEQA Amendments along with the 2019 CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

Section 15064.4(b) of the CEQA Guidelines provides direction for lead agencies for assessing the significance of impacts of GHG emissions:

- The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; or
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project’s incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project. In determining the significance of impacts, the lead agency may consider a project’s consistency with the State’s long-term climate goals or strategies, provided that substantial evidence supports the agency’s analysis of how those goals or strategies address the project’s incremental contribution to climate change and its conclusion that the project’s incremental contribution is not cumulatively considerable.

Section 15064.4(c) states that a lead agency may use a model or methodology to estimate greenhouse gas emissions resulting from a project. The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently take into account the project’s incremental contribution to climate change. The lead agency must support its selection of a model or methodology with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use.

The 2019 CEQA Guidelines include the following discussion regarding thresholds of significance.

> (d) Using environmental standards as thresholds of significance promotes consistency in significance determinations and integrates environmental review with

other environmental program planning and regulation. Any public agency may adopt or use an environmental standard as a threshold of significance. In adopting or using an environmental standard as a threshold of significance, a public agency shall explain how the particular requirements of that environmental standard reduce project impacts, including cumulative impacts, to a level that is less than significant, and why the environmental standard is relevant to the analysis of the project under consideration. For the purposes of this subdivision, an "environmental standard" is a rule of general application that is adopted by a public agency through a public review process and that is all of the following:

(1) a quantitative, qualitative or performance requirement found in an ordinance, resolution, rule, regulation, order, plan or other environmental requirement;
(2) adopted for the purpose of environmental protection;
(3) addresses the environmental effect caused by the project; and,
(4) applies to the project under review.

In addition, the 2019 amendments revised Appendix G Checklist questions to include a new question specifically on energy conservation.

CEQA emphasizes that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impacts analysis (see CEQA Guidelines Section 15130(f)).

California Supreme Court GHG Ruling

A November 30, 2015 ruling, the *California Supreme Court in Center for Biological Diversity (CBD) v. California Department of Fish and Wildlife (CDFW)* on the Newhall Ranch project, concluded that whether the project was consistent with meeting statewide emission reduction goals is a legally permissible criterion of significance, but the significance finding for the project was not supported by a reasoned explanation based on substantial evidence. The Court offered potential solutions on pages 25 to 27 of the ruling to address this issue summarized below.

Specifically, the Court advised that:

- **Substantiation of Project Reductions from BAU**. A lead agency may use a BAU comparison based on the Scoping Plan's methodology if it also substantiates the reduction a particular project must achieve to comply with statewide goals. The Court suggested a lead agency could examine the "data behind the Scoping Plan's business-as-usual model" to determine the necessary project-level reductions from new land use development at the proposed location (p. 25).

- **Compliance with Regulatory Programs or Performance Based Standards**. "A lead agency might assess consistency with A.B. 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities. (See Final Statement of Reasons, supra, at p. 64 [greenhouse gas emissions 'may be best analyzed and mitigated at a programmatic level.'].) To the extent a project's design features comply with or exceed the regulations outlined in the Scoping Plan and adopted by the Air Resources Board or other state agencies, a lead agency could appropriately rely on their use as showing compliance with 'performance based standards' adopted to fulfill 'a statewide . . . plan for the reduction or mitigation of greenhouse gas emissions.' (CEQA Guidelines § 15064.4(a)(2), (b)(3); see also id., § 15064(h)(3) [determination that impact is not cumulatively considerable may rest on compliance with previously adopted plans or regulations, including 'plans or regulations for the reduction of greenhouse gas emissions'].)" (p. 26).

- **Compliance with GHG Reduction Plans or Climate Action Plans (CAPs)**. A lead agency may utilize "geographically specific GHG emission reduction plans" such as climate action plans or greenhouse gas emission reduction plans to provide a basis for the tiering or streamlining of project-level CEQA analysis (p. 26).
- **Compliance with Local Air District Thresholds**. A lead agency may rely on "existing numerical thresholds of significance for greenhouse gas emissions" adopted by, for example, local air districts (p. 27).

Therefore, consistent with CEQA Guidelines Appendix G, the three factors identified in CEQA Guidelines Section 15064.4 and the recently issued Newhall Ranch opinion, the GHG impacts would be considered significant if the project would:

- Conflict with a compliant GHG Reduction Plan if adopted by the lead agency;
- Exceed the SJVAPCD GHG Reduction Threshold; or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of GHGs.

3.3.4 - San Joaquin Valley Air Pollution Control District

Climate Change Action Plan

On August 21, 2008, the SJVAPCD Governing Board approved a proposal called the Climate Change Action Plan (CCAP). The CCAP began with a public process bringing together stakeholders, land use agencies, environmental groups, and business groups to conduct public workshops to develop comprehensive policies for CEQA guidelines, a carbon exchange bank, and voluntary GHG emissions mitigation agreements for the Board's consideration. The CCAP contains the following goals and actions:

- Develop GHG significance thresholds to address CEQA projects with GHG emission increases.
- Develop the San Joaquin Valley Carbon Exchange for banking and trading GHG reductions.
- Authorize use of the SJVAPCD's existing inventory reporting system to allow use for GHG reporting required by AB 32 regulations.
- Develop and administer GHG reduction agreements to mitigate proposed emission increases from new projects.
- Support climate protection measures that reduce greenhouse gas emissions as well as toxic and criteria pollutants. Oppose measures that result in a significant increase in toxic or criteria pollutant emissions in already impacted areas.

On December 17, 2009, the SJVAPCD Governing Board adopted "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA," and the policy "District Policy—Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency." The SJVAPCD concluded that the existing science is inadequate to support quantification of the impacts that project-specific GHG emissions have on global climatic change. The SJVAPCD found the effects of project-specific emissions to be cumulative, and without mitigation, their incremental contribution to global climatic change could be considered cumulatively considerable. The SJVAPCD found that this cumulative impact is best addressed by requiring all projects to reduce their GHG emissions, whether through project design elements or mitigation.

The SJVAPCD's approach is intended to streamline the process of determining if project-specific GHG emissions would have a significant effect. Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less than significant cumulative impact. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources, and must have a certified final CEQA document.

For non-exempt projects, those projects for which there is no applicable approved plan or program, or those projects not complying with an approved plan or program, the lead agency must evaluate the project against performance-based standards and would require the adoption of design elements, known as a Best Performance Standard, to reduce GHG emissions. The Best Performance Standards (BPS) have not yet fully been established, though they must be designed to achieve a 29 percent reduction when compared with the BAU projections identified in ARB's AB 32 Scoping Plan.

BAU represents the emissions that would occur in 2020 if the average baseline emissions during the 2002–2004 period were grown to 2020 levels, without control. Thus, these standards would carry with them pre-quantified emissions reductions, eliminating the need for project-specific quantification. Therefore, projects incorporating BPS would not require specific quantification of GHG emissions, and automatically would be determined to have a less than significant cumulative impact for GHG emissions.

For stationary source permitting projects, BPS means, "The most stringent of the identified alternatives for control of GHG emissions, including type of equipment, design of equipment and operational and maintenance practices, which are achieved-in-practice for the identified service, operation, or emissions unit class." The SJVAPCD has identified BPS for the following sources: boilers; dryers and dehydrators; oil and gas extraction; storage, transportation, and refining operations; cogeneration; gasoline dispensing facilities; volatile organic compound control technology; and steam generators.

For development projects, BPS means, "Any combination of identified GHG emission reduction measures, including project design elements and land use decisions that reduce project-specific GHG emission reductions by at least 29 percent compared with business as usual."

Projects not incorporating BPS would require quantification of GHG emissions and demonstration that BAU GHG emissions have been reduced or mitigated by 29 percent. As stated earlier, ARB's adjusted inventory reduced the amount required by the State to achieve 1990 emission levels from 29 percent to 21.7 percent to account for slower growth experienced since the 2008 recession. According to SJVAPCD guidance, quantification of GHG emissions would be required for all projects for which the lead agency has determined that an environmental impact report is required, regardless of whether the project incorporates BPS. The SJVAPCD has not yet adopted BPS for development projects, so quantification of project emissions is required.

San Joaquin Valley Carbon Exchange

The SJVAPCD initiated work on the San Joaquin Valley Carbon Exchange in November 2008. The purpose of the carbon exchange is to quantify, verify, and track voluntary GHG emissions reductions generated within the San Joaquin Valley. However, the SJVAPCD has pursued an alternative strategy that incorporates the GHG emissions into its existing Rule 2301—Emission Reduction Credit Offset Banking that formerly only addressed criteria pollutants. The SJVAPCD is also participating with the California Air Pollution Control Officers Association (CAPCOA), of which it is a member, in the CAPCOA Greenhouse Gas Reduction Exchange (GHG Rx). The GHG Rx is operated cooperatively by air districts that have elected to participate. Participating districts have signed a Memorandum of Understanding (MOU) with CAPCOA and agree to post only those credits that meet the Rx standards for quality. The objective is to provide a secure, low-cost, high-quality greenhouse gas exchange for credits created in California. The GHG Rx is intended to help fulfill compliance obligations or mitigation needs of local projects subject to environmental review, reducing the uncertainty of using credits generated in distant locations. The SJVAPCD currently has no credits posted to the GHG Rx website as of this writing (CAPCOA 2018).

Rule 2301

While the Climate Change Action Plan indicated that the GHG emission reduction program would be called the San Joaquin Valley Carbon Exchange, the District incorporated a method to register voluntary GHG emission reductions into its existing Rule 2301—Emission Reduction Credit Banking through amendments of the rule. Amendments to the rule were adopted on January 19, 2012. The purposes of the amendments to the rule include the following:

- Provide an administrative mechanism for sources to bank voluntary GHG emission reductions for later use.
- Provide an administrative mechanism for sources to transfer banked GHG emission reductions to others for any use.
- Define eligibility standards, quantitative procedures, and administrative practices to ensure that banked GHG emission reductions are real, permanent, quantifiable, surplus, and enforceable.

Fresno Council of Governments

Regional Transportation Plan

The Fresno Council of Governments (Fresno COG) is the Regional Transportation Planning Agency (RTPA) for the Fresno County region. The Fresno COG adopted the 2014 Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS) that included the County's first Sustainable Community Strategy to comply with SB 375. The RTP is a planning document prepared in cooperation with the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), the California Department of Transportation (Caltrans), and other stakeholders, including transportation system users. The SCS is intended to show how integrated land use and transportation planning can lead to lower greenhouse gas (GHG) emissions from autos and light trucks. SB 375 includes the following four primary findings related to the RTP/SCS development process:

- SB 375 required the ARB to develop regional GHG emission reduction targets for cars and light trucks for each of the 18 MPOs in California, including Fresno COG. ARB approved targets for the San Joaquin Valley in January 2013. The target for Fresno is a per capita reduction in GHG emissions from passenger vehicle travel of five percent by 2020 and 10 percent by 2035 relative to 2005 levels. The 2018 RTP indicates that the County continues to pursue the 5 percent reduction by 2020 and 10 percent reduction by 2035 (Fresno COG 2018).
- SB 375 required the preparation of an SCS. Fresno COG included a SCS that specifies how the GHG emission reduction target set by ARB will be achieved in the RTP. If the target cannot be met through the SCS, then an Alternative Planning Strategy (APS) shall be prepared by Fresno COG. Chapter 4 of the 2014 RTP includes the SCS for Fresno COG. Chapter 3 of the 2018 RTP includes the updated SCS.
- SB 375 streamlines CEQA requirements for specific residential and mixed-use developments that are consistent with the Fresno County SCS or APS (as determined by ARB) to achieve regional GHG emissions reduction target.

The 2018 RTP/SCS was adopted by Fresno COG on July 26, 2018 and reflects its latest regional vehicle miles traveled (VMT) targets (Fresno COG 2018).

3.3.5 - Local

County of Fresno

The County of Fresno adopted its 2000 General Plan in October 2000, with a multi-jurisdictional fifth-cycle housing element updated adopted in April 2016. The 2000 General Plan does not address climate change or greenhouse gases; however, the 2000 General Plan includes the following applicable goals and policies related to improving energy efficiency that may also co-benefit climate change impacts.

County of Fresno General Plan—Updated Housing Element

- **Goal 6:** Encourage energy efficiency in all new and existing housing.
- **Policy 6.1:** Encourage the use of energy conserving techniques in the siting and design of new housing.
- **Policy 6.2:** Actively implement and enforce all State energy conservation requirements for new residential construction.
- **Policy 6.3:** Promote public awareness of the need for energy conservation.

City of Fresno

The City of Fresno included a Greenhouse Gas Reduction Plan as part of the General Plan Update that includes strategies that would help reduce GHG emissions associated with development projects. The GHG Reduction Plan used the General Plan as the basis for its land use and transportation related policies to reduce GHG emissions.

City of Fresno General Plan

The City of Fresno General Plan includes numerous objectives and policies in the Urban Form, Land Use, Design, Transportation, Park and Open Space, and Resource Conservation Elements. A list of the relevant policies was compiled in the Greenhouse Gas Reduction Plan and is provided in Appendix A. A qualitative policy consistency analysis of relevant General Plan policies is included in the Greenhouse Gas section.

City of Fresno General Plan Master Environmental Impact Report (MEIR)

The General Plan MEIR relies on General Plan goals and policies to mitigate GHG emissions to the extent feasible. The policies are similar to the strategies and actions included in plan. The following policies are applicable to the project:

- **RC-5-a Support State Goal to Reduce Statewide GHG Emissions**. As is consistent with State law, strive to meet AB 32 goal to reduce greenhouse gas emissions to 1990 levels by 2020 and strive to meet a reduction of 80 percent below 1990 levels by 2050 as stated in Executive Order S-03-05. As new statewide GHG reduction targets and dates are set by the State update the City's Greenhouse Gas Reduction Plan to include a comprehensive strategy to achieve consistency with those targets by the dates established.
- **RC-5-c GHG Reduction through Design and Operations**. Increase efforts to incorporate requirements for GHG emission reductions in land use entitlement decisions, facility design, and operational measures subject to City regulation through the following measures and strategies:
  - Promote the expansion of incentive-based programs that involve certification of projects for energy and water efficiency and resiliency. These certification programs and scoring systems may include public agency "Green" and conservation criteria, Energy Star™ certification, CALGreen Tier 1 or Tier 2, Leadership in Energy Efficient Design (LEED™) certification, etc.
  - Promote appropriate energy and water conservation standards and facilitate mixed-use projects, new incentives for infill development, and the incorporation of mass transit, bicycle and pedestrian amenities into public and private projects.
- **RC-5-d SCS and CAP Conformity Analysis**. Ensure that the City includes analysis of a project's conformity to an adopted regional Sustainable Community Strategy or Alternative Planning Strategy (APS), an adopted Climate Action Plan (CAP), and any other applicable City and regional greenhouse gas reduction strategies in affect at the time of project review.
- **RC-5-e Ensure Compliance**. Ensure ongoing compliance with GHG emissions reduction plans and programs by requiring that air quality measures are incorporated into projects' design, conditions of approval, and mitigation measures.

- **RC-5-g Evaluate Impacts with Models**. Continue to use computer models such as those used by SJVAPCD to evaluate greenhouse gas impacts of plans and projects that require such review (City of Fresno 2014c)

Greenhouse Gas Reduction Plan

The General Plan Update includes a Greenhouse Gas Reduction Plan (GHG Plan) that provides the City's primary strategy for reductions greenhouse gas emissions. The intent of the GHG Plan is to achieve compliance with state GHG reduction mandates by focusing on feasible actions the City can take to minimize the adverse impacts of growth and development on climate change. The GHG Plan does not reinvent the wheel; rather, it builds on the General Plan policies and implementation measures. Where needed, the GHG Plan provides more details to clarify and focus action and to ensure implementation (Fresno 2014b).

The GHG Plan shows that the City will achieve a reduction of 26.8 percent from BAU by 2020 through compliance with regulations only, which exceeds the 21.7 percent required to show consistency with AB 32 targets. The local measures contained in the GHG Plan were expected to achieve an additional 3.0 percent reduction from BAU for a total reduction of 29.8 percent from BAU by 2020.

The GHG Plan includes criteria that would allow projects to qualify for permit streamlining provisions and incentives and would receive a less than significant finding for GHG impacts. The checklist is intended as an incentive program and is not feasible for all projects. Projects that meet the Fresno Green Checklist point totals receive the following incentives:

- 25 percent fee reductions of many planning fees (Site Plans, CUPs, EAs etc.)
- 20 percent minor deviation from development standards, if needed (25% if public art is incorporated into the project)
- Expedited processing through the "Green Team"
- Eligibility for a Fresno Green award and use of the Fresno Green brand for the project.

In addition, projects that meet the criteria listed below do not need a quantitative greenhouse gas analysis in some cases. Projects that comply with the four actions listed below would not need to prepare a quantitative GHG analysis to demonstrate consistency with the GHG Plan and to be considered to have less than significant impacts. Projects requiring a General Plan Amendment or other projects as deemed appropriate would require a quantitative analysis of GHG emissions to demonstrate that the project would achieve at least a 21.7 percent GHG emission reduction compared to business as usual (BAU) in 2020 to be considered less than significant.

The GHG Plan includes the following guidance for determining project consistency with the GHG Plan:

1. Review General Plan Policies listed in the GHG Plan to determine applicability to the project.
2. Incorporate design features or mitigation measures into the project as needed to demonstrate consistency.
   a. Street and pedestrian design complies with complete streets concepts.
   b. Review project against Development Code for mandatory design features required for the project.

   c. Consider alternative energy generation (solar) if appropriate for the project and site. (The State is working towards zero net energy development that will require increasing efficiency and self-generation over time).
   d. Review water conservation building and landscape design features for compliance with City water conservation standards.
3. Implement project design features suitable for the development type and location.
   a. Projects within core/center areas and BRT corridors should meet minimum density and design requirements to ensure pedestrian and transit orientation is met.
   b. Maintain and enhance connections to regional bikeways and trail system.
4. Complete the latest version of the Fresno Green Residential or Non-Residential Checklist
   a. Meet the Fresno Green checklist point requirements.
   b. Alternatively, meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Programs, or qualify for Build It Green's GreenPoint rating system for residential building.

Many of the points available on the Fresno Green Checklist and the LEED Program apply to measures not related to greenhouse gas emissions or are specific to certain areas of the City such as redevelopment areas. Projects that do not choose to pursue the Fresno Green streamlining benefits may prepare a quantitative analysis to demonstrate that the project achieves emission reductions consistent with the GHG Plan and AB 32 reduction targets (21.7 percent reduction from BAU in 2020). This project does not require a General Plan Amendment; however, a quantitative analysis of project emissions under the BAU scenario and 2020 with emission reductions scenario is provided to demonstrate that the project would achieve the 21.7 percent reduction required to demonstrate consistency with AB 32 reduction targets and the 29 percent reduction from BAU recommended by the SJVAPCD that is based on reductions required in the AB 32 Scoping Plan. In addition, an analysis of 2030 emissions is included to address SB 32 2030 targets and compliance with the Newhall Ranch California Supreme Court ruling.

Waste Diversion

With the passage of SB 1016, the Per Capita Disposal Measurement System, only per capita disposal rates are measured. Targets are based on the per capita disposal rates. The City of Fresno's disposal rate for 2017 was 4.70 pounds per person per day, which is well below the target of 6.6 pounds per person per day (CalRecycle 2019).

SECTION 4: MODELING PARAMETERS AND ASSUMPTIONS

4.1—Model Selection and Guidance

Air pollutant emissions can be estimated by using emission factors and a level of activity. Emission factors represent the emission rate of a pollutant given the activity over time; for example, grams of NO_X per horsepower-hour or grams of NO_X per vehicle mile traveled. The ARB has published emission factors for on-road mobile vehicles/trucks in the EMFAC mobile source emissions model and emission factors for off-road equipment and vehicles in the OFFROAD emissions model. An air emissions model (or calculator) combines the emission factors and the various levels of activity and outputs the emissions for the various pieces of equipment.

The California Emissions Estimator Model (CalEEMod) version 2016.3.2 was developed by the South Coast Air Quality Management District in cooperation with other air districts throughout the State. CalEEMod is designed as a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with construction and operation from a variety of land uses.

The modeling follows District guidance where applicable from its GAMAQI. The models used in this analysis are summarized as follows:

- Construction emissions: CalEEMod, version 2016.3.2
- Operational emissions: CalEEMod, version 2016.3.2

4.2—Air Pollutants and GHGs Assessed

4.2.1 - Criteria Pollutants Assessed

The following air pollutants are assessed in this analysis:

- Reactive organic gases (ROG)
- Nitrogen oxides (NO_X)
- Carbon monoxide (CO)
- Sulfur dioxide (SO_2)
- Particulate matter less than 10 microns in diameter (PM_{10})
- Particulate matter less than 2.5 microns in diameter ($PM_{2.5}$)

Note that the project would emit ozone precursors ROG and NO_X. However, the project would not directly emit ozone, since it is formed in the atmosphere during the photochemical reaction of ozone precursors. Other criteria pollutants such as vinyl chloride, hydrogen sulfide, lead, and sulfates were not included because of their low levels of emissions from the project.

As noted previously, the project would emit ultrafine particles. However, there is currently no standard separate from the $PM_{2.5}$ standards for ultrafine particles and there is no accepted methodology to quantify or assess the significance of such particles.

4.2.2 - Greenhouse Gases Assessed

This analysis is restricted to GHGs identified by AB 32, which include: carbon dioxide, methane, NO_X, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The project would generate a variety of GHGs, including several defined by AB 32 such as carbon dioxide, methane, and NO_X.

The project may emit GHGs that are not defined by AB 32. For example, the project may generate aerosols through emissions of DPM from the vehicles and trucks that would access the project site. Aerosols are short-lived particles, as they remain in the atmosphere for about one week. Black carbon is a component of aerosol. Studies have indicated that black carbon has a high global warming potential; however, the Intergovernmental Panel on Climate Change states that it has a low level of scientific certainty (IPCC 2007a).

Water vapor could be emitted from evaporated water used for landscaping, but this is not a significant impact because water vapor concentrations in the upper atmosphere are primarily due to climate feedbacks rather than emissions from project-related activities.

The project would emit nitrogen oxides and volatile organic compounds, which are ozone precursors. Ozone is a GHG; however, unlike the other GHGs, ozone in the troposphere is relatively short-lived and can be reduced in the troposphere on a daily basis. Stratospheric ozone can be reduced through reactions with other pollutants.

Certain GHGs defined by AB 32 would not be emitted by the project. Perfluorocarbons and sulfur hexafluoride are typically used in industrial applications, none of which would be used by the project. Therefore, it is not anticipated that the project would emit perfluorocarbons or sulfur hexafluoride.

4.3—Construction Modeling Assumptions

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from on-site and off-site activities. On-site emissions principally consist of exhaust emissions from the activity levels of heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM_{10}) from disturbed soil. Additionally, paving operations and application of architectural coatings would release VOC emissions. Off-site emissions are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust (PM_{10} and $PM_{2.5}$).

4.3.1 - Project Schedule

Based on applicant-provided information, it was assumed that the project would be constructed in two equal phases, with construction of Phase 1 beginning on August 24, 2020. Project operations for Phase 1 are expected to begin as early as April 15, 2021. It is anticipated that 113 lots would be developed in each phase, for a total of 226 single-family homes. The conceptual construction schedule is provided in Table 8.

Table 8: Construction Schedule

Construction Activity	Start Date	End Date	Number of Days per Week	Number of Construction Days
Phase 1 Construction				
Site Preparation	8/24/2020	9/4/2020	5	10
Grading	9/5/2020	10/2/2020	5	20
Paving	10/3/2020	10/30/2020	5	20
Building Construction	10/31/2020	12/3/2021	5	285
Architectural Coating	12/4/2021	12/31/2021	5	20
Phase 2 Construction				
Site Preparation	8/15/2021	8/27/2021	5	10
Grading	8/28/2021	9/24/2021	5	20
Paving	10/23/2021	10/22/2021	5	20
Building Construction	10/23/2021	12/2/2022	5	290
Architectural Coating	12/3/2022	12/30/2022	5	20
Note: Phasing based on applicant-provided information. Source: CalEEMod output (Appendix A).				

The CalEEMod default schedules for Phase 1 and Phase 2 were each extended to match the anticipated construction schedule provided by the applicant. Because the expected schedules and the default schedules differ, the equipment in the building construction phases were adjusted to retain the default horsepower-hours.

The analysis uses CalEEMod default assumptions for the equipment used during construction. CalEEMod default construction equipment and equipment activity are based on surveys of construction projects of various sizes conducted for development in Southern California and may overstate equipment use for larger project sites in regions outside of Southern California and should be considered highly conservative. The modeling assumptions can be reviewed in the modeling results included in Appendix A of this report.

4.3.2 - Construction Equipment Emission Factors

CalEEMod contains an inventory of construction equipment that incorporates estimates of the number of equipment, age, horsepower, and equipment emission control level or tier from which rates of emissions are developed. The CalEEMod default equipment assumptions were used in this analysis for the estimation of emissions from on-site construction equipment. CalEEMod's off-road emission factors and load factors are from the ARB OFFROAD model.

4.3.3 - Site Preparation

Site preparation involves clearing vegetation (grubbing and tree/stump removal) and removing stones and other unwanted material or debris prior to grading. During site preparation, emissions are generated from the use of diesel construction equipment. Fugitive dust is generated during soil-disturbing activities and truck loading and unloading.

4.3.4 - Grading

During grading activities, fugitive dust can be generated from the movement of dirt on the project site. CalEEMod estimates dust from dozers moving dirt around, dust from graders or scrapers leveling the land, and loading or unloading dirt into haul trucks. Each activity is calculated differently in CalEEMod, based on the number of acres traversed by the grading equipment.

Only some pieces of equipment generate fugitive dust in CalEEMod. The CalEEMod manual identifies various equipment and the acreage disturbed in an 8-hour day:

- Crawler tractors, graders, and rubber-tired dozers: 0.5 acre per 8-hour day
- Scrapers: 1 acre per 8-hour day

Therefore, the following acres are the total quantities disturbed per day, per phase, according to the acreage disturbed quantities listed above:

- Phase 1 site preparation = 1.5 acres per day
- Phase 1 grading = 1 acres per day
- Phase 2 site preparation = 1.5 acres per day
- Phase 2 grading = 1 acres per day

It was assumed that soil would be balanced on-site so no additional haul truck trips were included in the analysis.

4.3.5 - Building Construction, Paving, and Architectural Coatings

The analysis uses the default modeling assumptions from CalEEMod for construction equipment during building construction, paving, and application of architectural coatings. As previously discussed, the equipment hours for the building construction phases were adjusted to retain the CalEEMod default-generated horsepower hours.

4.3.6 - Construction Off-site Trips

Worker trips are accounted for during the construction phases, based on 1.25 trips per piece of equipment (the CalEEMod default). The CalEEMod default worker trip length of 10.8 miles was retained. The CalEEMod default vehicle fleet (LD Mix) was used for employee trips.

Vendor trips for the building construction phase are calculated from a study performed by the Sacramento Metropolitan Air Quality Management District (SMAQMD) based on land use and size. The CalEEMod defaults for vendor trips, trip length, and vehicle fleet (Heavy Duty Truck Vehicle Fleet Mix) were used.

4.4—Operation

Operational emissions are those emissions that occur when the project is occupied by the future residents. The major sources are summarized below.

4.4.1 - Motor Vehicles

Motor vehicle emissions refer to exhaust and road dust emissions from the automobiles that would travel to and from the project residences.

Project trip generation rates were obtained from the *Institute of Transportation Engineers Trip Generation Manual, 10th Edition* for single-family dwelling units.

A pass-by trip accounts for vehicles already on the roadway network that stop at the project site as they pass-by; the pass-by trips are existing vehicle trips in the community. CalEEMod default rates of three percent pass-by trips were used in this analysis.

The vehicle fleet mix is defined as the mix of motor vehicle classes active during the operation of the project. Emission factors are assigned to the expected vehicle mix as a function of vehicle class, speed, and fuel use (gasoline and diesel-powered vehicles). The CalEEMod default vehicle fleet mix overstates the percentage of heavy-duty trucks for residential development projects; therefore, the SJVAPCD-approved Residential Fleet Mix was used for the analysis.

4.4.2 - Architectural Coatings (Painting)

Paints release VOC emissions during application and drying. The buildings in the project would be repainted on occasion. The project is required to comply with the SJVAPCD Rule 4601—Architectural Coatings. The rule required flat paints to meet a standard of 50 grams per liter (g/l) and gloss paints 100 g/l by 2012 for an average rate of 65 g/l. Most of the coatings used for residential painting are flat paints.

4.4.3 - Consumer Products

Consumer products are various solvents used in non-industrial applications, which emit VOCs during their product use. “Consumer Product” means a chemically formulated product used by household and institutional consumers, including but not limited to: detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. It does not include other paint products, furniture coatings, or architectural coatings (ARB 2011b). The default emission factor developed for CalEEMod was used.

4.4.4 - Landscape Equipment

CalEEMod estimated the landscaping equipment using the default assumptions in the model.

4.4.5 - Electricity

Electricity used by the project (for lighting, etc.) would result in emissions from the power plants that would generate electricity distributed on the electrical power grid. Electricity emissions estimates are only used in the GHG analysis. CalEEMod was used to estimate these emissions from the project.

Electricity Emission Factor

The default CalEEMod emission factors for Pacific Gas & Electric (from the CEC's year 2006 data) are as follows:

- Carbon dioxide: 641.35 pounds per megawatt hour (lbs/MWh)
- Methane: 0.029 lb/MWh
- Nitrous oxide: 0.006 lb/MWh

It is assumed that the Renewable Electricity Standards would have taken effect by 2020. The Renewable Electricity Standard requires that electricity providers include a minimum of 33 percent renewable energy in their portfolios by the year 2020. Pacific Gas & Electric provides estimates of its emission factor per megawatt hour of electricity delivered to its customers. The Pacific Gas and Electric Company (PG&E) emissions factor for 2020 for CO_2 is provided below. No projections have been made by PG&E for later years, so the rate is assumed to remain constant through 2030. The rates for methane and nitrous oxide are based on compliance with the Renewable Portfolio Standard.

- Carbon dioxide: 290 lbs/MWh
- Methane: 0.022 lb/MWh
- Nitrous oxide: 0.005 lb/MWh

4.4.6 - Electricity Consumption

CalEEMod has three categories for electricity consumption: electricity that is impacted by Title 24 regulations, non-Title 24 electricity, and lighting. The Title 24 uses are defined as the major building envelope systems covered by California's Building Code Title 24 Part 6, such as space heating, space cooling, water heating, and ventilation. Lighting is separate since it can be both part and not part of Title 24. Since lighting is not considered as part of the building envelope energy budget, CalEEMod does not consider lighting to have any further association with Title 24 references in the program. Non-Title 24 includes everything else such as appliances and electronics. Total electricity consumption in CalEEMod is divided into the three categories. The percentage for each category is determined by using percentages derived from the CalEEMod default electricity intensity factors. The percentages are then applied to the electricity consumption to result in the values used in the analysis.

4.4.7 - Natural Gas

The project would generate emissions from the combustion of natural gas for water heaters, heat, etc. CalEEMod has two categories for natural gas consumption: Title 24 and non-Title 24. CalEEMod defaults were used.

4.4.8 - Water and Wastewater

GHG emissions are emitted from the use of electricity to pump water to the project and to treat wastewater. CalEEMod defaults were used.

4.4.9 - Refrigerants

During operation, there may be leakage of refrigerants (hydrofluorocarbons) from air conditioners and the refrigeration system. Hydrofluorocarbons are typically used for refrigerants, which are long-lived GHGs. Residential uses of refrigerants are minor; therefore, they were not estimated.

4.4.10 - Solid Waste

GHG emissions would be generated from the decomposition of solid waste generated by the project. CalEEMod was used to estimate the GHG emissions from this source. The CalEEMod default for the mix of landfill types is as follows:

- Landfill no gas capture: 6%
- Landfill capture gas flare: 94%
- Landfill capture gas energy recovery: 0%

4.4.11 - Vegetation

There is currently limited carbon sequestration occurring on-site from existing agricultural vegetation. The project would plant trees and integrate landscaping into the project design, which would provide carbon sequestration. However, the number of trees to be planted is unknown and data are insufficient to accurately determine the impact that existing plants have on carbon sequestration. For this analysis, it was assumed that the loss and addition of carbon sequestration that are due to the project would be balanced; therefore, emissions due to carbon sequestration were not included.

SECTION 5: AIR QUALITY IMPACT ANALYSIS

This section calculates the expected emissions from construction and operation of the project as a necessary requisite for assessing the regulatory significance of project emissions on a regional and localized level.

5.1—CEQA Guidelines

The CEQA Guidelines define a significant effect on the environment as “a substantial, or potentially substantial, adverse change in the environment.” To determine if a project would have a significant impact on air quality, the type, level, and impact of emissions generated by the project must be evaluated.

The following air quality significance thresholds are contained in Appendix G of the CEQA Guidelines effective December 28, 2018. A significant impact would occur if the project would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable national or state ambient air quality standard;

c) Expose sensitive receptors to substantial pollutant concentrations; or

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

While the final determination of whether a project is significant is within the purview of the lead agency pursuant to Section 15064(b) of the CEQA Guidelines, the District recommends that its quantitative air pollution thresholds be used to determine the significance of project emissions. If the lead agency finds that the project has the potential to exceed these air pollution thresholds, the project should be considered to have significant air quality impacts. The applicable District thresholds and methodologies are contained under each impact statement below.

5.2—Impact Analysis

5.2.1 - Consistency with Air Quality Plan

Impact AIR-1: **The project would not conflict with or obstruct implementation of the applicable air quality plan.**

Impact Analysis

The CEQA Guidelines indicate that a significant impact would occur if the project would conflict with or obstruct implementation of the applicable air quality plan. The GAMAQI does not provide specific guidance on analyzing conformity with the Air Quality Plan (AQP). Therefore, this document proposes the following criteria for determining project consistency with the current AQPs:

1. Will the project result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQPs? This measure is determined by comparison to the regional and localized thresholds identified by the District for Regional and Local Air Pollutants.

2. Will the project comply with applicable control measures in the AQPs? The primary control measures applicable to development projects is Regulation VIII—Fugitive PM_{10} Prohibitions and Rule 9510 Indirect Source Review.

Contribution to Air Quality Violations

A measure for determining if the project is consistent with the air quality plans is if the project would not result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the air quality plans. Regional air quality impacts and attainment of standards are the result of the cumulative impacts of all emission sources within the air basin. Individual projects are generally not large enough to contribute measurably to an existing violation of air quality standards. Therefore, the cumulative impact of the project is based on its cumulative contribution. Because of the region's nonattainment status for ozone, $PM_{2.5}$, and PM_{10}—if project-generated emissions of either of the ozone precursor pollutants (ROG and NO_X), PM_{10}, or $PM_{2.5}$ would exceed the District's significance thresholds—then the project would be considered to contribute to violations of the applicable standards and conflict with the attainment plans.

As discussed in Impact AIR-2 below, emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ associated with the construction and operation of the project would not exceed the District's significance thresholds. As shown in Impact AIR-2, the project would not result in CO hotspots that would violate CO standards. Therefore, the project would not contribute to air quality violations.

Compliance with Applicable Control Measures

The AQP contains a number of control measures, which are enforceable requirements through the adoption of rules and regulations. A description of rules and regulations that apply to this project is provided below.

SJVAPCD Rule 9510—Indirect Source Review (ISR) is a control measure in the 2006 PM_{10} Plan that requires NO_X and PM_{10} emission reductions from development projects in the San Joaquin Valley. The NO_X emission reductions help reduce the secondary formation of PM_{10} in the atmosphere (primarily ammonium nitrate and ammonium sulfate) and also reduce the formation of ozone. Reductions in directly emitted PM_{10} reduce particles such as dust, soot, and aerosols. Rule 9510 is also a control measure in the 2016 Plan for the 2008 8-Hour Ozone Standard. Developers of projects subject to Rule 9510 must reduce emissions occurring during construction and operational phases through on-site measures, or pay off-site mitigation fees. The project is required to comply with Rule 9510 and has already completed the ISR process.

Regulation VIII—Fugitive PM_{10} Prohibitions is a control measure that is one main strategies from the 2006 PM_{10} for reducing the PM_{10} emissions that are part of fugitive dust. Projects over 10 acres are required to file a Dust Control Plan (DCP) containing dust control practices sufficient to comply with Regulation VIII. The project is required to prepare a DCP to comply with Regulation VIII.

Other control measures that apply to the project are Rule 4641—Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operation that requires reductions in VOC emissions during paving and Rule 4601—Architectural Coatings that limits the VOC content of all types of paints and coatings sold in the San Joaquin Valley.

The project would comply with all applicable SJVAPCD rules and regulations. Therefore, the project complies with this criterion and would not conflict with or obstruct implementation of the applicable air quality attainment plan.

Conclusion

The project's emissions are less than significant for all criteria pollutants and would not result in inconsistency with the AQP for this criterion. The project complies with applicable control measures of the AQP. The project's land use designation would provide densities and development patterns consistent with the land use policies of the City of Fresno General Plan. The project complies with all applicable policies, implementation actions, and mitigation measures of the General Plan; therefore, the project is consistent with the AQP, and the impact would be less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.2.2 - Cumulative Criteria Pollutant Impacts

Impact AIR-2: **The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.**

Impact Analysis

To result in a less than significant impact, the following criteria must be true:

1. Regional analysis: emissions of nonattainment pollutants must be below the District's regional significance thresholds. This is an approach recommended by the District in its GAMAQI.

2. Summary of projections: the project must be consistent with current air quality attainment plans including control measures and regulations. This is an approach consistent with Section 15130(b) of the CEQA Guidelines.

3. Cumulative health impacts: the project must result in less than significant cumulative health effects from the nonattainment pollutants. This approach correlates the significance of the

regional analysis with health effects, consistent with the court decision, *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219-20.

Regional Emissions

Air pollutant emissions have both regional and localized effects. This analysis assesses the regional effects of the project's criteria pollutant emissions in comparison to SJVAPCD thresholds of significance for short-term construction activities and long-term operation of the project. Localized emissions from project construction and operation are assessed under Impact AIR-3—Sensitive Receptors using concentration-based thresholds that determine if the project would result in a localized exceedance of any ambient air quality standards or would make a cumulatively considerable contribution to an existing exceedance.

The primary pollutants of concern during project construction and operation are ROG, NO_X, PM_{10}, and $PM_{2.5}$. The SJVAPCD GAMAQI adopted in 2015 contains thresholds for CO, NO_X, ROG, SO_X, PM_{10}, and $PM_{2.5}$.

Ozone is a secondary pollutant that can be formed miles from the source of emissions, through reactions of ROG and NO_X emissions in the presence of sunlight. Therefore, ROG and NO_X are termed ozone precursors. The Air Basin often exceeds the state and national ozone standards. Therefore, if the project emits a substantial quantity of ozone precursors, the project may contribute to an exceedance of the ozone standard. The Air Basin also exceeds air quality standards for PM_{10}, and $PM_{2.5}$; therefore, substantial project emissions may contribute to an exceedance for these pollutants. The District's annual emission significance thresholds used for the project define the substantial contribution for both operational and construction emissions as follows:

- 100 tons per year CO
- 10 tons per year NO_X
- 10 tons per year ROG
- 27 tons per year SO_X
- 15 tons per year PM_{10}
- 15 tons per year $PM_{2.5}$

The project does not contain sources that would produce substantial quantities of SO_2 emissions during construction and operation. Modeling conducted for the project shows that SO_2 emissions are well below the SJVAPCD GAMAQI thresholds, as shown in the modeling results contained in Appendix A. No further analysis of SO_2 is required.

Construction Emissions

Construction emissions were modeled using the CalEEMod version 2016.3.2. The results of the modeling are presented in Table 9. The highest emissions that would occur in any year of construction activity were compared with the significance threshold. For assumptions in estimating the emissions, please refer to Section 4, Modeling Parameters and Assumptions. As shown in Table 9, the emissions are below the significance thresholds in each construction year. Therefore, the emissions are less than significant on a project basis.

Table 9: Construction Air Pollutant Emissions Summary (Unmitigated)

Year	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Construction 2020	0.10	0.99	0.76	0.13	0.09
Construction 2021	1.14	2.85	2.56	0.36	0.23
Construction 2022	1.01	1.67	1.71	0.13	0.09
Grand Total for All Years of Construction	**2.25**	**5.51**	**5.03**	**0.62**	**0.41**
Highest Construction Emissions in Any Year	***1.14***	***2.85***	***2.56***	***0.36***	***0.23***
Significance threshold (tons/year)	10	10	100	15	15
Exceed threshold—significant impact?	No	No	No	No	No

Notes:
PM_{10} and $PM_{2.5}$ emissions are from the mitigated output to reflect compliance with Regulation VIII—Fugitive PM_{10} Prohibitions.
ROG = reactive organic gases NO_X = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Calculations use unrounded numbers.
Source: CalEEMod output (Appendix A).

Operational Emissions

Operational emissions occur over the lifetime of the project and are from two main sources: area sources and motor vehicles, or mobile sources. Construction of the project is expected to begin in August 2020 with full buildout completed in December 2022. First occupancy is expected as early as April 2021 for Phase 1 and April 2022 for Phase 2. The SJVAPCD considers construction and operational emissions separately when making significance determinations.

For assumptions in estimating the emissions, please refer to Section 4, Modeling Parameters and Assumptions. The emissions modeling results for project operation are summarized in Table 10.

As shown in Table 10, the emissions are below the SJVAPCD significance thresholds prior to application of mitigation measures or taking credit for project design features that would reduce project emissions and, therefore, would result in a less than significant impact. The results represent the combined emissions of both phases.

Table 10: Operational Air Pollutant Emissions (Unmitigated)

Source	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Area	2.33	0.16	5.39	0.61	0.61
Energy	0.03	0.27	0.12	0.02	0.02
Mobile	0.70	2.54	7.88	1.18	0.64

Table 10 (cont.): Operational Air Pollutant Emissions (Unmitigated)

Source	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Total Project Emissions	**3.06**	**2.98**	**13.38**	**1.82**	**1.28**
Significance threshold	10	10	100	15	15
Exceed threshold—significant impact?	No	No	No	No	No

Notes:
ROG = reactive organic gases NO_X = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Area source emissions include emissions from natural gas, landscape, and painting.
Source: CalEEMod output (Appendix A).

Step 2: Plan Approach

Section 15130(b) of the CEQA Guidelines states the following:

> The following elements are necessary to an adequate discussion of significant cumulative impacts: 1) Either: (A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.

In accordance with CEQA Guidelines 15130(b), this analysis of cumulative impacts is based on a summary of projections analysis. The District attainment plans are based on a summary of projections that accounts for projected growth throughout the Air Basin, and the controls needed to achieve ambient air quality standards. This analysis considers the current CEQA Guidelines, which includes the amendments approved by the Natural Resources Agency, effective on December 28, 2018. The Air Basin is in nonattainment or maintenance status for ozone and particulate matter (PM_{10} and $PM_{2.5}$), which means that concentrations of those pollutants currently exceed the ambient air quality standards for those pollutants, or that the standards have recently been attained in the case of pollutants with maintenance status. When concentrations of ozone, PM_{10}, or $PM_{2.5}$ exceed the ambient air quality standard, then those sensitive to air pollution (such as children, the elderly, and the infirm) could experience health effects such as: decrease of pulmonary function and localized lung edema in humans and animals; increased mortality risk; and risk to public health, implied by altered connective tissue metabolism, altered pulmonary morphology in animals after long-term exposures, and pulmonary function decrements in chronically exposed humans. See Section 2.3—Existing Air Quality Conditions for additional correlation of the health impacts with the existing pollutant concentrations experienced in the Fresno area.

Under the CEQA Guidelines, cumulative impacts may be analyzed using other plans that evaluate relevant cumulative effects. The geographic scope for cumulative criteria pollution from air quality impacts is the Air Basin, because that is the area in which the air pollutants generated by the sources within the Air Basin circulate and are often trapped. The SJVAPCD is required to prepare and maintain air quality attainment plans and a State Implementation Plan to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While the SJVAPCD does not have authority over land use decisions, it is recognized that changes in land use and circulation planning would help the Air Basin achieve clean air mandates. The District evaluated emissions from land uses and transportation in the entire Air Basin when it developed its attainment plans. Emission inventories used to predict attainment of NAAQS must be based on the latest planning assumptions for mobile sources.

In accordance with CEQA Guidelines Section 15064, subdivision (h)(3), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project complies with the requirements in a previously approved plan or mitigation program.

The history and development of the SJVAPCD's current Ozone Attainment Plan is described in Section 2.4, Air Quality Plans. The 2007 8-Hour Ozone Plan contains measures to achieve reductions in emissions of ozone precursors, and sets plans towards attainment of ambient ozone standards by 2023. The 2012 $PM_{2.5}$ Plan and the 2015 $PM_{2.5}$ Plan for the 1997 $PM_{2.5}$ Standard require fewer NO_X reductions to attain the $PM_{2.5}$ standard than the Ozone Plan, so the Ozone Plan is considered the applicable plan for reductions of the ozone precursors NO_X and ROG. The 2012 $PM_{2.5}$ Plan requires reductions in directly emitted $PM_{2.5}$ from combustion sources, such as diesel engines and fireplaces, and from fugitive dust to attain the ambient standard and is the applicable plan for $PM_{2.5}$ emissions. $PM_{2.5}$ is also formed in secondary reactions in the atmosphere involving NO_X and ammonia to form nitrate particles. Reductions in NO_X required for ozone attainment are also sufficient for $PM_{2.5}$ attainment. As discussed in Impact AIR-1, the project is consistent with all applicable control measures in the air quality attainment plans. The project would comply with any District rules and regulations that may pertain to implementation of the AQPs. Therefore, impacts would be less than significant with regard to compliance with applicable rules and regulations.

The Fresno General Plan MEIR found cumulative impacts to be significant and unavoidable because the cumulative impacts of development in accordance with the General Plan and other projects and plans within the SJVAPCD are significant, and the projects implementing the General Plan make an incremental contribution to this impact that itself is cumulatively considerable. The application of SJVAPCD Rule 9510, and implementation of the General Plan air quality related policies would reduce impacts to the extent feasible. In addition, the project fulfills other General Plan objectives by increasing development densities compared to the current agricultural use of the site and providing infill development in an area surrounded by existing homes and businesses. Therefore, the cumulative effects of developing the project site were considered in the MEIR. This project does not exceed SJVAPCD thresholds and will reduce its cumulative impact through compliance with Rule 9510; therefore, the project is considered less than significant for this criterion.

Project Health Impacts

In the 5th District Court of Appeal case *Sierra Club v. County of Fresno (Friant Ranch, L.P.)*, the Court found the project EIR deficient because it did not identify specific health-related effects resulting from the estimated amount of pollutants generated by the project. The ruling stated that the EIR should give a "sense of the nature and magnitude of the 'health and safety problems' caused by a project's air pollution. The EIR should translate the emission numbers into adverse impacts or to understand why such translation is not possible at this time (and what limited translation is, in fact, possible)."

The standard measure of the severity of impact is the concentration of pollutant in the atmosphere compared to the ambient air quality standard for the pollutant for a specified period of time. The severity of the impact increases with the concentration and the amount of time that people are exposed to the pollutant. The change in health impacts with concentration is described in Table 3 and Table 4 using the EPA's Air Quality Index. The pollutants of concern in the Friant Ranch ruling were regional criteria pollutants ozone, and PM_{10}. It is important to note that the potential for localized impacts can be addressed through dispersion modeling. The SJVAPCD includes screening criteria that if exceeded would require dispersion modeling to determine if project emissions would result in a significant health impact. For this project, no significant localized health impacts would occur. Regional pollutants require more complex modeling as described below.

Ozone concentrations are estimated using regional photochemical models because ozone formation is subject to temperature, inversion strength, sunlight, emissions transport over long distances, dispersion, and the regional nature of the precursor emissions. The emissions from individual projects are too small to produce a measurable change in ozone concentrations – it is the cumulative contribution of emissions from existing and new development that is accounted for in the photochemical model. Ozone concentrations vary widely throughout the day and year even with the same amount of daily emissions. The SJVAPCD indicated in an Amicus Brief on Friant Ranch that running the photochemical model with just Friant Ranch emissions (109.5 tons/year NO_X) is not likely to yield valid information given the relative scale involved. A copy of the SJVAPCD brief is included in Appendix B. The NO_X inventory for the San Joaquin Valley is 224 tons per day in 2019 or 81,760 tons per year. Friant Ranch would result in 0.13 percent increase in NO_X emissions. A project emitting at the SJVAPCD CEQA threshold of 10 tons per year would result in a 0.01 percent increase in NO_X emissions. Most project emissions are generated by motor vehicle travel distributed on regional roadways miles from the project site, and these emissions are not suited to project-level modeling.

Emissions throughout the San Joaquin Valley are projected to markedly decline in the coming decade. The SJVAPCD 2016 Ozone Plan predicts NO_X emissions will decline to 103 tons per day by 2029 or 54 percent from 2019 levels through implementation of control measures included in the plan. This means that ozone health impacts to residents of the San Joaquin Valley will be lower than currently experienced and most areas of the San Joaquin Valley will have attained ozone air quality standards. The plan accounts for growth in population at rates projected by the State of California for the San Joaquin Valley, so only cumulative projects that would exceed regional growth projections would potentially delay attainment and prolong the time and the number of people would experience health impacts. It is unlikely that anyone would experience greater impacts from regional emissions than currently occur. The federal transportation conformity regulation provides a means of ensuring growth in emissions does not exceed emission budgets for each County. Regional Transportation Plans and Regional Transportation Improvement Plans must provide a conformity analysis based on the latest planning assumptions that demonstrates that budgets will be not be exceeded. If budgets are exceeded, the San Joaquin Valley may be subject to Clean Air Act sanctions until the deficiency is addressed.

Particulate emission impacts can be localized and regional. Particulates can be directly emitted and can be formed in the atmosphere with chemical reactions. Small directly emitted particles such as diesel emissions and other combustion emissions can remain in the atmosphere for a long time and can be transported over long distances. Large particles such as fugitive dust tend to be deposited a short distance from where emitted but can also travel long distances during periods of high winds. Particulates can be washed out of the atmosphere by rain and deposited on surfaces. Secondary particulates formed in the atmosphere such as ammonium nitrate require NO_X and ammonia, and they require low inversion levels and certain ranges of temperature and humidity to result in substantial concentrations. These complications make modeling project particulate emissions to determine concentration feasible only for directly emitted particles at receptor locations close to the project site. Regional particulate concentrations are modeled using a gridded inventory (emissions in tons/day are placed a 4-kilometer, three-dimensional grid to spatially allocate the emissions geographically and vertically in the atmosphere) and an atmospheric chemistry component to simulate the chemical reactions. The model uses relative reduction factors to determine the amount of reductions of each PM component will be needed to attain the air quality standards on the days with the conditions most favorable to high particulate concentrations. A small project would not produce sufficient emissions to determine a project's individual contribution to the particulate concentration.

Step 3: Cumulative Health Impacts

The Air Basin is in nonattainment for ozone, PM_{10} (State only), and $PM_{2.5}$, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect public health, including the health of sensitive individuals (such as children, the elderly, and the infirm). Therefore, when the concentration of those pollutants exceeds the standard, it is likely that some sensitive individuals in the population would experience health effects that were described in Table 1. However, the health effects are a factor of the dose-response curve. Concentration of the pollutant in the air (dose), the length of time exposed, and the response of the individual are factors involved in the severity and nature of health impacts. If a significant health impact results from project emissions, it does not mean that 100 percent of the population would experience health effects. Table 2, Table 3, and Table 4 relate the pollutant concentration experienced by residents using air quality data for the nearest air monitoring station to the health impacts ascribed to those concentrations by the EPA Air Quality Index. This provides a more detailed look at the actual impacts currently experienced by area residents.

Since the Basin is nonattainment for ozone, PM_{10}, and $PM_{2.5}$, it is considered to have an existing significant cumulative health impact without the project. When this occurs, the analysis considers whether the project's contribution to the existing violation of air quality standards is cumulatively considerable. The SJVAPCD regional thresholds for NO_X, VOC, PM_{10}, or $PM_{2.5}$ are applied as cumulative contribution thresholds. Projects that exceed the regional thresholds would have a cumulatively considerable health impact. As shown in Table 9 and Table 10, the regional analysis of construction and operational emissions indicates that the project would not exceed the District's significance thresholds and the project is consistent with the applicable Air Quality

The SJVAPCD Air Quality Attainment Plans predict that nonattainment pollutant emissions will continue to decline each year as regulations adopted to reduce these emissions are implemented, accounting for growth projected for the region. Therefore, the cumulative health impact will also decline even with the project's emission contribution.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.2.3 - Sensitive Receptors

Impact AIR-3: The project would not expose sensitive receptors to substantial pollutant concentrations.

Impact Analysis

Sensitive Receptors

Those who are sensitive to air pollution include children, the elderly, and persons with pre-existing respiratory or cardiovascular illness. The District considers a sensitive receptor a location that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools. The closest off-site sensitive receptors are existing residences located adjacent to the project site to the north, east, south, and west. Specifically, the closest existing off-site sensitive receptor is located approximately 110 feet east of the project site. As a residential land use development project, proposed residences included as part of the project would be considered sensitive receptors once occupied. As discussed in Section 4 of this report, construction and operations of the project are anticipated to overlap.

Impacts to On-site Workers

The project is not a commercial or industrial operation that would have on-site workers. Therefore, a health risk assessment for on-site workers is not required or recommended.

Off-site Sensitive Receptors

Impacts to receptors located outside the project boundaries would occur primarily during project construction. Construction emissions commencing with the year 2019 and would continue until project buildout. Based on the applicant-provided conceptual construction schedule, construction is expected to last approximately 3 years. For criteria pollutants, impacts to receptors located outside of the project are based on emissions during the highest emissions during any construction year. As shown in Table 11 and Table 12, emissions generated from construction and operation of the project are less than SJVAPCD screening criteria. Therefore, this impact is less than significant.

On-site Sensitive Receptors

The project is not a significant source of TAC emissions. Construction activities produce short-term emissions that would not contribute substantially to cancer risk, which is estimated on a 70-year exposure period.

Construction: ROG

ROG is emitted during the application of architectural coatings (painting). The amount emitted is dependent on the amount of ROG (or VOC) in the paint. ROG emissions are typically an indoor air quality health hazard concern rather than an outdoor air quality health hazard concern. Therefore, exposure to ROG during architectural coatings is a less than significant health impact.

There are three types of asphalt that are typically used in paving: asphalt cements, cutback asphalts, and emulsified asphalts. However, SJVAPCD Rule 4641 prohibits the use of the following types of asphalt: rapid cure cutback asphalt; medium cure cutback asphalt; slow cure asphalt that contains more than one-half (0.5) percent of organic compounds that evaporate at 500 degrees Fahrenheit (°F) or lower; and emulsified asphalt containing organic compounds, in excess of 3 percent by volume, that evaporate at 500°F or lower. An exception to this is medium cure asphalt when the National Weather Service official forecast of the high temperature for the 24-hour period following application is below 50°F.

The acute (short-term) health effects from worker direct exposure to asphalt fumes include irritation of the eyes, nose, and throat. Other effects include respiratory tract symptoms and pulmonary function changes. The studies were based on occupational exposure of fumes. Residents are not in the immediate vicinity of the fumes; therefore, they would not be subjected to concentrations high enough to evoke a negative response. In addition, the restrictions that are placed on asphalt in the San Joaquin Valley reduce ROG emissions from asphalt and exposure. The impact to nearby sensitive receptors from ROG during construction would be less than significant.

Localized Pollutant Screening Analysis

Localized Pollutant Analysis

Emissions occurring at or near the project have the potential to create a localized impact, also referred to as an air pollutant hotspot. Localized emissions are considered significant if, when combined with background emissions, they would result in exceedance of any health-based air quality standard. The impact from localized pollutants is based on the impact to the nearest sensitive receptor.

The SJVAPCD's GAMAQI includes screening thresholds for identifying projects that need detailed analysis for localized impacts. Projects with on-site emission increases from construction activities or operational activities that exceed the 100 pounds per day screening level of any criteria pollutant after compliance with Rule 9510 and implementation of all enforceable mitigation measures would require preparation of an ambient air quality analysis. The criteria pollutants of concern for localized impact in the SJVAB are PM_{10}, $PM_{2.5}$, NO_X, and CO. There is no localized emission standard for ROG and most types of ROG are not toxic and have no health-based standard; however, ROG was included for informational purposes only.

The highest daily emissions occur during project grading activities except for ROG emissions, which are highest during application of architectural coatings. The results of the construction screening analysis are presented in Table 11.

Table 11: Maximum Daily Air Pollutant Emissions during Construction

Maximum Daily Emissions by Year	Emissions (pounds per day)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Construction 2020	4.16	42.47	22.09	10.48	6.53
Construction 2021	86.95	56.07	36.45	11.52	7.24
Construction 2022	82.97	13.75	14.25	0.11	0.72
Highest Emissions in Any Year	**86.95**	**56.07**	**36.45**	**11.52**	**7.24**
Screening Thresholds	—	100	100	100	100
Exceeds Threshold (Yes or No)	No	No	No	No	No

Notes:
NO_X = nitrogen oxides CO = carbon monoxide PM_{10} and $PM_{2.5}$ = particulate matter
N/A = Not applicable
Emissions were highest in the winter run for NO_X, while emissions for CO were higher in the summer run. There is no ambient air quality standard for ROG.
Source: CalEEMod output (Appendix A).

Maximum Daily Operational Emissions

An analysis of maximum daily emissions during operation was conducted to determine if emissions would exceed 100 pounds per day for any pollutant of concern. The maximum daily operational emissions would occur at project buildout. The built-out project was modeled at first occupancy for each phase. Phase 1 first occupancy was assumed to occur in 2021 and first occupancy for Phase 2 was assumed to occur in 2022. The daily emissions for each phase were combined to determine the maximum daily emissions for the entire project. Operational emissions include emissions generated on-site by area sources such as natural gas combustion and landscape maintenance, and off-site by motor vehicles accessing the project. Most motor vehicle emissions would occur distant from the site and would not contribute to a violation of ambient air quality standards; therefore, operational emissions from mobile sources were adjusted to reflect the portion of travel that would occur within one half mile of the project site. The results of the screening analysis are presented in Table 12.

Table 12: Maximum Daily Air Pollutant Emissions during Operations

Maximum Daily Emissions per Source Category and Phase	Emissions (pounds per day)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Area	10.41	2.28	19.42	0.27	0.27
Energy	0.17	1.49	0.63	0.12	0.12
Mobile	0.34	0.96	3.21	0.86	0.24
Total	**10.93**	**4.73**	**23.26**	**1.25**	**0.62**

Table 12 (cont.): Maximum Daily Air Pollutant Emissions during Operations

Maximum Daily Emissions per Source Category and Phase	Emissions (pounds per day)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Screening threshold	—	100	100	100	100
Exceed screening threshold?	No	No	No	No	No

Notes:
NO_X = nitrogen oxides   CO = carbon monoxide PM_{10} and $PM_{2.5}$ = particulate matter
N/A = Not applicable
Emissions were highest in the summer run for ROG and CO, while emissions for NO_x were higher in the winter run. There is no ambient air quality standard for ROG.
Source: CalEEMod output (Appendix A).

The project would not exceed SJVAPCD screening thresholds for localized operational criteria pollutant impacts; therefore, the project's localized criteria pollutant impacts would be less than significant.

Operation: ROG

During operation, ROG would be emitted primarily from motor vehicles. Direct exposure to ROG from project motor vehicles would not result in health effects, because the ROG would be distributed across miles and miles of roadway and in the air. The concentrations would not be great enough to result in direct health effects.

Operation: PM_{10}, $PM_{2.5}$, CO, NO_2

As shown in Table 12, localized concentrations of PM_{10}, $PM_{2.5}$, CO, and NO_2 would not exceed the SJVAPCD screening thresholds at full project build-out. Residential development is an insignificant source of these pollutants, except for projects that allow woodburning devices that emit PM_{10}, $PM_{2.5}$ in wood smoke. The project will include only natural gas-fueled fireplaces and inserts that are insignificant sources of $PM_{2.5}$ and PM_{10}. Therefore, the project would not expose sensitive receptors to substantial criteria air pollutant concentrations during operation.

Carbon Monoxide Hot Spot Analysis

Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. The SJVAPCD provides screening criteria to determine when to quantify local CO concentrations based on impacts to the level of service (LOS) of intersections in the project vicinity.

Construction of the project would result in minor increases in traffic for the surrounding road network during the duration of construction. Motor vehicles accessing the site when it becomes operational would result in a minor increase in daily trips that would not substantially reduce the LOS on roads serving the site. The highest background 8-hour average CO concentration during the latest year it was monitored is 2.06 ppm, which is 78 percent lower than the CAAQS of 9.0 ppm or the NAAQS of 9 ppm.

A sensitivity analysis using the CALINE4 CO Hotspot model was run for the General Plan MEIR to determine the volume of trips that would be required to exceed the most stringent CO standard. At triple the predicted peak for General Plan buildout of 36,000 peak-hour trips, the hourly concentration was 7.5 ppm and an 8-hour concentration of 6.0 ppm. Based on this analysis, it is extremely unlikely that a CO hotspot will occur in the Plan Area. CO emissions are predicted to continue to decline as old vehicles are retired and cleaner new motor vehicles take their place. Therefore, no CO hotspot modeling is required for new projects during General Plan Buildout unless intersection volumes exceed 36,000 peak-hour trips, which is not projected to occur with the project.

Therefore, the project would not significantly contribute to an exceedance of state or federal CO standards.

Operation: Toxic Air Contaminants

The ARB Air Quality and Land Use Handbook contains recommendations that will "help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution" (ARB 2005), including recommendations for distances between sensitive receptors and certain land uses. In the *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) (Case No. S213478) the California Supreme Court held that "agencies subject to CEQA generally are not required to analyze the impact of existing environmental conditions on a project's future users or residents. But when a proposed project risks exacerbating those environmental hazards or conditions that already exist, an agency must analyze the potential impact of such hazards on future residents or users. In those specific instances, it is the project's impact on the environment—and not the environment's impact on the project—that compels an evaluation of how future residents or users could be affected by exacerbated conditions." Although the Court ruled that impacts from the existing environment on projects are not required to be addressed under CEQA, land uses such as gasoline stations, dry cleaners, distribution centers, and auto body shops can expose residents to high levels of TAC emissions if they are in proximity of the project site. Information regarding the location of existing TAC sources is provided for disclosure purposes only and not as a measure of the project's significance under CEQA.

Consistency with these recommendations is assessed as follows:

- Heavily traveled roads. ARB recommends avoiding new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. Epidemiological studies indicate that the distance from the roadway and truck traffic densities were key factors in the correlation of health effects, particularly in children. The project is located on the northeast corner of North Armstrong Avenue and East Floradora Avenue. The traffic volume on North Temperance Avenue at East Floradora Avenue (located approximately 900 feet from the project site) was 7,940 trips per day in 2011. The traffic volume on East Olive Avenue at North Armstrong Avenue (located approximately 1,360 feet from the project site) was 3,170 trips per day in 2011. No roads serving the project would exceed this criterion (Fresno COG 2013).
- Distribution centers. ARB also recommends avoiding siting new sensitive land uses within 1,000 feet of a distribution center. The project is not located within 1,000 feet of a distribution center.

- Fueling stations. ARB recommends avoiding new sensitive land uses within 300 feet of a large fueling station (a facility with a throughput of 3.6 million gallons per year or greater). ARB recommends a 50-foot separation is recommended for typical gas dispensing facilities. The nearest gas station is located at the southwest corner of North Armstrong Avenue and East Shields Avenue, approximately 0.6 mile north of the project site.
- Dry cleaning operations. ARB recommends avoiding siting new sensitive land uses within 300 feet of any dry-cleaning operation that uses perchloroethylene. For operations with two or more machines, ARB recommends a buffer of 500 feet. For operations with three or more machines, ARB recommends consultation with the local air district. The nearest dry-cleaning operation is approximately 1.6 miles northwest of the project site at the southeast corner of North Fowler Avenue and Ashlan Avenue.
- Auto body shops. Auto body shops have the potential to emit TACs related to painting. The nearest auto body shop is located at 2617 North Fowler Avenue, approximately 0.4 mile northwest of the project site, which is beyond the distance that would result in a measurable impact.

Valley Fever

Valley fever, or coccidioidomycosis, is an infection caused by inhalation of the spores of the fungus, *Coccidioides immitis* (*C. immitis*). The spores live in soil and can live for an extended time in harsh environmental conditions. Activities or conditions that increase the amount of fugitive dust contribute to greater exposure, and they include dust storms, grading, and recreational off-road activities.

The San Joaquin Valley is considered an endemic area for Valley fever. By geographic region, hospitalizations for Valley fever in the San Joaquin Valley increased from 230 (6.9 per 100,000 population) in 2000 to 701 (17.7 per 100,000 population) in 2007. Within the region, Kern County reported the highest hospitalization rates, increasing from 121 (18.2 per 100,000 population) in 2000 to 285 (34.9 per 100,000 population) in 2007, and peaking in 2005 at 353 hospitalizations (45.8 per 100,000 population). The Centers for Disease Control and Prevention indicates that 752 of the 8,657 persons (8.7 percent) hospitalized in California between 2000 and 2007 for Valley fever died (CDC 2009). A total of 158 Valley fever cases reported in Fresno County in 2014 (Fresno County 2014).

The distribution of *C. immitis* within endemic areas is not uniform and growth sites are commonly small (a few tens of meters) and widely scattered. Known sites appear to have some ecological factors in common suggesting that certain physical, chemical, and biological conditions are more favorable for *C. immitis* growth. Avoidance, when possible, of sites favorable for the occurrence of *C. immitis* is a prudent risk management strategy. Listed below are ecologic factors and sites favorable for the occurrence of *C. immitis*:

1) Rodent burrows (often a favorable site for *C. immitis*, perhaps because temperatures are more moderate and humidity higher than on the ground surface)
2) Old (prehistoric) Indian campsites near fire pits
3) Areas with sparse vegetation and alkaline soils
4) Areas with high salinity soils

5) Areas adjacent to arroyos (where residual moisture may be available)

6) Packrat middens

7) Upper 30 centimeters of the soil horizon, especially in virgin undisturbed soils

8) Sandy, well-aerated soil with relatively high water-holding capacities

Sites within endemic areas less favorable for the occurrence of *C. immitis* include:

1) Cultivated fields

2) Heavily vegetated areas (e.g. grassy lawns)

3) Higher elevations (above 7,000 feet)

4) Areas where commercial fertilizers (e.g. ammonium sulfate) have been applied

5) Areas that are continually wet

6) Paved (asphalt or concrete) or oiled areas

7) Soils containing abundant microorganisms

8) Heavily urbanized areas where there is little undisturbed virgin soil (USGS 2000).

The project site is situated in a city growth area, within the City of Fresno's sphere of influence. The project includes urbanization of a site that was formerly used for agricultural purposes. Therefore, implementation of the project would have a low probability of the site having *C. immitis* growth sites and exposure to the spores from disturbed soil.

Construction activities would generate fugitive dust that could contain *C. immitis* spores. The project will minimize the generation of fugitive dust during construction activities by complying with the District's Regulation VIII. Therefore, this regulation, combined with the relatively low probability of the presence of *C. immitis* spores, would reduce Valley fever impacts to less than significant.

During operations, dust emissions are anticipated to be negligible, because most of the project area would be occupied by buildings, pavement, and landscaped areas. This condition would preclude the possibility of the project from providing habitat suitable for *C. immitis* spores and for generating fugitive dust that may contribute to Valley fever exposure. Impacts would be less than significant.

Naturally Occurring Asbestos

According to a map of areas where naturally occurring asbestos in California are likely to occur (U.S. Geological Survey 2011), there are no such areas in the project area. Therefore, development of the project is not anticipated to expose receptors to naturally occurring asbestos. Impacts would be less than significant.

In summary, the project would not exceed SJVAPCD localized emission daily screening levels for any criteria pollutant. The project is not a significant source of TAC emissions during construction or operation. The project is not in an area with suitable habitat for Valley fever spores and is not in area known to have naturally occurring asbestos. Therefore, the project would not result in significant impacts to sensitive receptors.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.2.4 - Objectionable Odors

Impact AIR-4: The project would not create objectionable odors affecting a substantial number of people.

Impact Analysis

Thresholds of Significance

Odor impacts on residential areas and other sensitive receptors, such as hospitals, day-care centers, schools, etc. warrant the closest scrutiny, but consideration should also be given to other land uses where people may congregate, such as recreational facilities, worksites, and commercial areas.

Two situations create a potential for odor impact. The first occurs when a new odor source is located near an existing sensitive receptor. The second occurs when a new sensitive receptor locates near an existing source of odor. According to the *CBIA v. BAAQMD* ruling, impacts of existing sources of odors on the project are not subject to CEQA review. Therefore, the analysis to determine if the project would locate new sensitive receptors near an existing source of odor is provided for information only. The District has determined the common land use types that are known to produce odors in the Air Basin. These types are shown in Table 13.

Table 13: Screening Levels for Potential Odor Sources

Odor Generator	Screening Distance
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g., auto body shop)	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile
Source: SJVAPCD 2015a.	

According to the SJVAPCD GAMAQI, analysis of potential odor impacts should be conducted for the following two situations:

- **Generators:** projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and
- **Receivers:** residential or other sensitive receptor projects or other projects built for the intent of attracting people located near existing odor sources.

Project Analysis

Project as a Generator

Land uses that are typically identified as sources of objectionable odors include landfills, transfer stations, sewage treatment plants, wastewater pump stations, composting facilities, feed lots, coffee roasters, asphalt batch plants, and rendering plants. The project would not engage in any of these activities. Therefore, the project would not be considered a generator of objectionable odors during operations.

During construction, the various diesel-powered vehicles and equipment in use on-site would create localized odors. These odors would be temporary and would not likely be noticeable for extended periods of time beyond the project's site boundaries. The potential for diesel odor impacts would therefore be less than significant.

Project as a Receiver

With the *CBIA v. BAAQMD* ruling, analysis of odor impacts on receivers is not required for CEQA compliance. Therefore, the following analysis is provided for information only.

As a residential development, the project has the potential to place sensitive receptors near existing odor sources. Other than two facilities that could engage in painting/coating operations, there are no major odor-generating sources (as listed in Table 13) within screening distance of the site. Public record requests were filed with the SJAVPCD to obtain the most recent odor compliant histories for the auto body shops located approximately 0.38 mile and 1.00 mile northwest of the project site. Based on the response from the SJVACPCD Public Records Section, neither potential source of odor had received any confirmed or unconfirmed complaints over the most recent three-year period. Therefore, the uses in the vicinity of the project would not cause substantial odor impacts to the project.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

SECTION 6: GREENHOUSE GAS IMPACT ANALYSIS

6.1—CEQA Guidelines

CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on GHGs, the type, level, and impact of emissions generated by the project must be evaluated.

The following GHG significance thresholds are contained in Appendix G of the CEQA Guidelines, which were amendments adopted into the Guidelines on March 18, 2010, pursuant to SB 97. A significant impact would occur if the project would:

(a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

(b) Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

6.2—Impact Analysis

6.2.1 - Greenhouse Gas Inventory

Impact GHG-1: The project would generate direct and indirect greenhouse gas emissions; however, these emissions would not result in a significant impact on the environment.

Impact Analysis

Threshold of Significance

Section 15064.4(b) of the CEQA Guidelines' 2018 amendments for GHG emissions states that a lead agency may take into account the following three considerations in assessing the significance of impacts from GHG emissions.

- **Consideration #1:** The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.
- **Consideration #2:** Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- **Consideration #3:** The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project. In determining the significance of impacts, the lead agency may consider a project's consistency with the State's long-term

climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable.

The City of Fresno adopted a Greenhouse Gas Reduction Plan in 2014 that includes procedures for certain qualified projects to demonstrate consistency with plan and use the streamlining provisions allowed under CEQA. In addition to the plan consistency analysis, a quantitative analysis that shows that reductions from BAU emissions would exceed 21.7 percent in 2020 was prepared to show consistency with State reduction targets. The SJVAPCD's *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* provides guidance for preparing a BAU analysis (SJVAPCD 2009b). Under the SJVAPCD guidance, projects meeting one of the following would have a less than significant impact on climate change:

- Exempt from CEQA;
- Complies with an approved GHG emission reduction plan or GHG mitigation program;
- Project achieves 29 percent GHG reductions by using approved Best Performance Standards; and
- Project achieves AB 32 targeted 29 percent GHG reductions compared with "business as usual."

The 29 percent GHG reduction level is based on the target established by ARB's AB 32 Scoping Plan, approved in 2008. The GHG reduction level for the State to reach 1990 emission levels by 2020 was reduced to 21.7 percent from BAU in 2020 in the 2014 First Update to the Scoping Plan to account for slower than projected growth after the 2008 recession (ARB 2014). In addition, the State has reported that the 2016 greenhouse gas inventory was below the 2020 target for the first time (ARB 2018). Furthermore, the 2017 Scoping Plan states that California is on track to achieve the 2020 target (ARB 2017c). First occupancy at the project site is expected to occur in 2021, which is the first year after the AB 32 target year. Until a new threshold or BPS are identified for projects constructed after-2020, significance is based on making continued progress toward the SB 32 2030 goal.

A quantitative analysis was prepared for this project to determine the extent to which it may increase or reduce greenhouse gas emissions as compared to the existing environmental setting to fulfill Consideration 1.

Consideration 2 requires the identification of BPS that are determined to meet the 29 percent reduction from BAU. The SJVAPCD intended to develop a list of BPS for development projects that were pre-determined to achieve a 29 percent reduction from BAU, but has not completed the list. However, since the SJVAPCD guidance was adopted in 2009, regulations on sources of GHG emissions applicable to development projects have been implemented that will achieve in excess of a 29 percent reduction from BAU for most projects. A BAU analysis is provided to demonstrate that the project would exceed the current 21.7 percent reduction from the GHG Reduction Plan and the previous SJVAPCD 29 percent reduction threshold.

The analysis also addresses consistency with the SB 32 targets and the 2017 Scoping Plan Update with an assessment of the project's reduction from BAU based on emissions in 2030 compared with the 21.7 percent reduction and with a consistency analysis. This approach provides estimates of project emissions in the new 2030 milestone year with the existing threshold to show the extent of progress achieved with existing regulations and project design features to address Considerations 1 and 2 above.

The ARB adopted the 2017 Scoping Plan Update on December 14, 2017. The plan provides the State's strategy to achieve the SB 32 2030 target of a 40 percent reduction in emissions compared to 1990 levels. The plan includes existing and new measures that when implemented are expected to achieve the SB 32 2030 target. The 2017 Scoping Plan achieves substantial reductions beyond 2020 through continued implementation of existing regulations. Other regulations will be adopted to implement recently enacted legislation including SB 350, which requires an increase in renewable energy from 33 percent to 50 percent and doubling the efficiency of existing buildings by 2030. The Legislature extended the Cap-and-Trade Program through 2030. Cap-and-Trade provides a mechanism to make up shortfalls in other strategies if they occur (ARB 2017c). In addition, the strategy relies on reductions achieved in implementing the ARB Short-Lived Climate Pollutant (SLCP) Reduction Strategy to reduce pollutants not previously controlled for climate change such as black carbon, CH_4, and hydrofluorocarbons (ARB 2017b).

Newhall Ranch

On November 30, 2015, the California Supreme Court issued its decision in *Newhall Ranch,* invalidating the GHG analysis for a large master planned residential development in Los Angeles County consisting of over 20,000 residential dwelling units and other uses. In particular, the Court upheld: (1) use of the statewide emissions reduction goal in AB 32 as a significance criterion (pp. 15–19), (2) use of the Scoping Plan's BAU model "as a comparative tool for evaluating efficiency and conservation efforts" of the Project (pp. 18–19), and (3) a comparison of the project's expected emissions to a BAU model rather than a baseline of pre-project conditions (pp. 15–19). The Court invalidated the GHG analysis on the grounds that the "administrative record discloses no substantial evidence that the Newhall Ranch's project-level reduction of 31 percent in comparison to [BAU] is consistent with achieving AB 32's statewide goal of a 29 percent reduction from [BAU]." The Court indicated that a lead agency may use a BAU comparison based on the Scoping Plan's methodology if it also substantiates the reduction a particular project must achieve to comply with statewide goals. The Court suggested a lead agency could examine the "data behind the Scoping Plan's business-as-usual model" to determine the necessary project-level reductions from new land use development at the proposed location (p. 25). A lead agency "might assess consistency with A.B. 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities."

The substantial evidence needed to support a project BAU threshold can be derived from data used to develop the Scoping Plan inventory and control strategy, and from analysis conducted by the ARB to track progress in achieving the AB 32 2020 target. The critical factor in determining the appropriate project threshold is whether the State requires additional reductions beyond those achieved by existing regulations in order to achieve its target. If no additional reductions are required from individual projects, no nexus exists to require a project to mitigate its emissions. In that case, the percentage reductions achieved by projects through compliance with regulations is the amount needed to reach the AB 32 target.

The State's regulatory program implementing the 2008 Scoping Plan is now fully mature. All regulations envisioned in the Scoping Plan have been adopted by the responsible agencies and the effectiveness of those regulations have been estimated by the agencies during the adoption process and then are tracked to verify their effectiveness after implementation. The combined effect of this successful effort is that the State now projects that it will meet the 2020 target and achieve continued progress toward meeting post-2020 targets. Governor Brown, in the introduction to Executive Order B-30-15, states "California is on track to meet or exceed the current target of reducing greenhouse gas emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32)."

The Supreme Court was concerned that new development may need to do more than existing development to reduce GHGs to demonstrate that it is doing its fair share of reductions. As will be shown below, new development does do more than existing development and, because of the nature of the sources of GHG emissions related to development, existing development is equally responsible for reducing emissions from the most important sources of emissions. It is important to note that most of the State's regulatory program applies to both new and existing development.

The Scoping Plan reduction from BAU accounts for growth projected in the State and assumes that existing development would continue to emit GHGs at the same rate that occurred in the base year (2002-2004 average). The California Department of Finance (DOF) Report E-5 predicts that population growth in California from 2005 to 2020 will be 13.2 percent. This means that development that existed in 2005 will produce nearly 87 percent of the State's emissions in 2020. Conversely, new development is only responsible for about 13 percent of the emissions generated during this timeframe. If measures to reduce emissions from existing development were not available, new development could not provide sufficient reductions to reach the 2020 target even if their emissions were reduced to net zero. This continues to apply to the 2030 target. The DOF forecasts California's population will grow by 8.1 percent between 2020 and 2030, so existing development will be responsible for 92 percent of the emissions that occur in 2030.

The State's regulatory program is able to target both new and existing development because the two most important strategies—motor vehicle fuel efficiency and emissions from electricity generation—obtain reductions equally from existing and new sources. This is because all vehicle operators use cleaner low carbon fuels and buy vehicles subject to the fuel efficiency regulations, and all building owners or operators purchase cleaner energy from the grid that is produced by increasing percentages of renewable fuels. This includes regulations on mobile sources such as: The Pavley standards that apply to all vehicles purchased in California, the Low Carbon Fuel Standard (LCFS) that applies to all fuel used in California, and the Renewable Portfolio Standard and Renewable Energy Standard that apply to utilities providing electricity to all California homes and businesses. The reduction strategy where new development is required to do more than existing development is building energy efficiency and energy use related to water conservation regulations. For example, new projects are subject to Title 24 Energy Efficiency standards and CALGreen Code and Model Water Efficient Landscape Ordinance (MWELO) water conservation requirements. Residential buildings constructed to the 2013 Title 24 standards use 25 percent less energy than buildings complying with the 2008 standards. The newest version of Title 24 effective January 1, 2017 improves energy efficiency in residential buildings by 28 percent compared to the 2013 Title 24 standards and 46 percent compared with 2008 Title 24 standards. New buildings and landscapes are much more energy efficient and water efficient than the development that has been built over the past decades and will require much less energy. Title 24 is updated about every 3 years with the goal of reaching zero net energy from new residential buildings by 2020 and new commercial buildings by 2030. Some of the project's residential buildings would be constructed after 2020 and would be required to comply with the regulations in effect at the time building permits are issued.

As described above, the State requires an average reduction from all sources of the emission inventory of 21.7 percent to achieve the 2020 target. The Scoping Plan strategy will achieve greater than average reductions from energy and mobile source sectors that are the primary sources related to development projects, and lower than average reductions from other sources such as agriculture. The amount of reduction estimated by the ARB for each sector was based on technical feasibility and cost effectiveness. Review of the 2008 Scoping Plan inventory and strategy shows that the reduction from all development related sources is approximately 29 percent from BAU in order to make up for the below average sectors and achieve the required 21.7 percent average reduction. Achieving the SB 32 2030 target will require an approximate 40 percent reduction from 2020 levels assuming the State achieves the AB 32 target. The 2017 Scoping Plan Update identifies a range of reduction amounts expected from each emission sector, but an amount needed for development's fair share of reductions have not been determined.

As suggested by the Court, a project BAU analysis was prepared for this project that assesses "consistency with AB 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities." The analysis shows the extent to which the project complies with adopted regulations and the additional amount that will be achieved through project design features. At this point in time, no additional reductions are required from new development beyond regulations for the State to achieve its 2020 target. The recently adopted 2030 target will require a reduction from 431 $MTCO_2e$ to 260 $MTCO_2e$ or 40 percent from 1990 levels. After accounting for projected growth of approximately 0.8 percent per year an average decrease of 5.2 percent per year from the State GHG inventory will be required to achieve the target. The 2017 Scoping Plan Update includes a strategy for achieving the needed reductions, but does not identify an amount required specifically from new development. However, all GHG emission sources within development projects are subject to GHG regulations.

Therefore, this analysis demonstrates consistency with the existing 2020 target and shows progress toward achieving the 2030 target. The quantitative analysis prepared for the project provides the reduction from BAU in the 2030 target year to show the progress anticipated prior to applying reductions from new strategies contained in the 2017 Scoping Plan Update. The new reduction strategies from the plan are designed to close the gap between existing commitments and those needed to achieve the 2030 target, but many of the strategies must go through a regulatory process to be implemented. Therefore, the amount of reductions needed from new development beyond regulations, if any, is uncertain.

The analysis prepared for the project also includes qualitative assessments of compliance with the 2008 Scoping Plan, the 2017 Scoping Plan Update, and the City of Fresno Greenhouse Gas Reduction Plan to support GHG significance findings under Impact GHG-2.

To determine significance, the analysis first quantifies project-related GHG emissions under a BAU scenario, and then compares these emissions with emissions that would occur when all project-related design features are accounted for, and when compliance with applicable regulatory measures is assumed. The standard and methodology is explained in further detail below.

Impact Analysis

Construction

Total GHG emissions generated during all phases of construction were combined and are presented in Table 14. The SJVAPCD does not recommend assessing the significance of construction-related emissions. However, other jurisdictions, such as the SCAQMD and the SMAQMD, have concluded that construction emissions should be included since they may remain in the atmosphere for years after construction is complete. In order to account for the construction emissions, amortization of the total emissions generated during construction were based on the life of the development (residential—30 years) and added to the operational emissions.

Table 14: Construction Greenhouse Gas Emissions

Year	$MTCO_2e$ per year
2020	120.78
2021	422.36
2022	295.05
Total	**844.45**
Amortized over 30 years	***28.15***

Notes:
Calculation totals use unrounded numbers from CalEEMod output.
$MTCO_2e$ = metric tons of carbon dioxide equivalents
Source: CalEEMod output (Appendix A).

Operation

Operational or long-term emissions occur over the life of the project. Sources of emissions may include motor vehicles and trucks, energy usage, water usage, waste generation, and area sources, such as landscaping activities and residential wood burning.

Business As Usual Operational Emissions

Operational emissions under the BAU scenario were modeled using CalEEMod 2016.3.2. Modeling assumptions for the year 2005 were used to represent 2020 and 2030 BAU conditions (without the benefit of regulations adopted to reduce GHG emissions). The SJVAPCD guidance recommends using emissions in 2002–2004 in the baseline scenario to represent conditions—as if regulations had not been adopted -to allow the effect of projected growth on achieving reduction targets to be clearly defined. CalEEMod defaults were used for project energy usage, water usage, waste generation, and area sources (architectural coating, consumer products, and landscaping). The vehicle fleet mix was revised to reflect the residential fleet mix approved by SJVAPCD for the 2022 buildout year. Full assumptions and CalEEMod model outputs are provided in Appendix A.

2022 and 2030 Operational Emissions

Operational emissions were modeled for the years 2022 and 2030 using CalEEMod. CalEEMod assumes compliance with some, but not all, applicable rules and regulations regarding energy efficiency, vehicle fuel efficiency, renewable energy usage, and other GHG reduction policies, as described in the CalEEMod User's Guide (SCAQMD 2017). The reductions obtained from each regulation and the source of the reduction amount used in the analysis are described below.

Emissions Accounting for Applicable Regulations

The following regulations are incorporated into the CalEEMod emission factors:

- Pavley I and Pavley II (LEV III) motor vehicle emission standards
- ARB Medium and Heavy-Duty Vehicle Regulation
- 2005, 2008, 2013, and 2016 Title 24 Energy Efficiency Standards

The following regulations have not been incorporated into the CalEEMod emission factors and require alternative methods to account for emission reductions provided by the regulations:

- Renewable Portfolio Standards (RPS)
- Low Carbon Fuel Standard (LCFS)
- Green Building Code Standards (indoor water use)
- California Model Water Efficient Landscape Ordinance (Outdoor Water)

Pavley II/LEV III standards have been incorporated in the latest version of CalEEMod. ARB estimates a 3 percent reduction in 2020 and a 19 percent reduction from the vehicle categories subject to the regulation by 2030 (ARB 2010b and ARB 2013d).

The ARB GHG Regulation for Medium and Heavy-Duty Engines and Vehicles applies to trucks that will be accessing the project site. The benefits of the regulation were incorporated into CalEEMod 2016.3.2. The ARB estimates that this regulation will reduce GHG emissions from the affected vehicles by 7.2 percent (ARB 2013f).

The Low Carbon Fuel Standard (LCFS) is estimated to achieve a 10 percent reduction in emissions by 2020 and an 18 percent reduction by 2030 (ARB 2010). CalEEMod does not include credit for the LCFS. CalEEMod does not include credit for the LCFS, so the reduction is calculated off-model based on reductions required by the regulation.

Title 24 reductions for 2013 and 2016 updates were added to CalEEMod 2016.3.2. The California Energy Commission (CEC) estimates that 2013 Title 24 standards would result in an increase in energy efficiency of 25 percent in residential buildings compared to 2008 Title 24 (CEC 2014a). An additional 28 percent reduction from the 2008 standards have been claimed for compliance with 2016 Title 24. This results in a combined reduction of 46 percent (CEC 2015). Compliance with 2019 Title 24 is expected to reduce residential energy use by 7 percent beyond 2016 Title 24 (CEC 2018).

RPS is not accounted for in CalEEMod 2016.3.2. Reductions from RPS are addressed by revising the electricity emission intensity factor in CalEEMod to account for the utility RPS rate forecast for 2020 (CPUC 2016). PG&E provides emission factors for the electricity it provides to customers and projections for its energy portfolio for 2020 that is used to estimate project emissions. No data to reflect compliance in 2030 was included in the PG&E projections. The utilities will be required by new legislation to increase the use of renewable energy sources to 50 percent, but details on individual utility compliance have not been determined.

Energy savings from water conservation resulting from the Green Building Code Standards for indoor water use and California Model Water Efficient Landscape Ordinance for outdoor water use are not included in CalEEMod. The Water Conservation Act of 2009 mandates a 20 percent reduction in urban water use that is implemented with these regulations (CDWR 2013). Benefits of the water conservation regulations are applied in the CalEEMod mitigation component.

Reductions in emissions from solid waste are based on the City achieving the CalRecycle 75 Percent Initiative by 2020 compared with a 50 percent baseline for 2005. Reductions are taken using the CalEEMod mitigation component.

Regulations applicable to project sources and the percent reduction anticipated from each source are shown in Table 15. The percentage reductions are only applied to the specific sources subject to the regulations. For example, the Pavley LEV Standards apply only to light duty cars and trucks.

Table 15: Reductions from Greenhouse Gas Regulations

Regulation	Project Applicability	Reduction Source	Percent Reduction in 2020/2030
Pavley Low Emission Vehicle Standards	Light-duty cars and trucks accessing the site are subject to the regulation.	CalEEMod defaults (Pavley I)	25.1[1]
		Adjusted GHG emission factor (Pavley II/LEV III) in CalEEMod.	3% 2020 19.5% 2030[2]
Truck and Bus Regulation	Heavy-duty trucks accessing the site for deliveries and services are subject to the regulation.	CalEEMod defaults	7.2%[3]
Low Carbon Fuel Standard (LCFS)	Vehicles accessing the site will use fuel subject to the LCFS.	ARB LCFS estimate calculated off model	10% 2020 18% 2030[1]
Title 24 Energy Efficiency Standards	Project buildings will be constructed to meet the latest version of Title 24 (currently 2016). Reduction applies only to energy consumption subject to the regulation.	CalEEMod defaults	46%[4,5]
Green Building Code Standards	The project will include water conservation features required by the standard.	CalEEMod mitigation component	20%[6]

Table 15 (cont.): Reductions from Greenhouse Gas Regulations

Regulation	Project Applicability	Reduction Source	Percent Reduction in 2020/2030
Water Efficient Land Use Ordinance	The project landscaping will comply with the regulation.	CalEEMod mitigation component	20%[7]
Renewable Portfolio Standard (RPS)	Electricity purchased for use at the project site is subject to the 33 percent RPS mandate.	CalEEMod adjusted energy intensity factors with PG&E emission factors that show the company will exceed the 33 percent mandate.	54.5%[8]
Solid waste	The solid waste service provider will need to provide programs to increase diversion and recycling to meet the 75 percent mandate.	CalEEMod mitigation component	25%[9]

Notes:
Regulations are described in Section 2.3 Regulatory Environment. The source of the percentage reductions from each measure are from the following sources:
1 Pavley 1 + Low Carbon Fuel Standard Postprocessor Version 1.0 User's Guide (ARB 2010b) and (ARB 2017c)
2 ARB Staff Report for LEV III Amendments (ARB 2013e)
3 ARB Staff Report for GHG Regulations for Medium and Heavy-Duty Engines and Vehicles (ARB 2013f)
4 California Energy Commission News Release: New Title 24 Standards Will Cut Residential Energy Use by 25 Percent, Save Water, and Reduce Greenhouse Gas Emissions (CEC 2014b)
5 California Energy Commission Adoption Hearing Presentation: 2016 Buildings Energy Efficiency Standards (CEC 2015)
6 2013 California Green Building Standards Code Section 5.303.2
7 California Water Plan Update 2013 (CDWR 2013)
8 Based on CalEEMod default PG&E rate for 2005 and PG&E projected emission factor for 2020
9 CalRecycle 75 Percent Initiative: Defining the Future (2016).

In addition to rules and regulations, the project would incorporate design features and would obtain benefits from its location and infrastructure that would reduce project VMT compared with default values. The project would construct pedestrian infrastructure connecting to adjacent land uses and is located approximately 8.5 miles from existing development in Downtown Fresno. In addition, the project would provide electrical outlets for landscaping equipment that would be used in accordance with statewide usage rates for this type of equipment.

Note that CalEEMod nominally treats these design elements and conditions as "mitigation measures," despite their inclusion in the project description. Therefore, reported operational emissions are considered to represent unmitigated project conditions. Full assumptions and model outputs are provided in Appendix A and results of this analysis for 2022 are presented in Table 16. A second analysis for 2030 is presented in Table 17.

Table 16: Project Operational Greenhouse Gases 2022

Source	Emissions ($MTCO_2e$ per year)		
	Business as Usual	2022 (with Regulation and Design Features)	Percent Reduction
Area	190.87	101.27	46.9%
Energy	895.43	579.53	35.3%
Mobile	2,774.33	1,875.10	32.4%
Waste	116.95	87.72	25.0%
Water	52.80	27.92	47.1%
Amortized Construction Emissions	28.15	28.15	0.0%
Total	**4,058.54**	**2,699.69**	**33.5%**
	Reduction from BAU	**1,358.85**	—
	Percent Reduction	**33.5%**	—
	Significance Threshold	**29.0%**	—
	Are emissions significant?	**No**	

Notes:
$MTCO_2e$ = metric tons of carbon dioxide equivalents
The project achieves the SJVAPCD 29 percent reduction from BAU threshold and the 21.7 percent required to show consistency with AB 32 targets. No new target has been set for 2030.
Source: CalEEMod output (Appendix A).

As shown in Table 16, the project would achieve a reduction of 33.5 percent from BAU by the year 2022 with regulations and design features incorporated. This is above the 29 percent reduction required by the SJVAPCD threshold, and the 21.7 percent average reduction from all sources of GHG emissions now required to achieve AB 32 targets. The ARB originally identified a reduction of 29 percent from BAU as needed to achieve AB 32 targets. The 2008 recession and slower growth in the years since 2008 have reduced the growth forecasted for 2020, and the amount needed to be reduced to achieve 1990 levels as required by AB 32. The California Department of Finance (DOF) population forecast for 2020 to 2030 predicts growth in the State of 8.1 percent by the 2030 target year or 0.8 percent per year (DOF 2017).

The project includes design features that would result in reductions in energy use and support walking and bicycling. Measures that are part of the project design do not require additional mitigation measures to ensure they are accomplished.

The 33.5 percent reduction from BAU is 11.8 percent beyond the average reduction required by the State from all sources to achieve the AB 32 2020 target and therefore addresses the concern expressed in Newhall Ranch that projects should likely do more than the average to ensure they are providing a fair share of emission reductions.

Since the project buildout would occur after 2020, additional analysis summarized in Table 17 was prepared to show consistency with SB 32 2030 target.

Table 17: Project Operational Greenhouse Gases 2030

Source	Emissions ($MTCO_2e$ per year)		
	Business as Usual	2030 (with Regulation and Design Features)	Percent Reduction
Area	190.87	101.27	46.9%
Energy	895.43	579.53	35.3%
Mobile	2,774.33	1,355.70	51.1%
Waste	116.95	87.72	25.0%
Water	52.80	27.92	47.1%
Amortized Construction Emissions	28.15	28.15	0.0%
Total	**4,058.54**	**2,180.29**	**46.3%**
	Reduction from BAU	**1,878.24**	—
	Percent Reduction	**46.3%**	—
	Significance Threshold	**29.0%**	—
	Are emissions significant?	**No**	

Notes:
$MTCO_2e$ = metric tons of carbon dioxide equivalents
The project achieves the SJVAPCD 29 percent reduction from BAU threshold and the 21.7 percent required to show consistency with AB 32 targets. No new target has been set for 2030.
Source: CalEEMod output (Appendix A).

As shown in Table 17, the project would exceed the 21.7 percent reduction required by the State to achieve the 2020 target by 24.6 percent and the SJVAPCD 29.0 percent target by 17.3 percent. No new threshold has been adopted by the City of Fresno for the 2030 target, so in the interim the project must make continued progress toward the 2030 goal.

The analysis presented above does not include new strategies proposed in the 2030 Scoping Plan Update. The update was adopted in December 2017. The update provides alternatives in terms of their likelihood of implementation and ranges of reduction from the strategies. Measures already authorized by legislation are highly likely to be implemented, while measures requiring new legislation are less likely to go forward. The State is highly likely to incorporate zero net energy buildings in future updates to Title 24. A new round of motor vehicle fuel efficiency standards beyond 2025 when LEV III standards are at their maximum reduction level is highly likely. Changing heavy-duty trucks and off-road equipment to alternative fuels face greater technological hurdles and are less likely to provide dramatic reductions by 2030.

The 2030 emission limit is 260 $MMTCO_2e$. The ARB estimates that the 2030 BAU (reference) Inventory will be 392 $MMTCO_2e$—a reduction of 132 $MMCO_2e$, including existing policies and programs but not including known commitments that are already underway. The 2030 Scoping Plan Update includes the estimated GHG emissions by sector compared with 1990 levels that is presented in Table 18. The proposed plan would achieve the bulk of the reductions from Electric Power, Industrial fuel combustion, and Transportation. Cap-and-Trade would provide between 10 and 20 percent of the required reductions depending on the amounts achieved by the other reduction measures.

Table 18: 2030 Scoping Plan Update Estimated Change in GHG Emissions by Sector

Scoping Plan Sector	Emissions ($MMTCO_2e$ per year)		
	1990	2030 Proposed Plan Ranges	Percent Change form 1990
Agriculture	26	24–25	-4 to -8
Residential and Commercial	44	38–40	-9 to -14
Electric Power	108	42–62	-43 to -61
High GWP	3	8–11	167 to 267
Industrial	98	77–87	-11 to -21
Recycling and Waste	7	8–9	14 to 29
Transportation (including TCU)	152	103–111	-27 to -32
Net Sink	-7	TBD	TBD
Subtotal	**431**	**300–345**	**-20 to -30**
Cap-and-Trade Program	N/A	40–85	N/A
Total	**431**	**260**	**-40**
ARB 2030 Scoping Plan Update (ARB 2017)			

Although 2030 Scoping Plan Update focuses on state agency actions necessary to achieve the 2030 GHG limit, the ARB considers local governments essential partners in achieving California's goals to reduce GHG emissions. The 2030 target will require an increase in the rate of emission reductions compared to what was needed to achieve the 2020 limit, and this will require action and collaboration at all levels, including local government action to complement and support State-level actions. For individual projects, the 2030 Scoping Plan Update suggests that all new land use development implement all feasible measures to reduce GHG emissions. The Scoping Plan does not define all feasible measures or attribute an amount of reductions required from new development beyond compliance with regulations. When requiring mitigation of a project's fair share of a cumulative impact, the Lead Agency must show the nexus between the project contribution and its fair share of mitigation to reduce the impact to less than cumulatively considerable. A threshold based on local support and collaboration with State actions as described in the 2017 Scoping Plan Update does not lend itself to a quantitative determination of fair share. Requiring developers and future residents of the development to fully mitigate emissions without accounting for compliance with regulations would result in double mitigation, first by the developer and then by the residents purchasing electricity, fuel, and vehicles compliant with regulations in effect at the time of purchase and beyond that would violate constitutional nexus requirements.

In conclusion, the project would achieve reductions 11.8 percent beyond the ARB 2020 21.7 percent target and 4.5 percent beyond the SJVAPCD 29 percent reduction from BAU requirements from adopted regulations and on-site design features in the 2022 operational year. No new threshold has been adopted by the City for the SB 32 2030 target. Based on this progress and the strong likelihood that the measures included in the 2017 Scoping Plan Update will be implemented, it is reasonable to conclude that the project is consistent with the 2017 Scoping Plan and will contribute a reasonable fair-share contribution to achieving the 2030 target. The fair share may very well be achieved through compliance with increasingly stringent State regulations that apply to new development, such as Title 24 and CALGreen; regulations on energy production, fuels, and motor vehicles that apply to both new and existing development; and voluntary actions to improve energy efficiency in existing development. In addition, compliance with the VMT targets adopted to comply with SB 375 and implemented through the RTP/SCS may be considered to adequately address GHG emissions from passenger cars and light-duty trucks. As shown in Table 18, the State strategy relies on the Cap-and-Trade Program to make up any shortfalls that may occur from the other regulatory strategies. The costs of Cap-and-Trade emission reductions will ultimately be passed on to the consumers of fuels, electricity and products produced by regulated industries which include future residents of development projects and other purchasers of products and services. Therefore, the impact in terms of Considerations #1 and #2 would be less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

6.2.2 - Greenhouse Gas Reduction Plans

Impact GHG-2: The project would not conflict with any applicable plan, policy, or regulation of an agency adopted to reduce the emissions of greenhouse gases.

Impact Analysis

The following analysis assesses the project's compliance with Consideration #3 regarding consistency with adopted plans to reduce GHG emissions. The City of Fresno adopted its GHG Reduction Plan as part of the General Plan Update in 2014. The project's consistency with applicable GHG policies from the GHG Reduction Plan policies is assessed below.

The project is also assessed for its consistency with ARB's adopted Scoping Plans. This would be achieved with an assessment of the project's compliance with Scoping Plan measures contained in the 2008 Scoping Plan and the 2017 Scoping Plan Update.

City of Fresno GHG Plan

The analysis includes an assessment of the project's consistency with the GHG Plan. The following requirements apply.

1. Review General Plan policies listed in the GHG Reduction Plan to identify those that apply to the project and prepare a consistency analysis for compliance with the applicable policies.

2. Ensure project is consistent with the City's Development Code as it relates to complete streets and design standards for multi-family projects
3. Prepare a GHG technical study to quantify project emissions and emission reductions through compliance with regulations and project design features.

Table 19 provides a consistency analysis with applicable GHG policies from the GHG Reduction Plan. The project is consistent with all applicable policies.

Table 19: Consistency with Fresno Greenhouse Gas Reduction Plan

Climate Action Plan Policy	Project Consistency
Policy RC-2-a Link Land Use to Transportation. Promote mixed-use, higher density infill development in multi-modal corridors. Support land use patterns that make more efficient use of the transportation system and plan future transportation investments in areas of higher-intensity development. Discourage investment in infrastructure that would not meet these criteria**.**	**Consistent**. The project will provide higher-density development at a site currently used for agricultural purposes, making efficient use of the existing infrastructure.
Objective UF-12 Locate roughly one-half of future residential development in infill areas — defined as being within the City on December 21, 2012—including the Downtown core area and surrounding neighborhoods, mixed-use centers and transit-oriented development along major BRT corridors, and other non-corridor infill areas, and vacant land.	**Consistent**. The project is residential development within the City of Fresno's Sphere of Influence. The project site is within 1 mile of existing commercial and residential development.
Policy LU-2-b Infill Development for Affordable Housing. Consider a priority infill incentive program for residential infill development of existing vacant lots and underutilized sites within the City as a strategy to help to meet the affordable housing needs of the community.	**Not Applicable.** The project is residential development on an underutilized site; however, the project would provide market-based housing. Although not classified as "affordable housing," development of the project would provide housing that helps the City meet the needs of the community.
Policy LU-5-f High Density Residential Uses. Promote high-density residential uses to support Activity Centers and BRT corridors, affordable housing and walkable access to transit stops**.**	**Not Applicable.** The project is not within a designated Activity Center or BRT corridor.
Policy UF-14-a Design Guidelines for Walkability. Use design guidelines and standards for a walkable and pedestrian-scaled environment with a network of streets and connections for pedestrians and bicyclists, as well as transit and autos.	**Consistent.** The project will comply with the City Development Code, which requires appropriate pedestrian infrastructure in new development projects. The project connects to the existing street network that includes sidewalks.
Objective MT-9 Provide public transit opportunities to the maximum number and diversity of people practicable in balance with providing service that is high in quality, convenient, frequent, reliable, and financially feasible.	**Not Applicable.** The project is not on an existing FAX transit line; however, the project provides increased development density that could help support future transit in the area.

Table 19 (cont.): Consistency with Fresno Greenhouse Gas Reduction Plan

Climate Action Plan Policy	Project Consistency
Policy MT-6-a Link Residences to Destinations. Design a pedestrian and bicycle path network that links residential areas with Activity Centers, such as parks and recreational facilities, educational institutions, employment centers, cultural sites, and other focal points of the city environment.	**Consistent.** The project will provide pedestrian infrastructure connecting to neighboring uses. Multiple parks are located within 1 mile of the project site, with the closest park located approximately 0.31 mile northwest of the project site.
Objective RC-8 Reduce the consumption of non-renewable energy resources by requiring and encouraging conservation measures and the use of alternative energy sources**.**	**Consistent.** The project will comply with Title 24 Energy Efficiency Standards and CalGreen Code requirements for solar ready roofs, electric vehicle charging, and water conservation. The 2016 Building Efficiency Standards are the current regulations and went into effect on January 1, 2017. The 2019 Title 24 Standards are scheduled to go into effect on January 1, 2020. Proposed buildings that would receive building permits after January 1, 2020 would be subject to the 2019 Title 24 Standards. One of the notable changes in the 2019 Title 24 Standards includes the solar photovoltaic systems requirement for new low-rise residential homes.
Policy RC-8-a Existing Standards and Programs. Continue existing beneficial energy conservation programs, including adhering to the California Energy Code in new construction and major renovations.	**Consistent.** The project will comply with all applicable energy standards.
Policy RC-8-b Energy Reduction Targets. Strive to reduce per capita residential electricity use to 1,800 kWh per year and nonresidential electricity use to 2,700 kWh per year per capita by developing and implementing incentives, design and operation standards, promoting alternative energy sources, and cost-effective savings.	**Consistent.** The project will comply with the Title 24 energy standards in effect at the time building permits are processed for approval.
Source: City of Fresno Greenhouse Gas Reduction Plan 2014.	

AB 32 Scoping Plan

The California State Legislature adopted AB 32 in 2006. AB 32 focuses on reducing GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) to 1990 levels by the year 2020. Pursuant to the requirements in AB 32, the ARB adopted the Climate Change Scoping Plan (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal. The Scoping Plan calls for an “ambitious but achievable” reduction in California’s GHG emissions, cutting approximately 30 percent from BAU emission levels projected for 2020, or about 10 percent from 2008 levels. On a per-capita basis, that means reducing annual emissions of 14 tons of carbon dioxide for every man, woman, and child in California down to about 10 tons per person by 2020. As stated earlier, the ARB has updated its emission inventory forecasts and now estimates a reduction of 21.7 percent is required from BAU in 2020 to achieve AB 32 targets.

The Scoping Plan contains a variety of strategies to reduce the State's emissions. As shown in Table 20, the project is consistent with most of the strategies, while others are not applicable to the project. As discussed earlier, the 2017 Scoping Plan Update strategies primarily rely on increasing the stringency of existing regulations with which the project would continue to comply, support through the project's design, and implementation of the General Plan goals and policies.

Table 20: Project Consistency with AB 32 Scoping Plan

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
Transportation	California Cap-and-Trade Program Linked to Western Climate Initiative	Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanism October 20, 2015 (CCR 95800)	**Consistent.** The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers. However, the regulation indirectly affects people who use the products and services produced by these industrial sources when increased cost of products or services (such as electricity and fuel) are transferred to the consumers. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period.
	California Light-Duty Vehicle Greenhouse Gas Standards	Pavley I 2005 Regulations to Control GHG Emissions from Motor Vehicles 2012 LEV III Amendments to the California Greenhouse Gas and Criteria Pollutant Exhaust and Evaporative Emission Standards	**Consistent**. This measure applies to all new vehicles starting with model year 2012. The project would not conflict with its implementation as it would apply to all new passenger vehicles purchased in California. Passenger vehicles, model year 2012 and later, associated with construction and operation of the project would be required to comply with the Pavley emissions standards.
	Low Carbon Fuel Standard.	2009 readopted in 2015. Regulations to Achieve Greenhouse Gas Emission Reductions Subarticle 7. Low Carbon Fuel Standard CCR 95480	**Consistent.** This measure applies to transportation fuels utilized by vehicles in California. The project would not conflict with implementation of this measure. Motor vehicles associated with construction and operation of the project would utilize low carbon transportation fuels as required under this measure.

Table 20 (cont.): Project Consistency with AB 32 Scoping Plan

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
	Regional Transportation-Related Greenhouse Gas Targets.	SB 375. Cal. Public Resources Code §§ 21155, 21155.1, 21155.2, 21159.28	**Consistent**. The project will provide residential development in the region that is consistent with the increased development densities promoted in the 2018 Regional Transportation Plan/Sustainable Communities Strategy (SCS). The project is not within an SCS priority area and so is not subject to requirements applicable to those areas.
	Goods Movement	Goods Movement Action Plan January 2007.	**Not applicable**. The project does not propose any changes to maritime, rail, or intermodal facilities or forms of transportation.
	Medium/Heavy-Duty Vehicles	2010 Amendments to the Truck and Bus Regulation, the Drayage Truck Regulation and the Tractor-Trailer Greenhouse Gas Regulation	**Consistent**. This measure applies to medium- and heavy-duty vehicles that operate in the State. The project would not conflict with implementation of this measure. Medium- and heavy-duty vehicles associated with construction and operation of the project would be required to comply with the requirements of this regulation.
	High Speed Rail	Funded under SB 862	**Not applicable**. This is a statewide measure that cannot be implemented by a project applicant or lead agency.
Electricity and Natural Gas	Energy Efficiency	Title 20 Appliance Efficiency Regulation	**Consistent.** The project would not conflict with implementation of this measure. The project will comply with the latest energy efficiency standards and incorporate applicable energy efficiency features designed to reduce project energy consumption.
		Title 24 Part 6 Energy Efficiency Standards for Residential and Non-Residential Building	
		Title 24 Part 11 California Green Building Code Standards	
	Renewable Portfolio Standard/Renewable Electricity Standard.	2010 Regulation to Implement the Renewable Electricity Standard (33% 2020)	**Consistent**. PG&E obtained 33 percent of its power supply from renewable sources such as solar and geothermal in 2017, and about 70 percent of the electricity it delivers is carbon-free, including nuclear and large hydroelectric facilities. The owners of residences within the project would purchase power that consists of a greater percentage of renewable sources and could install renewable solar power systems that will assist the utility in achieving exceeding the renewable mandate.
		SB 350 Clean Energy and Pollution Reduction Act of 2015 (50% 2030)	

Table 20 (cont.): Project Consistency with AB 32 Scoping Plan

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
	Million Solar Roofs Program	Tax incentive program	**Consistent.** This measure is intended to increase solar throughout California by means of a variety of electricity providers and existing solar programs. Projects within the plan area will be able to take advantage of incentives that are in place at the time of construction.
Water	Water	Title 24 Part 11 California Green Building Code Standards	**Consistent.** The project will comply with the California Green Building Standards Code, which requires a 20 percent reduction in indoor water use. The project will also comply with the MWELO as required by the City's development code and water ordinance.
		SBX 7-7—The Water Conservation Act of 2009	
		Model Water Efficient Landscape Ordinance	
Green Buildings	Green Building Strategy	Title 24 Part 11 California Green Building Code Standards	**Consistent.** The State will increase the use of green building practices. The project would implement required green building strategies through existing regulation that requires the project to comply with various CALGreen requirements. The project includes sustainability design features that support the Green Building Strategy.
Industry	Industrial Emissions	2010 ARB Mandatory Reporting Regulation	**Not applicable.** The project is not an industrial land use.
Recycling and Waste Management	Recycling and Waste	Title 24 Part 11 California Green Building Code Standards	**Consistent.** The project would not conflict with implementation of these measures. The project is required to achieve the recycling mandates via compliance with the CALGreen code. The project would utilize City of Fresno recycling services.
		AB 341 Statewide 75 Percent Diversion Goal	

Table 20 (cont.): Project Consistency with AB 32 Scoping Plan

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
Forests	Sustainable Forests	Cap-and-Trade Offset Projects	**Not applicable.** The project site is in an area designated for urban uses. No forested lands exist on-site.
High Global Warming Potential	High Global Warming Potential Gases	ARB Refrigerant Management Program CCR 95380	**Not applicable**. The regulations are applicable to refrigerants used by large air conditioning systems and large commercial and industrial refrigerators and cold storage system. Homes do not use large systems subject to the refrigerant management regulations adopted by ARB.
Agriculture	Agriculture	Cap-and-Trade Offset Projects for Livestock and Rice Cultivation	**Not applicable**. The project site is designated for urban development. No grazing, feedlot, or other agricultural activities that generate manure occur currently exist on-site or are proposed to be implemented by the project.
Source of ARB Scoping Plan Reduction Measures: California Air Resources Board 2008.			

In summary, the project incorporates a number of features that would minimize GHG emissions. These features are consistent with project-level strategies identified by the ARB's Scoping Plan and the City of Fresno GHG Reduction Plan. As demonstrated in the impact analysis above, the project would achieve a 33.5 percent reduction from the BAU inventory by 2022 and 46.3 percent from the BAU inventory by 2030, therefore, the project would not significantly hinder or delay the State's ability to meet the reduction targets contained in AB 32 or SB 32 or conflict with implementation of the Scoping Plan. The project promotes the goals of the Scoping Plan through implementation of design measures that reduce energy consumption, water consumption, and reduction in VMT. Therefore, the project does not conflict with any plans to reduce GHG emissions. The impact would be less than significant.

Consistency with California's Post-2020 Targets

The State's executive branch adopted several Executive Orders related to GHG emissions. Executive Orders S-3-05 and B-30-15 are two examples. Executive Order S-3-05 sets goals to reduce emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. The goal of Executive Order S-3-05 to reduce GHG emissions to 1990 levels by 2020 was codified by AB 32. The project, as analyzed above, is consistent with AB 32. Therefore, the project does not conflict with this component of Executive Order S-3-05. Executive Order B-30-15 establishes an interim goal to reduce GHG emissions to 40 percent below 1990 levels by 2030.

The 2030 goal was recently codified under SB 32 and is now addressed by the 2017 Scoping Plan Update. The new plan provides a strategy that is capable of reaching the SB 32 target if the measures included in the plan are implemented and achieve reductions within the ranges expected. Under the Scoping Plan Update, local government plays a supporting role through its land use authority and control over local transportation infrastructure. The Plan Update includes reductions from implementation of SB 375 that applies to VMT from passenger vehicles. Fresno County targets for SB 375 are a 5 percent reduction by 2020 and a 10 percent reduction by 2035. SB 375 is implemented with the Fresno COG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). The RTP/SCS envisions an increase in development density that would encourage fewer and shorter trips and more trips by transit, walking, and bicycling in amounts sufficient to achieve the SB 375 targets.

Now that the 2017 Scoping Plan has been adopted, new methodologies and threshold approaches are required to determine the fair-share contributions City development projects would need to make to achieve the 2030 target. In the meantime, however, the discussion under "Consistency with SB 32" below addresses the consistency of the proposed project with SB 32, which provides the statutory underpinning of the 2017 Scoping Plan. The SB 32 target requires GHG emissions to be reduced from 1990 levels. No consensus has been reached around the State on a new quantitative target for new development based on consistency with the SB 32 targets.

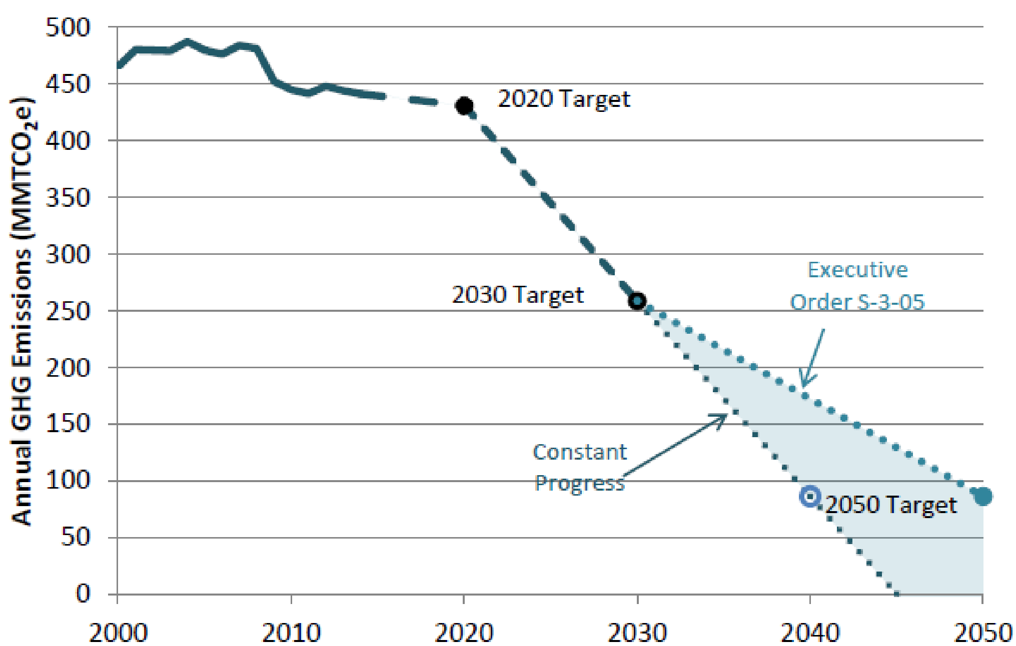
The Executive Order S-3-05 2050 target has not been codified by legislation. Studies have shown that, in order to meet the 2050 target, aggressive pursuit of technologies in the transportation and energy sectors, including electrification and the decarbonization of fuel, will be required. Because of the technological shifts required and the unknown parameters of the regulatory framework in 2050, quantitatively analyzing the project's impacts further relative to the 2050 goal is speculative for purposes of CEQA (ARB 2014b).

The ARB recognizes that AB 32 establishes an emissions reduction trajectory that will allow California to achieve the more stringent 2050 target: "These [greenhouse gas emission reduction] measures also put the State on a path to meet the long-term 2050 goal of reducing California's GHG emissions to 80 percent below 1990 levels. This trajectory is consistent with the reductions that are needed globally to stabilize the climate." In addition, ARB's First Update "lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050," and many of the emission reduction strategies recommended by ARB would serve to reduce the proposed project's post-2020 emissions level to the extent applicable by law:

- **Energy Sector:** Continued improvements in California's appliance and building energy efficiency programs and initiatives, such as the State's zero net energy building goals, would serve to reduce the proposed project's emissions level. Additionally, further additions to California's renewable resource portfolio would favorably influence the project's emissions level.
- **Transportation Sector:** Anticipated deployment of improved vehicle efficiency, zero emission technologies, lower carbon fuels, and improvement of existing transportation systems all will serve to reduce the project's emissions level.
- **Water Sector:** The project's emissions level will be reduced as a result of further desired enhancements to water conservation technologies.
- **Waste Management Sector:** Plans to further improve recycling, reuse and reduction of solid waste will beneficially reduce the project's emissions level.

For the reasons described above, the project's post-2020 emissions trajectory is expected to follow a declining trend, consistent with the 2030 and 2050 targets. The trajectory required to achieve the post-2020 targets is shown in Figure 8.

Figure 8: California's Path to Achieving the 2050 Target



Source: ARB 2017 Scoping Plan Update (ARB 2017)

In his January 2015 inaugural address, Governor Brown expressed a commitment to achieve "three ambitious goals" that he would like to see accomplished by 2030 to reduce the State's GHG emissions:

- Increasing the State's Renewable Portfolio Standard from 33 percent in 2020 to 50 percent in 2030;
- Cutting the petroleum use in cars and trucks in half; and
- Doubling the efficiency of existing buildings and making heating fuels cleaner.

These expressions of executive branch policy may be manifested in adopted legislative or regulatory action through the state agencies and departments responsible for achieving the State's environmental policy objectives, particularly those relating to global climate change (Brown 2015). Further, recent studies show that the State's existing and proposed regulatory framework will allow the State to reduce its GHG emissions level to 40 percent below 1990 levels by 2030, and to 80 percent below 1990 levels by 2050. Even though these studies did not provide an exact regulatory and technological roadmap to achieve the 2030 and 2050 goals, they demonstrated that various combinations of policies could allow the statewide emissions level to remain very low through 2050, suggesting that the combination of new technologies and other regulations not analyzed in the studies could allow the State to meet the 2050 target (Energy and Economics 2015).

Given the proportional contribution of mobile source-related GHG emissions to the State's inventory, recent studies also show that relatively new trends—such as the increasing importance of web-based shopping, the emergence of different driving patterns by the "millennial" generation, and the increasing effect of web-based applications on transportation choices—are beginning to substantially influence transportation choices and the energy used by transportation modes. These factors have changed the direction of transportation trends in recent years and will require the creation of new models to effectively analyze future transportation patterns and the corresponding effect on GHG emissions. For the reasons described above, the proposed project's post-2020 emissions trajectory is expected to follow a declining trend, consistent with the 2030 and 2050 targets.

Consistency with SB 32

The 2017 Climate Change Scoping Plan Update (2017 Scoping Plan) includes the strategy that the State intends to pursue to achieve the 2030 targets of Executive Order S-3-05 and SB 32. The 2017 Scoping Plan includes the following summary of its overall strategy for reaching the 2030 target:

- SB 350
  - Achieve 50 percent Renewables Portfolio Standard (RPS) by 2030.
  - Doubling of energy efficiency savings by 2030.
- Low Carbon Fuel Standard (LCFS)
  - Increased stringency (reducing carbon intensity 18 percent by 2030, up from 10 percent in 2020).
- Mobile Source Strategy (Cleaner Technology and Fuels Scenario)
  - Maintaining existing GHG standards for light- and heavy-duty vehicles.
  - Put 4.2 million zero-emission vehicles (ZEVs) on the roads.
  - Increase ZEV buses, delivery and other trucks.

- Sustainable Freight Action Plan
  - Improve freight system efficiency.
  - Maximize use of near-zero emission vehicles and equipment powered by renewable energy.
  - Deploy over 100,000 zero-emission trucks and equipment by 2030.
- Short-Lived Climate Pollutant (SLCP) Reduction Strategy
  - Reduce emissions of methane and hydrofluorocarbons 40 percent below 2013 levels by 2030.
  - Reduce emissions of black carbon 50 percent below 2013 levels by 2030.
- SB 375 Sustainable Communities Strategies
  - Increased stringency of 2035 targets.
- Post-2020 Cap-and-Trade Program
  - Declining caps, continued linkage with Québec, and linkage to Ontario, Canada.
  - ARB will look for opportunities to strengthen the program to support more air quality co-benefits, including specific program design elements. In Fall 2016, ARB staff described potential future amendments including reducing the offset usage limit, redesigning the allocation strategy to reduce free allocation to support increased technology and energy investment at covered entities and reducing allocation if the covered entity increases criteria or toxics emissions over some baseline.
- By 2018, develop Integrated Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Table 21 provides an analysis of the project's consistency with the 2017 Scoping Plan Update measures.

Table 21: Consistency with SB 32 2017 Scoping Plan Update

Scoping Plan Measure	Project Consistency
SB 350 50% Renewable Mandate. Utilities subject to the legislation will be required to increase their renewable energy mix from 33% in 2020 to 50% in 2030.	**Consistent**: The project will purchase electricity from a utility subject to the SB 350 Renewable Mandate.
SB 350 Double Building Energy Efficiency by 2030. This is equivalent to a 20 percent reduction from 2014 building energy usage compared to current projected 2030 levels	**Not Applicable**. This measure applies to existing buildings. New structures are required to comply with Title 24 Energy Efficiency Standards that are expected to increase in stringency until residential housing achieves zero net energy.
Low Carbon Fuel Standard. This measure requires fuel providers to meet an 18 percent reduction in carbon content by 2030.	**Consistent**. Vehicles accessing the project site will use fuel containing lower carbon content as the fuel standard is implemented.
Mobile Source Strategy (Cleaner Technology and Fuels Scenario) Vehicle manufacturers will be required to meet existing regulations mandated by the LEV III and Heavy-Duty Vehicle programs. The strategy includes a goal of having 4.2 million ZEVs on the road by 2030 and increasing numbers of ZEV trucks and buses.	**Consistent**. Project residents can be expected to purchase increasing numbers of more fuel efficient and zero emission cars and trucks each year. The 2016 CALGreen Code requires electrical service in new single-family housing to be EV charger-ready. Home deliveries will be made by increasing numbers of ZEV delivery trucks.

Table 21 (cont.): Consistency with SB 32 2017 Scoping Plan Update

Scoping Plan Measure	Project Consistency
Sustainable Freight Action Plan The plan's target is to improve freight system efficiency 25 percent by increasing the value of goods and services produced from the freight sector, relative to the amount of carbon that it produces by 2030. This would be achieved by deploying over 100,000 freight vehicles and equipment capable of zero emission operation and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.	**Not Applicable**. The measure applies to owners and operators of trucks and freight operations. However, home deliveries are expected to be made by increasing number of ZEV delivery trucks.
Short-Lived Climate Pollutant (SLCP) Reduction Strategy. The strategy requires the reduction of SLCPs by 40 percent from 2013 levels by 2030 and the reduction of black carbon by 50 percent from 2013 levels by 2030.	**Consistent**. The project will include only natural gas hearths that produce very little black carbon compared to wood burning fireplaces and heaters.
SB 375 Sustainable Communities Strategies. Requires Regional Transportation Plans to include a sustainable communities strategy for reduction of per capita vehicle miles traveled. The targets for Fresno County are	**Consistent**. The project will provide residential development in the region that is consistent with the Regional Transportation Plan/Sustainable Communities Strategy (SCS) strategy to increase development densities to reduce VMT. The project is not within an SCS priority area and so is not subject to requirements applicable to those areas.
Post-2020 Cap-and-Trade Program. The Post 2020 Cap-and-Trade Program continues the existing program for another 10 years. The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers.	**Consistent.** The post-2020 Cap-and-Trade Program indirectly affects people who use the products and services produced by the regulated industrial sources when increased cost of products or services (such as electricity and fuel) are transferred to the consumers. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the program's first compliance period.
Natural and Working Lands Action Plan. The ARB is working in coordination with several other agencies at the federal, state, and local levels, stakeholders, and with the public, to develop measures as outlined in the Scoping Plan Update and the governor's Executive Order B-30-15 to reduce GHG emissions and to cultivate net carbon sequestration potential for California's natural and working land.	**Not Applicable**. The project is residential development and will not be considered natural or working lands.
Source: ARB 2017 Scoping Plan Update.	

Regarding goals for 2050 under Executive Order S-3-05, at this time it is not possible to quantify the emissions savings from future regulatory measures, as they have not yet been developed; nevertheless, it can be anticipated that operation of the project would comply with whatever measures are enacted that state lawmakers decide would lead to an 80 percent reduction below 1990 levels by 2050. In its 2008 Scoping Plan, ARB acknowledged that the "measures needed to meet the 2050 are too far in the future to define in detail." In the First Scoping Plan Update; however, ARB generally described the type of activities required to achieve the 2050 target: "energy demand reduction through efficiency and activity changes; large scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately." The 2017 Scoping Plan provides an intermediate target that is intended to achieve reasonable progress toward the 2050 target.

Accordingly, taking into account the proposed project's emissions, project design features, and the progress being made by the State towards reducing emissions in key sectors such as transportation, industry, and electricity, the project would be consistent with State GHG Plans and would further the State's goals of reducing GHG emissions to 1990 levels by 2020, 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050, and does not obstruct their attainment.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

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Appendix A: CalEEMod Modeling Results

Appendix A: Modeling Assumptions and Results

Modeling Assumptions for Wilson Tract 6241

Construction Schedule

Phase 1 (113 Lots)		
Construction Start Date		8/24/2020
First Occupancy		4/15/2021
Finish Const Phase 1		12/31/2021
Phase 2 (113 Lots)		
Construction Start Date		8/15/2021
First Occupancy		4/15/2022
Finish Const Phase 1		12/31/2022
Cut	50,000 CU	
Fill	50,000 CU	
Balanced onsite		
Total Units		226
APN	310-041-21	
	310-041-22	
Site Acreage		19.83
Phase 1		9.91
Phase 2		9.92

Wilson Premier Homes Tract No. 6241 Construction Fleet and Schedule

Default Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	
1	Site Preparation	Site Preparatio	2020/08/24	2020/09/04	5	10
2	Grading	Grading	2020/09/05	2020/10/02	5	20
3	Building Construction	Building Constr	2020/10/03	2021/08/20	5	230
4	Paving	Paving	2021/08/21	2021/09/17	5	20
5	Architectural Coating	Architectural C	2021/09/18	2021/10/15	5	20

Developers Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	
1	Site Preparation	Site Preparatio	2020/08/24	2020/09/04	5	10
2	Grading	Grading	2020/09/05	2020/10/02	5	20
3	Paving	Paving	2020/10/03	2020/10/30	5	20
4	Building Construction	Building Constr	2020/10/31	2021/12/03	5	285
5	Architectural Coating	Architectural C	2021/12/04	2021/12/31	5	20

Phase Name	Offroad Equipment Type	Amount	Default Hours /Day	No. of Days per Phase	Hours/Phase	Revised Days per Phase	Revised Amount of Equip	Revised Hours/Day	Rev. Hrs/ Phase	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8	10	240	10	3	8	240	247	0.4
Site Preparation	Tractors/Loaders/Backhoes	4	8	10	320	10	4	8	320	97	0.37
Grading	Excavators	1	8	20	160	20	1	8	160	158	0.38
Grading	Graders	1	8	20	160	20	1	8	160	187	0.41
Grading	Rubber Tired Dozers	1	8	20	160	20	1	8	160	247	0.4
Grading	Tractors/Loaders/Backhoes	3	8	20	480	20	3	8	480	97	0.37
Building Construction	Cranes	1	7	230	1610	285	1	5.65	1610	231	0.29
Building Construction	Forklifts	3	8	230	5520	285	3	6.46	5,520	89	0.2
Building Construction	Generator Sets	1	8	230	1840	285	1	6.46	1,840	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7	230	4830	285	3	5.65	4,830	97	0.37
Building Construction	Welders	1	8	230	1840	285	1	6.46	1,840	46	0.45
Paving	Pavers	2	8	20	320	20	2	8	320	130	0.42
Paving	Paving Equipment	2	8	20	320	20	2	8	320	132	0.36
Paving	Rollers	2	8	20	320	20	2	8	320	80	0.38
Architectural Coating	Air Compressors	1	6	20	120	20	1	6	120	78	0.48
					18240				18240		

Phase 2

Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	
1	Site Preparation	Site Preparatio	2021/08/15	2021/08/27	5	10
2	Grading	Grading	2021/08/28	2021/09/24	5	20
3	Building Construction	Building Constr	2021/09/25	2022/08/12	5	230
4	Paving	Paving	2022/08/13	2022/09/09	5	20
5	Architectural Coating	Architectural C	2022/09/10	2022/10/07	5	20

Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	
1	Site Preparation	Site Preparatio	2021/08/15	2021/08/27	5	10
2	Grading	Grading	2021/08/28	2021/09/24	5	20
4	Paving	Paving	2021/09/25	2021/10/22	5	20
3	Building Construction	Building Constr	2021/10/23	2022/12/02	5	290
5	Architectural Coating	Architectural C	2022/12/03	2022/12/30	5	20

Phase Name	Offroad Equipment Type	Amount	Default Hours /Day	No. of Days per Phase	Hours/Phase	Revised Days per Phase	Revised Amount of Equip	Revised Hours/Day	Rev. Hrs/ Phase	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8	10	240	10	3	8	240	247	0.4
Site Preparation	Tractors/Loaders/Backhoes	4	8	10	320	10	4	8	320	97	0.37
Grading	Excavators	1	8	20	160	20	1	8	160	158	0.38
Grading	Graders	1	8	20	160	20	1	8	160	187	0.41
Grading	Rubber Tired Dozers	1	8	20	160	20	1	8	160	247	0.4
Grading	Tractors/Loaders/Backhoes	3	8	20	480	20	3	8	480	97	0.37
Building Construction	Cranes	1	7	230	1610	290	1	5.6	1610	231	0.29
Building Construction	Forklifts	3	8	230	5520	290	3	6.3	5,520	89	0.2
Building Construction	Generator Sets	1	8	230	1840	290	1	6.3	1,840	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7	230	4830	290	3	5.6	4,830	97	0.37
Building Construction	Welders	1	8	230	1840	290	1	6.3	1,840	46	0.45
Paving	Pavers	2	8	20	320	20	2	8	320	130	0.42
Paving	Paving Equipment	2	8	20	320	20	2	8	320	132	0.36
Paving	Rollers	2	8	20	320	20	2	8	320	80	0.38
Architectural Coating	Air Compressors	1	6	20	120	20	1	6	120	78	0.48
											0.48
					18240				18240		

Appendix A: Emission Summary

Wilson Tract 6241 Emissions Summary

Phase 1		Tons/Year				
Construction Emissions		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
	2020	0.1025	0.9936	0.7550	0.1335	0.0884
	2021	1.0388	1.8861	1.7821	0.1446	0.1027
Total		**1.1413**	**2.8797**	**2.5371**	**0.2781**	**0.1911**

Phase 2						
Construction Emissions		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
	2021	0.0991	0.9623	0.7804	0.2169	0.1313
	2022	1.0143	1.6663	1.7136	0.1280	0.0872
Total		**1.1134**	**2.6286**	**2.4940**	**0.3449**	**0.2185**

Phase 1 and 2 Combined Annual		Tons/Year				
Construction Emissions		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
	2020	0.10	0.99	0.76	0.13	0.09
	2021	1.14	2.85	2.56	0.36	0.23
	2022	1.01	1.67	1.71	0.13	0.09
Total		**2.25**	**5.51**	**5.03**	**0.62**	**0.41**
Highest Emissions in Any Year		**1.14**	**2.85**	**2.56**	**0.36**	**0.23**

Phase 1 Operational	Tons/Year				
Unmitigated Operational Emissions	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
Area	1.22	0.08	2.69	0.31	0.31
Energy	0.02	0.14	0.06	0.01	0.01
Mobile	0.36	1.32	4.11	1.17	0.32
Total	**1.60**	**1.54**	**6.86**	**1.49**	**0.64**

Phase 2 Operational	Tons/Year				
Unmitigated Operational Emissions	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
Area	1.11	0.08	2.69	0.31	0.31
Energy	0.02	0.14	0.06	0.01	0.01
Mobile	0.33	1.22	3.77	0.01	0.32
Total	**1.46**	**1.44**	**6.52**	**0.33**	**0.64**

Phase 1 and 2 Combined Operational	Tons/Year				
Unmitigated Operational Emissions	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
Area	2.33	0.16	5.39	0.61	0.61
Energy	0.03	0.27	0.12	0.02	0.02
Mobile	0.70	2.54	7.88	1.18	0.64
Total	**3.06**	**2.98**	**13.38**	**1.82**	**1.28**

Phase 1 Construction Summer Daily		Pound/Day				
Maximum Daily Emission		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
	2020	4.16	42.46	22.09	10.48	6.53
	2021	82.98	15.50	14.77	1.20	0.85
Max Daily any Year		**82.98**	**42.46**	**22.09**	**10.48**	**6.53**

Phase 2 Construction Summer Daily		Pound/Day				
Maximum Daily Emission		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
	2021	3.97	40.54	21.68	10.33	6.39
	2022	82.97	13.75	14.25	0.11	0.72
Max Daily Any Year		**82.97**	**40.54**	**21.68**	**10.33**	**6.39**

Phase 1 and 2 Combined Construction Summer Daily		Pound/Day				
Maximum Daily Emission		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
	2020	4.16	42.46	22.09	10.48	6.53
	2021	86.95	56.04	36.45	11.52	7.24
	2022	82.97	13.75	14.25	0.11	0.72
Max Daily Any Year		**86.95**	**56.04**	**36.45**	**11.52**	**7.24**

Phase 1 Construction Winter Daily		Pound/Day				
Maximum Daily Emission		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
	2020	4.16	42.47	22.01	10.48	6.53
	2021	82.98	15.53	14.63	1.20	0.85
Max Daily any Year		**82.98**	**42.47**	**22.01**	**10.48**	**6.53**

Phase 2 Construction Winter Daily		Pound/Day				
Maximum Daily Emission		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
	2021	3.97	40.54	21.68	10.32	6.39
	2022	82.97	13.75	14.25	1.07	0.72
Max Daily Any Year		**82.97**	**40.54**	**21.68**	**10.32**	**6.39**

Phase 1 and 2 Combined Construction Winter Daily		Pound/Day				
Maximum Daily Emission		**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
	2020	4.16	42.47	22.01	10.48	6.53
	2021	86.95	56.07	36.31	11.52	7.24
	2022	82.97	13.75	14.25	1.07	0.72
Max Daily Any Year		**86.95**	**56.07**	**36.31**	**11.52**	**7.24**

Operations 2021 Summer	Pound/Day				
Maximum Daily Emissions	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
Area	5.21	1.14	9.71	0.13	0.13
Energy	0.09	0.75	0.32	0.06	0.06
Mobile	0.18	0.47	1.67	0.43	0.12
Total	**5.47**	**2.36**	**11.71**	**0.63**	**0.31**

Area emissions are from mitigated report to reflect no woodburning devices.

Operations 2021 Winter	Pound/Day				
Maximum Daily Emissions	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
Area	5.21	1.14	9.71	0.13	0.13
Energy	0.09	0.75	0.32	0.06	0.06
Mobile	0.12	0.50	1.52	0.43	0.12
	5.42	**2.39**	**11.55**	**0.63**	**0.31**

Area emissions are from mitigated report to reflect no woodburning devices.
Mobile emissions use a 0.5 mile trip length to count only local emissions near the project site

Operations 2022 Summer	Pound/Day				
Maximum Daily Emissions	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
Area	5.20	1.14	9.70	0.13	0.13
Energy	0.09	0.75	0.32	0.06	0.06
Mobile	0.16	0.44	1.54	0.43	0.12
Total	**5.46**	**2.32**	**11.56**	**0.62**	**0.31**

Operations 2022 Winter	Pound/Day				
Maximum Daily Emissions	**ROG**	**NOX**	**CO**	**PM10**	**PM2.5**
Area	5.20	1.14	9.70	0.13	0.13
Energy	0.09	0.75	0.32	0.06	0.06
Mobile	0.11	0.46	1.39	0.43	0.12
	5.41	**2.35**	**11.41**	**0.62**	**0.31**

Combined Operations 2022 Summer — Pound/Day

Maximum Daily Emissions	ROG	NOX	CO	PM10	PM2.5
Area	10.41	2.28	19.42	0.27	0.27
Energy	0.17	1.49	0.63	0.12	0.12
Mobile	0.34	0.91	3.21	0.86	0.24
Total	**10.93**	**4.68**	**23.26**	**1.25**	**0.62**

Combined Operations 2022 Winter — Pound/Day

Maximum Daily Emissions	ROG	NOX	CO	PM10	PM2.5
Area	10.41	2.28	19.42	0.27	0.27
Energy	0.17	1.49	0.63	0.12	0.12
Mobile	0.24	0.96	2.90	0.86	0.24
	10.82	**4.73**	**22.96**	**1.25**	**0.62**

Construction GHG Emissions					Total MT CO2e per year
Year	**MTCO2e**				
2020-2022 Total	844.45		2020	120.78	
Total	**844.45**		2021	301.57	422.36
Amortized over 30 years	28.15		2021	127.05	
			2022	295.05	
		Total		844.45	
		Amortized		28.15	

Operational GHG Emissions 2020

	BAU (MTCO2e)	2022 (MTCO2e)	Percent Reduction
Area	190.87	101.27	46.9%
Energy	895.43	579.53	35.3%
Mobile	2,774.33	1,875.10	32.4%
Waste	116.95	87.72	25.0%
Water	52.80	27.92	47.1%
Total	**4,030.39**	**2,671.54**	**33.7%**
Construction	28.15	28.15	0.0%
Total with Amortized Construction	**4,058.54**	**2,699.69**	**33.5%**

Reduction from BAU **1,358.85**

LCFS 10% reduction for 2020 for calculated by multiplying mitigated mobile by 0.90

Operational GHG Emissions 2030

	BAU (MTCO2e)	2030 (MTCO2e)	Percent Reduction
Area	190.87	101.27	46.9%
Energy	895.43	579.53	35.3%
Mobile	2,774.33	1,355.70	51.1%
Waste	116.95	87.72	25.0%
Water	52.80	27.92	47.1%
Total	**4,030.39**	**2,152.14**	**46.6%**
Construction	28.15	28.15	0.0%
Total with Amortized Construction	**4,058.54**	**2,180.29**	**46.3%**

Reduction from BAU **1,878.24**

LCFS 18% reduction for 2030 for calculated by multiplying mitigated mobile by 0.82

Appendix A: CalEEMod Output

CalEEMod Output

Construction and Operations (Annual)

Wilson Tract 6241 Phase 1

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	113.00	Dwelling Unit	9.91	203,400.00	323

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.025	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Wilson Tract 6241 Phase 1 - Fresno County, Annual

Project Characteristics - PG&E Intensity Factors for 2020

Land Use - Site plan acreage.

Construction Phase - Developers schedule

Off-road Equipment - Developers equipment estimates

Off-road Equipment -

Trips and VMT -

Vehicle Trips - ITE 10th Ed. Trip Generation 9.44, 9.54, 8.55

Woodstoves - Rule 4901 Compliance

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Rule 4601 Compliant Coatings

Fleet Mix - SJVAPCD Residential Fleet Mix

Off-road Equipment -

Architectural Coating - Rule 4601 Architectural Coatings compliance

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	65.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	65.00
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	150	65
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	150	65
tblConstructionPhase	NumDays	230.00	285.00
tblConstructionPhase	PhaseEndDate	8/20/2021	12/3/2021
tblConstructionPhase	PhaseEndDate	9/17/2021	10/30/2020
tblConstructionPhase	PhaseEndDate	10/15/2021	12/31/2021
tblConstructionPhase	PhaseStartDate	10/3/2020	10/31/2020

tblConstructionPhase	PhaseStartDate	8/21/2021	10/3/2020
tblConstructionPhase	PhaseStartDate	9/18/2021	12/4/2021
tblFleetMix	HHD	0.12	0.02
tblFleetMix	LDA	0.49	0.54
tblFleetMix	LDT1	0.03	0.20
tblFleetMix	LDT2	0.17	0.17
tblFleetMix	LHD1	0.02	1.4000e-003
tblFleetMix	LHD2	4.7320e-003	9.0000e-004
tblFleetMix	MCY	5.1540e-003	2.6000e-003
tblFleetMix	MDV	0.12	0.05
tblFleetMix	MH	6.2900e-004	1.6000e-003
tblFleetMix	MHD	0.03	9.0000e-003
tblFleetMix	OBUS	2.3660e-003	0.00
tblFleetMix	SBUS	1.0970e-003	9.0000e-004
tblFleetMix	UBUS	1.5900e-003	4.4000e-003
tblLandUse	LotAcreage	36.69	9.91
tblOffRoadEquipment	UsageHours	7.00	5.65
tblOffRoadEquipment	UsageHours	8.00	6.46
tblOffRoadEquipment	UsageHours	8.00	6.46
tblOffRoadEquipment	UsageHours	7.00	5.65
tblOffRoadEquipment	UsageHours	8.00	6.46
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.025
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1025	0.9936	0.7550	1.3700e-003	0.1679	0.0513	0.2193	0.0866	0.0476	0.1342	0.0000	119.9983	119.9983	0.0315	0.0000	120.7849
2021	1.0388	1.8861	1.7821	3.4300e-003	0.0497	0.0949	0.1446	0.0134	0.0893	0.1027	0.0000	300.0728	300.0728	0.0600	0.0000	301.5734
Maximum	**1.0388**	**1.8861**	**1.7821**	**3.4300e-003**	**0.1679**	**0.0949**	**0.2193**	**0.0866**	**0.0893**	**0.1342**	**0.0000**	**300.0728**	**300.0728**	**0.0600**	**0.0000**	**301.5734**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1025	0.9936	0.7550	1.3700e-003	0.0822	0.0513	0.1335	0.0408	0.0476	0.0884	0.0000	119.9981	119.9981	0.0315	0.0000	120.7848
2021	1.0388	1.8861	1.7821	3.4300e-003	0.0497	0.0949	0.1446	0.0134	0.0893	0.1027	0.0000	300.0725	300.0725	0.0600	0.0000	301.5731
Maximum	**1.0388**	**1.8861**	**1.7821**	**3.4300e-003**	**0.0822**	**0.0949**	**0.1446**	**0.0408**	**0.0893**	**0.1027**	**0.0000**	**300.0725**	**300.0725**	**0.0600**	**0.0000**	**301.5731**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**39.38**	**0.00**	**23.56**	**45.82**	**0.00**	**19.34**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**8-24-2020**	**11-23-2020**	0.8077	0.8077
2	**11-24-2020**	**2-23-2021**	0.5915	0.5915
3	**2-24-2021**	**5-23-2021**	0.5488	0.5488
4	**5-24-2021**	**8-23-2021**	0.5670	0.5670
5	**8-24-2021**	**9-30-2021**	0.2342	0.2342
		Highest	0.8077	0.8077

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2177	0.0819	2.6930	6.3000e-003		0.3073	0.3073		0.3073	0.3073	40.0634	50.3230	90.3864	0.1896	9.0000e-004	95.3927
Energy	0.0159	0.1361	0.0579	8.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	287.8803	287.8803	0.0143	5.1400e-003	289.7669
Mobile	0.3619	1.3235	4.1122	0.0125	1.1586	0.0112	1.1698	0.3102	0.0105	0.3207	0.0000	1,146.7986	1,146.7986	0.0794	0.0000	1,148.7826
Waste						0.0000	0.0000		0.0000	0.0000	23.6038	0.0000	23.6038	1.3949	0.0000	58.4774
Water						0.0000	0.0000		0.0000	0.0000	2.3358	7.3773	9.7131	0.2405	5.7900e-003	17.4525
Total	**1.5955**	**1.5416**	**6.8631**	**0.0197**	**1.1586**	**0.3295**	**1.4881**	**0.3102**	**0.3288**	**0.6390**	**66.0029**	**1,492.3792**	**1,558.3821**	**1.9186**	**0.0118**	**1,609.8720**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9072	0.0519	0.8528	3.1000e-004		8.0200e-003	8.0200e-003		8.0200e-003	8.0200e-003	0.0000	50.3106	50.3106	2.2500e-003	9.0000e-004	50.6343
Energy	0.0159	0.1361	0.0579	8.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	287.8803	287.8803	0.0143	5.1400e-003	289.7669
Mobile	0.3552	1.2704	3.8954	0.0117	1.0787	0.0106	1.0892	0.2888	9.8700e-003	0.2986	0.0000	1,072.7321	1,072.7321	0.0759	0.0000	1,074.6287
Waste						0.0000	0.0000		0.0000	0.0000	17.7028	0.0000	17.7028	1.0462	0.0000	43.8580
Water						0.0000	0.0000		0.0000	0.0000	1.8686	5.9018	7.7704	0.1924	4.6300e-003	13.9620
Total	**1.2783**	**1.4584**	**4.8061**	**0.0129**	**1.0787**	**0.0296**	**1.1082**	**0.2888**	**0.0289**	**0.3177**	**19.5714**	**1,416.8248**	**1,436.3963**	**1.3310**	**0.0107**	**1,472.8499**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**19.88**	**5.39**	**29.97**	**34.59**	**6.90**	**91.02**	**25.53**	**6.90**	**91.21**	**50.28**	**70.35**	**5.06**	**7.83**	**30.63**	**9.81**	**8.51**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/24/2020	9/4/2020	5	10	
2	Grading	Grading	9/5/2020	10/2/2020	5	20	
3	Paving	Paving	10/3/2020	10/30/2020	5	20	
4	Building Construction	Building Construction	10/31/2020	12/3/2021	5	285	
5	Architectural Coating	Architectural Coating	12/4/2021	12/31/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 411,885; Residential Outdoor: 137,295; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	5.65	231	0.29
Building Construction	Forklifts	3	6.46	89	0.20
Building Construction	Generator Sets	1	6.46	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	5.65	97	0.37
Building Construction	Welders	1	6.46	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	41.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	**0.0204**	**0.2121**	**0.1076**	**1.9000e-004**	**0.0903**	**0.0110**	**0.1013**	**0.0497**	**0.0101**	**0.0598**	**0.0000**	**16.7153**	**16.7153**	**5.4100e-003**	**0.0000**	**16.8505**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.5000e-004	2.5000e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6227	0.6227	2.0000e-005	0.0000	0.6232
Total	**3.9000e-004**	**2.5000e-004**	**2.5000e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6227**	**0.6227**	**2.0000e-005**	**0.0000**	**0.6232**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	**0.0204**	**0.2121**	**0.1076**	**1.9000e-004**	**0.0407**	**0.0110**	**0.0516**	**0.0223**	**0.0101**	**0.0325**	**0.0000**	**16.7153**	**16.7153**	**5.4100e-003**	**0.0000**	**16.8505**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	2.5000e-004	2.5000e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6227	0.6227	2.0000e-005	0.0000	0.6232
Total	**3.9000e-004**	**2.5000e-004**	**2.5000e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6227**	**0.6227**	**2.0000e-005**	**0.0000**	**0.6232**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0243	0.2639	0.1605	3.0000e-004		0.0127	0.0127		0.0117	0.0117	0.0000	26.0588	26.0588	8.4300e-003	0.0000	26.2694
Total	**0.0243**	**0.2639**	**0.1605**	**3.0000e-004**	**0.0655**	**0.0127**	**0.0783**	**0.0337**	**0.0117**	**0.0454**	**0.0000**	**26.0588**	**26.0588**	**8.4300e-003**	**0.0000**	**26.2694**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5000e-004	4.1000e-004	4.1700e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0379	1.0379	3.0000e-005	0.0000	1.0386
Total	**6.5000e-004**	**4.1000e-004**	**4.1700e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0379**	**1.0379**	**3.0000e-005**	**0.0000**	**1.0386**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0295	0.0000	0.0295	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0243	0.2639	0.1605	3.0000e-004		0.0127	0.0127		0.0117	0.0117	0.0000	26.0587	26.0587	8.4300e-003	0.0000	26.2694
Total	**0.0243**	**0.2639**	**0.1605**	**3.0000e-004**	**0.0295**	**0.0127**	**0.0422**	**0.0152**	**0.0117**	**0.0269**	**0.0000**	**26.0587**	**26.0587**	**8.4300e-003**	**0.0000**	**26.2694**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5000e-004	4.1000e-004	4.1700e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0379	1.0379	3.0000e-005	0.0000	1.0386
Total	**6.5000e-004**	**4.1000e-004**	**4.1700e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0379**	**1.0379**	**3.0000e-005**	**0.0000**	**1.0386**

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1902
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0136**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1902**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5000e-004	4.1000e-004	4.1700e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0379	1.0379	3.0000e-005	0.0000	1.0386
Total	**6.5000e-004**	**4.1000e-004**	**4.1700e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0379**	**1.0379**	**3.0000e-005**	**0.0000**	**1.0386**

3.4 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1901
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0136**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1901**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.5000e-004	4.1000e-004	4.1700e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0379	1.0379	3.0000e-005	0.0000	1.0386
Total	**6.5000e-004**	**4.1000e-004**	**4.1700e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0379**	**1.0379**	**3.0000e-005**	**0.0000**	**1.0386**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0377	0.3408	0.2993	4.8000e-004		0.0198	0.0198		0.0187	0.0187	0.0000	41.1364	41.1364	0.0100	0.0000	41.3873
Total	**0.0377**	**0.3408**	**0.2993**	**4.8000e-004**		**0.0198**	**0.0198**		**0.0187**	**0.0187**	**0.0000**	**41.1364**	**41.1364**	**0.0100**	**0.0000**	**41.3873**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.9000e-004	0.0327	5.2200e-003	7.0000e-005	1.7500e-003	1.7000e-004	1.9200e-003	5.1000e-004	1.7000e-004	6.7000e-004	0.0000	7.1197	7.1197	8.8000e-004	0.0000	7.1417
Worker	3.8900e-003	2.4700e-003	0.0251	7.0000e-005	7.2100e-003	5.0000e-005	7.2600e-003	1.9200e-003	4.0000e-005	1.9600e-003	0.0000	6.2413	6.2413	1.7000e-004	0.0000	6.2455
Total	**4.8800e-003**	**0.0352**	**0.0303**	**1.4000e-004**	**8.9600e-003**	**2.2000e-004**	**9.1800e-003**	**2.4300e-003**	**2.1000e-004**	**2.6300e-003**	**0.0000**	**13.3610**	**13.3610**	**1.0500e-003**	**0.0000**	**13.3872**

3.5 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0377	0.3408	0.2993	4.8000e-004		0.0198	0.0198		0.0187	0.0187	0.0000	41.1364	41.1364	0.0100	0.0000	41.3872
Total	**0.0377**	**0.3408**	**0.2993**	**4.8000e-004**		**0.0198**	**0.0198**		**0.0187**	**0.0187**	**0.0000**	**41.1364**	**41.1364**	**0.0100**	**0.0000**	**41.3872**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.9000e-004	0.0327	5.2200e-003	7.0000e-005	1.7500e-003	1.7000e-004	1.9200e-003	5.1000e-004	1.7000e-004	6.7000e-004	0.0000	7.1197	7.1197	8.8000e-004	0.0000	7.1417
Worker	3.8900e-003	2.4700e-003	0.0251	7.0000e-005	7.2100e-003	5.0000e-005	7.2600e-003	1.9200e-003	4.0000e-005	1.9600e-003	0.0000	6.2413	6.2413	1.7000e-004	0.0000	6.2455
Total	**4.8800e-003**	**0.0352**	**0.0303**	**1.4000e-004**	**8.9600e-003**	**2.2000e-004**	**9.1800e-003**	**2.4300e-003**	**2.1000e-004**	**2.6300e-003**	**0.0000**	**13.3610**	**13.3610**	**1.0500e-003**	**0.0000**	**13.3872**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1849	1.6958	1.6125	2.6200e-003		0.0933	0.0933		0.0877	0.0877	0.0000	225.3418	225.3418	0.0544	0.0000	226.7009
Total	**0.1849**	**1.6958**	**1.6125**	**2.6200e-003**		**0.0933**	**0.0933**		**0.0877**	**0.0877**	**0.0000**	**225.3418**	**225.3418**	**0.0544**	**0.0000**	**226.7009**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.3700e-003	0.1628	0.0248	4.1000e-004	9.5800e-003	4.4000e-004	0.0100	2.7700e-003	4.2000e-004	3.1900e-003	0.0000	38.6293	38.6293	4.6600e-003	0.0000	38.7459
Worker	0.0197	0.0120	0.1246	3.7000e-004	0.0395	2.5000e-004	0.0397	0.0105	2.3000e-004	0.0107	0.0000	33.0138	33.0138	8.2000e-004	0.0000	33.0341
Total	**0.0241**	**0.1748**	**0.1494**	**7.8000e-004**	**0.0491**	**6.9000e-004**	**0.0498**	**0.0133**	**6.5000e-004**	**0.0139**	**0.0000**	**71.6431**	**71.6431**	**5.4800e-003**	**0.0000**	**71.7800**

3.5 Building Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1849	1.6958	1.6125	2.6200e-003		0.0933	0.0933		0.0877	0.0877	0.0000	225.3416	225.3416	0.0544	0.0000	226.7006
Total	**0.1849**	**1.6958**	**1.6125**	**2.6200e-003**		**0.0933**	**0.0933**		**0.0877**	**0.0877**	**0.0000**	**225.3416**	**225.3416**	**0.0544**	**0.0000**	**226.7006**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.3700e-003	0.1628	0.0248	4.1000e-004	9.5800e-003	4.4000e-004	0.0100	2.7700e-003	4.2000e-004	3.1900e-003	0.0000	38.6293	38.6293	4.6600e-003	0.0000	38.7459
Worker	0.0197	0.0120	0.1246	3.7000e-004	0.0395	2.5000e-004	0.0397	0.0105	2.3000e-004	0.0107	0.0000	33.0138	33.0138	8.2000e-004	0.0000	33.0341
Total	**0.0241**	**0.1748**	**0.1494**	**7.8000e-004**	**0.0491**	**6.9000e-004**	**0.0498**	**0.0133**	**6.5000e-004**	**0.0139**	**0.0000**	**71.6431**	**71.6431**	**5.4800e-003**	**0.0000**	**71.7800**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8273					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.8295**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	1.9000e-004	2.0200e-003	1.0000e-005	6.4000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5346	0.5346	1.0000e-005	0.0000	0.5349
Total	**3.2000e-004**	**1.9000e-004**	**2.0200e-003**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**6.4000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**0.5346**	**0.5346**	**1.0000e-005**	**0.0000**	**0.5349**

3.6 Architectural Coating - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8273					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.8295**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	1.9000e-004	2.0200e-003	1.0000e-005	6.4000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5346	0.5346	1.0000e-005	0.0000	0.5349
Total	**3.2000e-004**	**1.9000e-004**	**2.0200e-003**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**6.4000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**0.5346**	**0.5346**	**1.0000e-005**	**0.0000**	**0.5349**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3552	1.2704	3.8954	0.0117	1.0787	0.0106	1.0892	0.2888	9.8700e-003	0.2986	0.0000	1,072.7321	1,072.7321	0.0759	0.0000	1,074.6287
Unmitigated	0.3619	1.3235	4.1122	0.0125	1.1586	0.0112	1.1698	0.3102	0.0105	0.3207	0.0000	1,146.7986	1,146.7986	0.0794	0.0000	1,148.7826

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,066.72	1,078.02	966.15	3,087,775	2,874,719
Total	1,066.72	1,078.02	966.15	3,087,775	2,874,719

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.537300	0.200000	0.167100	0.054200	0.001400	0.000900	0.009000	0.020600	0.000000	0.004400	0.002600	0.000900	0.001600

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	130.2216	130.2216	0.0112	2.2500e-003	131.1713
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	130.2216	130.2216	0.0112	2.2500e-003	131.1713
NaturalGas Mitigated	0.0159	0.1361	0.0579	8.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	157.6587	157.6587	3.0200e-003	2.8900e-003	158.5956
NaturalGas Unmitigated	0.0159	0.1361	0.0579	8.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	157.6587	157.6587	3.0200e-003	2.8900e-003	158.5956

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	2.95441e +006	0.0159	0.1361	0.0579	8.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	157.6587	157.6587	3.0200e-003	2.8900e-003	158.5956
Total		**0.0159**	**0.1361**	**0.0579**	**8.7000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**157.6587**	**157.6587**	**3.0200e-003**	**2.8900e-003**	**158.5956**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	2.95441e +006	0.0159	0.1361	0.0579	8.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	157.6587	157.6587	3.0200e-003	2.8900e-003	158.5956
Total		**0.0159**	**0.1361**	**0.0579**	**8.7000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**157.6587**	**157.6587**	**3.0200e-003**	**2.8900e-003**	**158.5956**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	989964	130.2216	0.0112	2.2500e-003	131.1713
Total		**130.2216**	**0.0112**	**2.2500e-003**	**131.1713**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	989964	130.2216	0.0112	2.2500e-003	131.1713
Total		**130.2216**	**0.0112**	**2.2500e-003**	**131.1713**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9072	0.0519	0.8528	3.1000e-004		8.0200e-003	8.0200e-003		8.0200e-003	8.0200e-003	0.0000	50.3106	50.3106	2.2500e-003	9.0000e-004	50.6343
Unmitigated	1.2177	0.0819	2.6930	6.3000e-003		0.3073	0.3073		0.3073	0.3073	40.0634	50.3230	90.3864	0.1896	9.0000e-004	95.3927

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1909					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7944					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2069	0.0722	1.8521	6.2500e-003		0.3026	0.3026		0.3026	0.3026	40.0634	48.9524	89.0158	0.1882	9.0000e-004	93.9889
Landscaping	0.0255	9.7100e-003	0.8409	4.0000e-005		4.6400e-003	4.6400e-003		4.6400e-003	4.6400e-003	0.0000	1.3706	1.3706	1.3300e-003	0.0000	1.4038
Total	**1.2177**	**0.0819**	**2.6930**	**6.2900e-003**		**0.3073**	**0.3073**		**0.3073**	**0.3073**	**40.0634**	**50.3230**	**90.3864**	**0.1896**	**9.0000e-004**	**95.3927**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0827					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7944					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9524	48.9524	9.4000e-004	9.0000e-004	49.2433
Landscaping	0.0251	9.6500e-003	0.8348	4.0000e-005		4.6000e-003	4.6000e-003		4.6000e-003	4.6000e-003	0.0000	1.3582	1.3582	1.3100e-003	0.0000	1.3909
Total	**0.9072**	**0.0519**	**0.8528**	**3.1000e-004**		**8.0200e-003**	**8.0200e-003**		**8.0200e-003**	**8.0200e-003**	**0.0000**	**50.3107**	**50.3107**	**2.2500e-003**	**9.0000e-004**	**50.6343**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.7704	0.1924	4.6300e-003	13.9620
Unmitigated	9.7131	0.2405	5.7900e-003	17.4525

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	7.3624 / 4.64152	9.7131	0.2405	5.7900e-003	17.4525
Total		**9.7131**	**0.2405**	**5.7900e-003**	**17.4525**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	5.88992 / 3.71321	7.7704	0.1924	4.6300e-003	13.9620
Total		**7.7704**	**0.1924**	**4.6300e-003**	**13.9620**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	17.7028	1.0462	0.0000	43.8580
Unmitigated	23.6038	1.3949	0.0000	58.4774

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	116.28	23.6038	1.3949	0.0000	58.4774
Total		**23.6038**	**1.3949**	**0.0000**	**58.4774**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	87.21	17.7028	1.0462	0.0000	43.8580
Total		**17.7028**	**1.0462**	**0.0000**	**43.8580**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Wilson Tract 6241 Phase 2

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	113.00	Dwelling Unit	9.92	203,400.00	323

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.025	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E Intensity Factors

Land Use - Site plan acreage.

Construction Phase - Developers schedule

Off-road Equipment - Equipment hours adjusted for longer schedule while retaining default hours of operation

Off-road Equipment -

Trips and VMT -

Vehicle Trips - ITE 10th Ed. Trip Generation 9.44, 9.54, 8.55

Woodstoves - Rule 4901 Compliance

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Fleet Mix - SJVAPCD Residential Fleet Mix

Off-road Equipment -

Architectural Coating - Rule 4601 Compliant Coatings

Area Coating - Rule 4601 Architectural Coatings compliance

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	65.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	65.00
tblAreaCoating	Area_EF_Residential_Exterior	150	65
tblAreaCoating	Area_EF_Residential_Interior	150	65
tblConstructionPhase	NumDays	230.00	290.00
tblConstructionPhase	PhaseEndDate	8/12/2022	12/2/2022
tblConstructionPhase	PhaseEndDate	9/9/2022	10/22/2021
tblConstructionPhase	PhaseEndDate	10/7/2022	12/30/2022

tblConstructionPhase	PhaseStartDate	9/25/2021	10/23/2021
tblConstructionPhase	PhaseStartDate	8/13/2022	9/25/2021
tblConstructionPhase	PhaseStartDate	9/10/2022	12/3/2022
tblFleetMix	HHD	0.13	0.02
tblFleetMix	LDA	0.49	0.53
tblFleetMix	LDT1	0.03	0.20
tblFleetMix	LDT2	0.17	0.17
tblFleetMix	LHD1	0.02	1.3000e-003
tblFleetMix	LHD2	4.5020e-003	9.0000e-004
tblFleetMix	MCY	5.0620e-003	2.5000e-003
tblFleetMix	MDV	0.12	0.05
tblFleetMix	MH	5.9400e-004	1.8000e-003
tblFleetMix	MHD	0.03	8.6000e-003
tblFleetMix	OBUS	2.3630e-003	0.00
tblFleetMix	SBUS	1.0830e-003	7.0000e-004
tblFleetMix	UBUS	1.5190e-003	4.4000e-003
tblLandUse	LotAcreage	36.69	9.92
tblOffRoadEquipment	UsageHours	7.00	5.60
tblOffRoadEquipment	UsageHours	8.00	6.30
tblOffRoadEquipment	UsageHours	8.00	6.30
tblOffRoadEquipment	UsageHours	7.00	5.60
tblOffRoadEquipment	UsageHours	8.00	6.30
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.025
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55

tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0991	0.9623	0.7804	1.4400e-003	0.1692	0.0478	0.2169	0.0869	0.0443	0.1313	0.0000	126.2310	126.2310	0.0326	0.0000	127.0467
2022	1.0143	1.6663	1.7136	3.3500e-003	0.0495	0.0785	0.1280	0.0134	0.0739	0.0872	0.0000	293.5881	293.5881	0.0584	0.0000	295.0488
Maximum	**1.0143**	**1.6663**	**1.7136**	**3.3500e-003**	**0.1692**	**0.0785**	**0.2169**	**0.0869**	**0.0739**	**0.1313**	**0.0000**	**293.5881**	**293.5881**	**0.0584**	**0.0000**	**295.0488**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0991	0.9623	0.7804	1.4400e-003	0.0834	0.0478	0.1312	0.0411	0.0443	0.0854	0.0000	126.2308	126.2308	0.0326	0.0000	127.0465
2022	1.0143	1.6663	1.7136	3.3500e-003	0.0495	0.0785	0.1280	0.0134	0.0739	0.0872	0.0000	293.5878	293.5878	0.0584	0.0000	295.0486
Maximum	**1.0143**	**1.6663**	**1.7136**	**3.3500e-003**	**0.0834**	**0.0785**	**0.1312**	**0.0411**	**0.0739**	**0.0872**	**0.0000**	**293.5878**	**293.5878**	**0.0584**	**0.0000**	**295.0486**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**39.20**	**0.00**	**24.85**	**45.70**	**0.00**	**20.98**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**8-15-2021**	**11-14-2021**	0.7605	0.7605
2	**11-15-2021**	**2-14-2022**	0.5318	0.5318
3	**2-15-2022**	**5-14-2022**	0.4867	0.4867
4	**5-15-2022**	**8-14-2022**	0.5029	0.5029
5	**8-15-2022**	**9-30-2022**	0.2569	0.2569
		Highest	0.7605	0.7605

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.1096	0.0819	2.6939	6.3000e-003		0.3076	0.3076		0.3076	0.3076	40.1038	50.3230	90.4268	0.1897	9.0000e-004	95.4377
Energy	0.0159	0.1361	0.0579	8.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	287.8803	287.8803	0.0143	5.1400e-003	289.7669
Mobile	0.3340	1.2188	3.7672	0.0121	1.1580	0.0106	1.1685	0.3099	9.8600e-003	0.3198	0.0000	1,111.6535	1,111.6535	0.0747	0.0000	1,113.5221
Waste						0.0000	0.0000		0.0000	0.0000	23.6038	0.0000	23.6038	1.3949	0.0000	58.4774
Water						0.0000	0.0000		0.0000	0.0000	2.3358	7.3773	9.7131	0.2405	5.7900e-003	17.4525
Total	**1.4596**	**1.4368**	**6.5191**	**0.0193**	**1.1580**	**0.3291**	**1.4871**	**0.3099**	**0.3284**	**0.6383**	**66.0434**	**1,457.2341**	**1,523.2774**	**1.9142**	**0.0118**	**1,574.6566**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9071	0.0519	0.8519	3.1000e-004		8.0200e-003	8.0200e-003		8.0200e-003	8.0200e-003	0.0000	50.3106	50.3106	2.2400e-003	9.0000e-004	50.6341
Energy	0.0159	0.1361	0.0579	8.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	287.8803	287.8803	0.0143	5.1400e-003	289.7669
Mobile	0.3279	1.1712	3.5678	0.0113	1.0781	9.9200e-003	1.0880	0.2885	9.2600e-003	0.2978	0.0000	1,039.9345	1,039.9345	0.0715	0.0000	1,041.7218
Waste						0.0000	0.0000		0.0000	0.0000	17.7028	0.0000	17.7028	1.0462	0.0000	43.8580
Water						0.0000	0.0000		0.0000	0.0000	1.8686	5.9018	7.7704	0.1924	4.6300e-003	13.9620
Total	**1.2509**	**1.3592**	**4.4776**	**0.0125**	**1.0781**	**0.0290**	**1.1070**	**0.2885**	**0.0283**	**0.3168**	**19.5714**	**1,384.0272**	**1,403.5987**	**1.3266**	**0.0107**	**1,439.9428**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**14.29**	**5.40**	**31.31**	**35.13**	**6.90**	**91.20**	**25.56**	**6.90**	**91.39**	**50.37**	**70.37**	**5.02**	**7.86**	**30.70**	**9.81**	**8.56**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/15/2021	8/27/2021	5	10	
2	Grading	Grading	8/28/2021	9/24/2021	5	20	
3	Building Construction	Building Construction	10/23/2021	12/2/2022	5	290	
4	Paving	Paving	9/25/2021	10/22/2021	5	20	
5	Architectural Coating	Architectural Coating	12/3/2022	12/30/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 411,885; Residential Outdoor: 137,295; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	5.60	231	0.29
Building Construction	Forklifts	3	6.30	89	0.20
Building Construction	Generator Sets	1	6.30	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	5.60	97	0.37
Building Construction	Welders	1	6.30	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	41.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.2025	0.1058	1.9000e-004		0.0102	0.0102		9.4000e-003	9.4000e-003	0.0000	16.7179	16.7179	5.4100e-003	0.0000	16.8530
Total	**0.0194**	**0.2025**	**0.1058**	**1.9000e-004**	**0.0903**	**0.0102**	**0.1006**	**0.0497**	**9.4000e-003**	**0.0591**	**0.0000**	**16.7179**	**16.7179**	**5.4100e-003**	**0.0000**	**16.8530**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.2000e-004	2.2700e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6014	0.6014	1.0000e-005	0.0000	0.6018
Total	**3.6000e-004**	**2.2000e-004**	**2.2700e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6014**	**0.6014**	**1.0000e-005**	**0.0000**	**0.6018**

3.2 Site Preparation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.2025	0.1058	1.9000e-004		0.0102	0.0102		9.4000e-003	9.4000e-003	0.0000	16.7178	16.7178	5.4100e-003	0.0000	16.8530
Total	**0.0194**	**0.2025**	**0.1058**	**1.9000e-004**	**0.0407**	**0.0102**	**0.0509**	**0.0223**	**9.4000e-003**	**0.0317**	**0.0000**	**16.7178**	**16.7178**	**5.4100e-003**	**0.0000**	**16.8530**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.2000e-004	2.2700e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6014	0.6014	1.0000e-005	0.0000	0.6018
Total	**3.6000e-004**	**2.2000e-004**	**2.2700e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6014**	**0.6014**	**1.0000e-005**	**0.0000**	**0.6018**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0229	0.2474	0.1586	3.0000e-004		0.0116	0.0116		0.0107	0.0107	0.0000	26.0537	26.0537	8.4300e-003	0.0000	26.2644
Total	**0.0229**	**0.2474**	**0.1586**	**3.0000e-004**	**0.0655**	**0.0116**	**0.0771**	**0.0337**	**0.0107**	**0.0443**	**0.0000**	**26.0537**	**26.0537**	**8.4300e-003**	**0.0000**	**26.2644**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	3.7000e-004	3.7800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0023	1.0023	2.0000e-005	0.0000	1.0030
Total	**6.0000e-004**	**3.7000e-004**	**3.7800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0023**	**1.0023**	**2.0000e-005**	**0.0000**	**1.0030**

3.3 Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0295	0.0000	0.0295	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0229	0.2474	0.1586	3.0000e-004		0.0116	0.0116		0.0107	0.0107	0.0000	26.0537	26.0537	8.4300e-003	0.0000	26.2643
Total	**0.0229**	**0.2474**	**0.1586**	**3.0000e-004**	**0.0295**	**0.0116**	**0.0411**	**0.0152**	**0.0107**	**0.0258**	**0.0000**	**26.0537**	**26.0537**	**8.4300e-003**	**0.0000**	**26.2643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	3.7000e-004	3.7800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0023	1.0023	2.0000e-005	0.0000	1.0030
Total	**6.0000e-004**	**3.7000e-004**	**3.7800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0023**	**1.0023**	**2.0000e-005**	**0.0000**	**1.0030**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0377	0.3461	0.3287	5.3000e-004		0.0190	0.0190		0.0179	0.0179	0.0000	45.9661	45.9661	0.0111	0.0000	46.2441
Total	**0.0377**	**0.3461**	**0.3287**	**5.3000e-004**		**0.0190**	**0.0190**		**0.0179**	**0.0179**	**0.0000**	**45.9661**	**45.9661**	**0.0111**	**0.0000**	**46.2441**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.1000e-004	0.0338	5.1400e-003	8.0000e-005	1.9900e-003	9.0000e-005	2.0800e-003	5.7000e-004	9.0000e-005	6.6000e-004	0.0000	8.0144	8.0144	9.7000e-004	0.0000	8.0386
Worker	4.0900e-003	2.5000e-003	0.0259	8.0000e-005	8.1900e-003	5.0000e-005	8.2500e-003	2.1800e-003	5.0000e-005	2.2300e-003	0.0000	6.8493	6.8493	1.7000e-004	0.0000	6.8536
Total	**5.0000e-003**	**0.0363**	**0.0310**	**1.6000e-004**	**0.0102**	**1.4000e-004**	**0.0103**	**2.7500e-003**	**1.4000e-004**	**2.8900e-003**	**0.0000**	**14.8637**	**14.8637**	**1.1400e-003**	**0.0000**	**14.8921**

3.4 Building Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0377	0.3461	0.3287	5.3000e-004		0.0190	0.0190		0.0179	0.0179	0.0000	45.9661	45.9661	0.0111	0.0000	46.2440
Total	**0.0377**	**0.3461**	**0.3287**	**5.3000e-004**		**0.0190**	**0.0190**		**0.0179**	**0.0179**	**0.0000**	**45.9661**	**45.9661**	**0.0111**	**0.0000**	**46.2440**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.1000e-004	0.0338	5.1400e-003	8.0000e-005	1.9900e-003	9.0000e-005	2.0800e-003	5.7000e-004	9.0000e-005	6.6000e-004	0.0000	8.0144	8.0144	9.7000e-004	0.0000	8.0386
Worker	4.0900e-003	2.5000e-003	0.0259	8.0000e-005	8.1900e-003	5.0000e-005	8.2500e-003	2.1800e-003	5.0000e-005	2.2300e-003	0.0000	6.8493	6.8493	1.7000e-004	0.0000	6.8536
Total	**5.0000e-003**	**0.0363**	**0.0310**	**1.6000e-004**	**0.0102**	**1.4000e-004**	**0.0103**	**2.7500e-003**	**1.4000e-004**	**2.8900e-003**	**0.0000**	**14.8637**	**14.8637**	**1.1400e-003**	**0.0000**	**14.8921**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1624	1.4878	1.5576	2.5700e-003		0.0770	0.0770		0.0725	0.0725	0.0000	220.7218	220.7218	0.0530	0.0000	222.0474
Total	**0.1624**	**1.4878**	**1.5576**	**2.5700e-003**		**0.0770**	**0.0770**		**0.0725**	**0.0725**	**0.0000**	**220.7218**	**220.7218**	**0.0530**	**0.0000**	**222.0474**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0500e-003	0.1536	0.0229	4.0000e-004	9.5400e-003	3.7000e-004	9.9200e-003	2.7600e-003	3.6000e-004	3.1100e-003	0.0000	38.1018	38.1018	4.5000e-003	0.0000	38.2144
Worker	0.0182	0.0107	0.1131	3.5000e-004	0.0393	2.4000e-004	0.0396	0.0105	2.2000e-004	0.0107	0.0000	31.6959	31.6959	7.2000e-004	0.0000	31.7140
Total	**0.0223**	**0.1643**	**0.1360**	**7.5000e-004**	**0.0489**	**6.1000e-004**	**0.0495**	**0.0132**	**5.8000e-004**	**0.0138**	**0.0000**	**69.7977**	**69.7977**	**5.2200e-003**	**0.0000**	**69.9283**

3.4 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1624	1.4878	1.5576	2.5700e-003		0.0770	0.0770		0.0725	0.0725	0.0000	220.7215	220.7215	0.0530	0.0000	222.0471
Total	**0.1624**	**1.4878**	**1.5576**	**2.5700e-003**		**0.0770**	**0.0770**		**0.0725**	**0.0725**	**0.0000**	**220.7215**	**220.7215**	**0.0530**	**0.0000**	**222.0471**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.0500e-003	0.1536	0.0229	4.0000e-004	9.5400e-003	3.7000e-004	9.9200e-003	2.7600e-003	3.6000e-004	3.1100e-003	0.0000	38.1018	38.1018	4.5000e-003	0.0000	38.2144
Worker	0.0182	0.0107	0.1131	3.5000e-004	0.0393	2.4000e-004	0.0396	0.0105	2.2000e-004	0.0107	0.0000	31.6959	31.6959	7.2000e-004	0.0000	31.7140
Total	**0.0223**	**0.1643**	**0.1360**	**7.5000e-004**	**0.0489**	**6.1000e-004**	**0.0495**	**0.0132**	**5.8000e-004**	**0.0138**	**0.0000**	**69.7977**	**69.7977**	**5.2200e-003**	**0.0000**	**69.9283**

3.5 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0126**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	3.7000e-004	3.7800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0023	1.0023	2.0000e-005	0.0000	1.0030
Total	**6.0000e-004**	**3.7000e-004**	**3.7800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0023**	**1.0023**	**2.0000e-005**	**0.0000**	**1.0030**

3.5 Paving - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0126**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-004	3.7000e-004	3.7800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0023	1.0023	2.0000e-005	0.0000	1.0030
Total	**6.0000e-004**	**3.7000e-004**	**3.7800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0023**	**1.0023**	**2.0000e-005**	**0.0000**	**1.0030**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8273					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.8293**	**0.0141**	**0.0181**	**3.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	1.7000e-004	1.8400e-003	1.0000e-005	6.4000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5154	0.5154	1.0000e-005	0.0000	0.5157
Total	**3.0000e-004**	**1.7000e-004**	**1.8400e-003**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**6.4000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**0.5154**	**0.5154**	**1.0000e-005**	**0.0000**	**0.5157**

3.6 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8273					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.8293**	**0.0141**	**0.0181**	**3.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	1.7000e-004	1.8400e-003	1.0000e-005	6.4000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5154	0.5154	1.0000e-005	0.0000	0.5157
Total	**3.0000e-004**	**1.7000e-004**	**1.8400e-003**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**6.4000e-004**	**1.7000e-004**	**0.0000**	**1.7000e-004**	**0.0000**	**0.5154**	**0.5154**	**1.0000e-005**	**0.0000**	**0.5157**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3279	1.1712	3.5678	0.0113	1.0781	9.9200e-003	1.0880	0.2885	9.2600e-003	0.2978	0.0000	1,039.9345	1,039.9345	0.0715	0.0000	1,041.7218
Unmitigated	0.3340	1.2188	3.7672	0.0121	1.1580	0.0106	1.1685	0.3099	9.8600e-003	0.3198	0.0000	1,111.6535	1,111.6535	0.0747	0.0000	1,113.5221

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,066.72	1,078.02	966.15	3,087,775	2,874,719
Total	1,066.72	1,078.02	966.15	3,087,775	2,874,719

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.534300	0.203000	0.167300	0.054500	0.001300	0.000900	0.008600	0.020700	0.000000	0.004400	0.002500	0.000700	0.001800

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	130.2216	130.2216	0.0112	2.2500e-003	131.1713
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	130.2216	130.2216	0.0112	2.2500e-003	131.1713
NaturalGas Mitigated	0.0159	0.1361	0.0579	8.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	157.6587	157.6587	3.0200e-003	2.8900e-003	158.5956
NaturalGas Unmitigated	0.0159	0.1361	0.0579	8.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	157.6587	157.6587	3.0200e-003	2.8900e-003	158.5956

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	2.95441e +006	0.0159	0.1361	0.0579	8.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	157.6587	157.6587	3.0200e-003	2.8900e-003	158.5956
Total		**0.0159**	**0.1361**	**0.0579**	**8.7000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**157.6587**	**157.6587**	**3.0200e-003**	**2.8900e-003**	**158.5956**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	2.95441e +006	0.0159	0.1361	0.0579	8.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	157.6587	157.6587	3.0200e-003	2.8900e-003	158.5956
Total		**0.0159**	**0.1361**	**0.0579**	**8.7000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**157.6587**	**157.6587**	**3.0200e-003**	**2.8900e-003**	**158.5956**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	989964	130.2216	0.0112	2.2500e-003	131.1713
Total		**130.2216**	**0.0112**	**2.2500e-003**	**131.1713**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	989964	130.2216	0.0112	2.2500e-003	131.1713
Total		**130.2216**	**0.0112**	**2.2500e-003**	**131.1713**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9071	0.0519	0.8519	3.1000e-004		8.0200e-003	8.0200e-003		8.0200e-003	8.0200e-003	0.0000	50.3106	50.3106	2.2400e-003	9.0000e-004	50.6341
Unmitigated	1.1096	0.0819	2.6939	6.3000e-003		0.3076	0.3076		0.3076	0.3076	40.1038	50.3230	90.4268	0.1897	9.0000e-004	95.4377

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0827					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7944					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2071	0.0722	1.8540	6.2600e-003		0.3029	0.3029		0.3029	0.3029	40.1038	48.9524	89.0563	0.1884	9.0000e-004	94.0341
Landscaping	0.0254	9.6900e-003	0.8399	4.0000e-005		4.6400e-003	4.6400e-003		4.6400e-003	4.6400e-003	0.0000	1.3706	1.3706	1.3200e-003	0.0000	1.4036
Total	**1.1096**	**0.0819**	**2.6939**	**6.3000e-003**		**0.3076**	**0.3076**		**0.3076**	**0.3076**	**40.1038**	**50.3230**	**90.4268**	**0.1897**	**9.0000e-004**	**95.4377**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0827					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7944					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9524	48.9524	9.4000e-004	9.0000e-004	49.2433
Landscaping	0.0250	9.6300e-003	0.8339	4.0000e-005		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	1.3582	1.3582	1.3000e-003	0.0000	1.3908
Total	**0.9071**	**0.0519**	**0.8519**	**3.1000e-004**		**8.0300e-003**	**8.0300e-003**		**8.0300e-003**	**8.0300e-003**	**0.0000**	**50.3107**	**50.3107**	**2.2400e-003**	**9.0000e-004**	**50.6341**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.7704	0.1924	4.6300e-003	13.9620
Unmitigated	9.7131	0.2405	5.7900e-003	17.4525

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	7.3624 / 4.64152	9.7131	0.2405	5.7900e-003	17.4525
Total		**9.7131**	**0.2405**	**5.7900e-003**	**17.4525**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	5.88992 / 3.71321	7.7704	0.1924	4.6300e-003	13.9620
Total		**7.7704**	**0.1924**	**4.6300e-003**	**13.9620**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	17.7028	1.0462	0.0000	43.8580
Unmitigated	23.6038	1.3949	0.0000	58.4774

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	116.28	23.6038	1.3949	0.0000	58.4774
Total		**23.6038**	**1.3949**	**0.0000**	**58.4774**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	87.21	17.7028	1.0462	0.0000	43.8580
Total		**17.7028**	**1.0462**	**0.0000**	**43.8580**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Output

Construction and Operations

(Summer Daily)

Wilson Tract 6241 Phase 1

Fresno County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	113.00	Dwelling Unit	9.91	203,400.00	323

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.025	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E Intensity Factors for 2020

Land Use - Site plan acreage.

Construction Phase - Developers schedule

Off-road Equipment - Developers equipment estimates

Off-road Equipment -

Trips and VMT -

Vehicle Trips - ITE 10th Ed. Trip Generation 9.44, 9.54, 8.55

Woodstoves - Rule 4901 Compliance

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Rule 4601 Compliant Coatings

Fleet Mix - SJVAPCD Residential Fleet Mix

Off-road Equipment -

Architectural Coating - Rule 4601 Architectural Coatings compliance

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	65.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	65.00
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	150	65
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	150	65
tblConstructionPhase	NumDays	230.00	285.00
tblConstructionPhase	PhaseEndDate	8/20/2021	12/3/2021
tblConstructionPhase	PhaseEndDate	9/17/2021	10/30/2020
tblConstructionPhase	PhaseEndDate	10/15/2021	12/31/2021
tblConstructionPhase	PhaseStartDate	10/3/2020	10/31/2020

tblConstructionPhase	PhaseStartDate	8/21/2021	10/3/2020
tblConstructionPhase	PhaseStartDate	9/18/2021	12/4/2021
tblFleetMix	HHD	0.12	0.02
tblFleetMix	LDA	0.49	0.54
tblFleetMix	LDT1	0.03	0.20
tblFleetMix	LDT2	0.17	0.17
tblFleetMix	LHD1	0.02	1.4000e-003
tblFleetMix	LHD2	4.7320e-003	9.0000e-004
tblFleetMix	MCY	5.1540e-003	2.6000e-003
tblFleetMix	MDV	0.12	0.05
tblFleetMix	MH	6.2900e-004	1.6000e-003
tblFleetMix	MHD	0.03	9.0000e-003
tblFleetMix	OBUS	2.3660e-003	0.00
tblFleetMix	SBUS	1.0970e-003	9.0000e-004
tblFleetMix	UBUS	1.5900e-003	4.4000e-003
tblLandUse	LotAcreage	36.69	9.91
tblOffRoadEquipment	UsageHours	7.00	5.65
tblOffRoadEquipment	UsageHours	8.00	6.46
tblOffRoadEquipment	UsageHours	8.00	6.46
tblOffRoadEquipment	UsageHours	7.00	5.65
tblOffRoadEquipment	UsageHours	8.00	6.46
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.025
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.1649	42.4632	22.0925	0.0395	18.2141	2.1983	20.4125	9.9699	2.0225	11.9924	0.0000	3,835.6703	3,835.6703	1.1959	0.0000	3,865.5681
2021	82.9823	15.5013	14.7700	0.0285	0.4181	0.7795	1.1977	0.1128	0.7329	0.8457	0.0000	2,750.6719	2,750.6719	0.5459	0.0000	2,764.3190
Maximum	**82.9823**	**42.4632**	**22.0925**	**0.0395**	**18.2141**	**2.1983**	**20.4125**	**9.9699**	**2.0225**	**11.9924**	**0.0000**	**3,835.6703**	**3,835.6703**	**1.1959**	**0.0000**	**3,865.5681**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.1649	42.4632	22.0925	0.0395	8.2777	2.1983	10.4760	4.5080	2.0225	6.5305	0.0000	3,835.6703	3,835.6703	1.1959	0.0000	3,865.5681
2021	82.9823	15.5013	14.7700	0.0285	0.4181	0.7795	1.1977	0.1128	0.7329	0.8457	0.0000	2,750.6719	2,750.6719	0.5459	0.0000	2,764.3190
Maximum	**82.9823**	**42.4632**	**22.0925**	**0.0395**	**8.2777**	**2.1983**	**10.4760**	**4.5080**	**2.0225**	**6.5305**	**0.0000**	**3,835.6703**	**3,835.6703**	**1.1959**	**0.0000**	**3,865.5681**

Wilson Tract 6241 Phase 1 - Fresno County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	53.33	0.00	45.98	54.17	0.00	42.54	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	10.7285	1.8686	54.5161	0.1530		7.4325	7.4325		7.4325	7.4325	1,077.1298	1,332.9041	2,410.0339	5.0769	0.0241	2,544.1456
Energy	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Mobile	2.6330	7.2119	25.9144	0.0760	6.6880	0.0631	6.7510	1.7865	0.0589	1.8454		7,679.2921	7,679.2921	0.4972		7,691.7210
Total	**13.4487**	**9.8264**	**80.7479**	**0.2337**	**6.6880**	**7.5559**	**14.2438**	**1.7865**	**7.5517**	**9.3382**	**1,077.1298**	**9,964.4644**	**11,041.5942**	**5.5923**	**0.0416**	**11,193.7937**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.2058	1.1381	9.7143	7.0700e-003		0.1345	0.1345		0.1345	0.1345	0.0000	1,332.7529	1,332.7529	0.0413	0.0241	1,340.9747
Energy	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Mobile	2.5923	6.9300	24.4392	0.0710	6.2265	0.0592	6.2857	1.6632	0.0554	1.7186		7,182.0105	7,182.0105	0.4742		7,193.8663
Total	**7.8854**	**8.8141**	**34.4709**	**0.0829**	**6.2265**	**0.2540**	**6.4805**	**1.6632**	**0.2501**	**1.9134**	**0.0000**	**9,467.0316**	**9,467.0316**	**0.5337**	**0.0416**	**9,492.7681**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	41.37	10.30	57.31	64.55	6.90	96.64	54.50	6.90	96.69	79.51	100.00	4.99	14.26	90.46	0.00	15.20

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/24/2020	9/4/2020	5	10	
2	Grading	Grading	9/5/2020	10/2/2020	5	20	
3	Paving	Paving	10/3/2020	10/30/2020	5	20	
4	Building Construction	Building Construction	10/31/2020	12/3/2021	5	285	
5	Architectural Coating	Architectural Coating	12/4/2021	12/31/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 411,885; Residential Outdoor: 137,295; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	5.65	231	0.29
Building Construction	Forklifts	3	6.46	89	0.20
Building Construction	Generator Sets	1	6.46	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	5.65	97	0.37
Building Construction	Welders	1	6.46	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	41.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216		3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**18.0663**	**2.1974**	**20.2637**	**9.9307**	**2.0216**	**11.9523**		**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0884	0.0459	0.5789	1.5100e-003	0.1479	9.3000e-004	0.1488	0.0392	8.5000e-004	0.0401		150.5688	150.5688	4.0800e-003		150.6707
Total	**0.0884**	**0.0459**	**0.5789**	**1.5100e-003**	**0.1479**	**9.3000e-004**	**0.1488**	**0.0392**	**8.5000e-004**	**0.0401**		**150.5688**	**150.5688**	**4.0800e-003**		**150.6707**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**8.1298**	**2.1974**	**10.3272**	**4.4688**	**2.0216**	**6.4904**	**0.0000**	**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0884	0.0459	0.5789	1.5100e-003	0.1479	9.3000e-004	0.1488	0.0392	8.5000e-004	0.0401		150.5688	150.5688	4.0800e-003		150.6707
Total	**0.0884**	**0.0459**	**0.5789**	**1.5100e-003**	**0.1479**	**9.3000e-004**	**0.1488**	**0.0392**	**8.5000e-004**	**0.0401**		**150.5688**	**150.5688**	**4.0800e-003**		**150.6707**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.4288	26.3859	16.0530	0.0297		1.2734	1.2734		1.1716	1.1716		2,872.4851	2,872.4851	0.9290		2,895.7106
Total	**2.4288**	**26.3859**	**16.0530**	**0.0297**	**6.5523**	**1.2734**	**7.8258**	**3.3675**	**1.1716**	**4.5390**		**2,872.4851**	**2,872.4851**	**0.9290**		**2,895.7106**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0737	0.0383	0.4824	1.2600e-003	0.1232	7.7000e-004	0.1240	0.0327	7.1000e-004	0.0334		125.4740	125.4740	3.4000e-003		125.5589
Total	**0.0737**	**0.0383**	**0.4824**	**1.2600e-003**	**0.1232**	**7.7000e-004**	**0.1240**	**0.0327**	**7.1000e-004**	**0.0334**		**125.4740**	**125.4740**	**3.4000e-003**		**125.5589**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	2.4288	26.3859	16.0530	0.0297		1.2734	1.2734		1.1716	1.1716	0.0000	2,872.4851	2,872.4851	0.9290		2,895.7106
Total	**2.4288**	**26.3859**	**16.0530**	**0.0297**	**2.9486**	**1.2734**	**4.2220**	**1.5154**	**1.1716**	**2.6869**	**0.0000**	**2,872.4851**	**2,872.4851**	**0.9290**		**2,895.7106**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0737	0.0383	0.4824	1.2600e-003	0.1232	7.7000e-004	0.1240	0.0327	7.1000e-004	0.0334		125.4740	125.4740	3.4000e-003		125.5589
Total	**0.0737**	**0.0383**	**0.4824**	**1.2600e-003**	**0.1232**	**7.7000e-004**	**0.1240**	**0.0327**	**7.1000e-004**	**0.0334**		**125.4740**	**125.4740**	**3.4000e-003**		**125.5589**

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926		2,207.733 4	2,207.733 4	0.7140		2,225.584 1
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3566**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**		**2,207.733 4**	**2,207.733 4**	**0.7140**		**2,225.584 1**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0737	0.0383	0.4824	1.2600e-003	0.1232	7.7000e-004	0.1240	0.0327	7.1000e-004	0.0334		125.4740	125.4740	3.4000e-003		125.5589
Total	**0.0737**	**0.0383**	**0.4824**	**1.2600e-003**	**0.1232**	**7.7000e-004**	**0.1240**	**0.0327**	**7.1000e-004**	**0.0334**		**125.4740**	**125.4740**	**3.4000e-003**		**125.5589**

3.4 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926	0.0000	2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3566**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**	**0.0000**	**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0737	0.0383	0.4824	1.2600e-003	0.1232	7.7000e-004	0.1240	0.0327	7.1000e-004	0.0334		125.4740	125.4740	3.4000e-003		125.5589
Total	**0.0737**	**0.0383**	**0.4824**	**1.2600e-003**	**0.1232**	**7.7000e-004**	**0.1240**	**0.0327**	**7.1000e-004**	**0.0334**		**125.4740**	**125.4740**	**3.4000e-003**		**125.5589**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7114	15.4891	13.6024	0.0217		0.9018	0.9018		0.8480	0.8480		2,061.1418	2,061.1418	0.5028		2,073.7121
Total	**1.7114**	**15.4891**	**13.6024**	**0.0217**		**0.9018**	**0.9018**		**0.8480**	**0.8480**		**2,061.1418**	**2,061.1418**	**0.5028**		**2,073.7121**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0442	1.4666	0.2198	3.4500e-003	0.0813	7.8200e-003	0.0891	0.0234	7.4800e-003	0.0309		361.4814	361.4814	0.0418		362.5251
Worker	0.2014	0.1046	1.3185	3.4400e-003	0.3368	2.1100e-003	0.3389	0.0893	1.9400e-003	0.0913		342.9622	342.9622	9.2800e-003		343.1943
Total	**0.2455**	**1.5712**	**1.5383**	**6.8900e-003**	**0.4181**	**9.9300e-003**	**0.4280**	**0.1128**	**9.4200e-003**	**0.1222**		**704.4436**	**704.4436**	**0.0510**		**705.7194**

3.5 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7114	15.4891	13.6024	0.0217		0.9018	0.9018		0.8480	0.8480	0.0000	2,061.1418	2,061.1418	0.5028		2,073.7121
Total	**1.7114**	**15.4891**	**13.6024**	**0.0217**		**0.9018**	**0.9018**		**0.8480**	**0.8480**	**0.0000**	**2,061.1418**	**2,061.1418**	**0.5028**		**2,073.7121**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0442	1.4666	0.2198	3.4500e-003	0.0813	7.8200e-003	0.0891	0.0234	7.4800e-003	0.0309		361.4814	361.4814	0.0418		362.5251
Worker	0.2014	0.1046	1.3185	3.4400e-003	0.3368	2.1100e-003	0.3389	0.0893	1.9400e-003	0.0913		342.9622	342.9622	9.2800e-003		343.1943
Total	**0.2455**	**1.5712**	**1.5383**	**6.8900e-003**	**0.4181**	**9.9300e-003**	**0.4280**	**0.1128**	**9.4200e-003**	**0.1222**		**704.4436**	**704.4436**	**0.0510**		**705.7194**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5347	14.0731	13.3817	0.0217		0.7739	0.7739		0.7276	0.7276		2,061.3847	2,061.3847	0.4973		2,073.8168
Total	**1.5347**	**14.0731**	**13.3817**	**0.0217**		**0.7739**	**0.7739**		**0.7276**	**0.7276**		**2,061.3847**	**2,061.3847**	**0.4973**		**2,073.8168**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0356	1.3351	0.1896	3.4200e-003	0.0813	3.5700e-003	0.0849	0.0234	3.4100e-003	0.0268		358.0847	358.0847	0.0403		359.0932
Worker	0.1859	0.0931	1.1987	3.3300e-003	0.3368	2.0400e-003	0.3389	0.0893	1.8800e-003	0.0912		331.2025	331.2025	8.2600e-003		331.4091
Total	**0.2215**	**1.4282**	**1.3882**	**6.7500e-003**	**0.4181**	**5.6100e-003**	**0.4237**	**0.1128**	**5.2900e-003**	**0.1180**		**689.2872**	**689.2872**	**0.0486**		**690.5022**

3.5 Building Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5347	14.0731	13.3817	0.0217		0.7739	0.7739		0.7276	0.7276	0.0000	2,061.3847	2,061.3847	0.4973		2,073.8168
Total	**1.5347**	**14.0731**	**13.3817**	**0.0217**		**0.7739**	**0.7739**		**0.7276**	**0.7276**	**0.0000**	**2,061.3847**	**2,061.3847**	**0.4973**		**2,073.8168**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0356	1.3351	0.1896	3.4200e-003	0.0813	3.5700e-003	0.0849	0.0234	3.4100e-003	0.0268		358.0847	358.0847	0.0403		359.0932
Worker	0.1859	0.0931	1.1987	3.3300e-003	0.3368	2.0400e-003	0.3389	0.0893	1.8800e-003	0.0912		331.2025	331.2025	8.2600e-003		331.4091
Total	**0.2215**	**1.4282**	**1.3882**	**6.7500e-003**	**0.4181**	**5.6100e-003**	**0.4237**	**0.1128**	**5.2900e-003**	**0.1180**		**689.2872**	**689.2872**	**0.0486**		**690.5022**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	82.7271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**82.9460**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0363	0.0182	0.2339	6.5000e-004	0.0657	4.0000e-004	0.0661	0.0174	3.7000e-004	0.0178		64.6249	64.6249	1.6100e-003		64.6652
Total	**0.0363**	**0.0182**	**0.2339**	**6.5000e-004**	**0.0657**	**4.0000e-004**	**0.0661**	**0.0174**	**3.7000e-004**	**0.0178**		**64.6249**	**64.6249**	**1.6100e-003**		**64.6652**

3.6 Architectural Coating - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	82.7271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**82.9460**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0363	0.0182	0.2339	6.5000e-004	0.0657	4.0000e-004	0.0661	0.0174	3.7000e-004	0.0178		64.6249	64.6249	1.6100e-003		64.6652
Total	**0.0363**	**0.0182**	**0.2339**	**6.5000e-004**	**0.0657**	**4.0000e-004**	**0.0661**	**0.0174**	**3.7000e-004**	**0.0178**		**64.6249**	**64.6249**	**1.6100e-003**		**64.6652**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.5923	6.9300	24.4392	0.0710	6.2265	0.0592	6.2857	1.6632	0.0554	1.7186		7,182.0105	7,182.0105	0.4742		7,193.8663
Unmitigated	2.6330	7.2119	25.9144	0.0760	6.6880	0.0631	6.7510	1.7865	0.0589	1.8454		7,679.2921	7,679.2921	0.4972		7,691.7210

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,066.72	1,078.02	966.15	3,087,775	2,874,719
Total	1,066.72	1,078.02	966.15	3,087,775	2,874,719

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.537300	0.200000	0.167100	0.054200	0.001400	0.000900	0.009000	0.020600	0.000000	0.004400	0.002600	0.000900	0.001600

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
NaturalGas Unmitigated	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	8094.28	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Total		**0.0873**	**0.7459**	**0.3174**	**4.7600e-003**		**0.0603**	**0.0603**		**0.0603**	**0.0603**		**952.2682**	**952.2682**	**0.0183**	**0.0175**	**957.9271**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	8.09428	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Total		**0.0873**	**0.7459**	**0.3174**	**4.7600e-003**		**0.0603**	**0.0603**		**0.0603**	**0.0603**		**952.2682**	**952.2682**	**0.0183**	**0.0175**	**957.9271**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.2058	1.1381	9.7143	7.0700e-003		0.1345	0.1345		0.1345	0.1345	0.0000	1,332.7529	1,332.7529	0.0413	0.0241	1,340.9747
Unmitigated	10.7285	1.8686	54.5161	0.1530		7.4325	7.4325		7.4325	7.4325	1,077.1298	1,332.9041	2,410.0339	5.0769	0.0241	2,544.1456

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.0461					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3528					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	5.0465	1.7607	45.1732	0.1525		7.3810	7.3810		7.3810	7.3810	1,077.129 8	1,316.117 7	2,393.247 4	5.0606	0.0241	2,526.952 5
Landscaping	0.2831	0.1079	9.3429	4.9000e-004		0.0515	0.0515		0.0515	0.0515		16.7864	16.7864	0.0163		17.1931
Total	**10.7285**	**1.8686**	**54.5161**	**0.1530**		**7.4325**	**7.4325**		**7.4325**	**7.4325**	**1,077.129 8**	**1,332.904 1**	**2,410.033 9**	**5.0769**	**0.0241**	**2,544.145 6**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4533					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3528					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1206	1.0310	0.4387	6.5800e-003		0.0834	0.0834		0.0834	0.0834	0.0000	1,316.1177	1,316.1177	0.0252	0.0241	1,323.9387
Landscaping	0.2791	0.1072	9.2756	4.9000e-004		0.0511	0.0511		0.0511	0.0511		16.6352	16.6352	0.0160		17.0361
Total	**5.2058**	**1.1381**	**9.7143**	**7.0700e-003**		**0.1345**	**0.1345**		**0.1345**	**0.1345**	**0.0000**	**1,332.7529**	**1,332.7529**	**0.0413**	**0.0241**	**1,340.9747**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Wilson Tract 6241 Phase 2

Fresno County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	113.00	Dwelling Unit	9.92	203,400.00	323

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.025	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E Intensity Factors

Land Use - Site plan acreage.

Construction Phase - Developers schedule

Off-road Equipment - Equipment hours adjusted for longer schedule while retaining default hours of operation

Off-road Equipment -

Trips and VMT -

Vehicle Trips - ITE 10th Ed. Trip Generation 9.44, 9.54, 8.55

Woodstoves - Rule 4901 Compliance

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Fleet Mix - SJVAPCD Residential Fleet Mix

Off-road Equipment -

Architectural Coating - Rule 4601 Compliant Coatings

Area Coating - Rule 4601 Architectural Coatings compliance

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	65.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	65.00
tblAreaCoating	Area_EF_Residential_Exterior	150	65
tblAreaCoating	Area_EF_Residential_Interior	150	65
tblConstructionPhase	NumDays	230.00	290.00
tblConstructionPhase	PhaseEndDate	8/12/2022	12/2/2022
tblConstructionPhase	PhaseEndDate	9/9/2022	10/22/2021
tblConstructionPhase	PhaseEndDate	10/7/2022	12/30/2022

tblConstructionPhase	PhaseStartDate	9/25/2021	10/23/2021
tblConstructionPhase	PhaseStartDate	8/13/2022	9/25/2021
tblConstructionPhase	PhaseStartDate	9/10/2022	12/3/2022
tblFleetMix	HHD	0.13	0.02
tblFleetMix	LDA	0.49	0.53
tblFleetMix	LDT1	0.03	0.20
tblFleetMix	LDT2	0.17	0.17
tblFleetMix	LHD1	0.02	1.3000e-003
tblFleetMix	LHD2	4.5020e-003	9.0000e-004
tblFleetMix	MCY	5.0620e-003	2.5000e-003
tblFleetMix	MDV	0.12	0.05
tblFleetMix	MH	5.9400e-004	1.8000e-003
tblFleetMix	MHD	0.03	8.6000e-003
tblFleetMix	OBUS	2.3630e-003	0.00
tblFleetMix	SBUS	1.0830e-003	7.0000e-004
tblFleetMix	UBUS	1.5190e-003	4.4000e-003
tblLandUse	LotAcreage	36.69	9.92
tblOffRoadEquipment	UsageHours	7.00	5.60
tblOffRoadEquipment	UsageHours	8.00	6.30
tblOffRoadEquipment	UsageHours	8.00	6.30
tblOffRoadEquipment	UsageHours	7.00	5.60
tblOffRoadEquipment	UsageHours	8.00	6.30
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.025
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55

tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	3.9698	40.5380	21.6805	0.0395	18.2141	2.0454	20.2595	9.9699	1.8817	11.8516	0.0000	3,831.0629	3,831.0629	1.1957	0.0000	3,860.9540
2022	82.9653	13.7475	14.2509	0.0280	0.4181	0.6470	1.0651	0.1128	0.6086	0.7214	0.0000	2,701.5231	2,701.5231	0.5335	0.0000	2,714.8617
Maximum	**82.9653**	**40.5380**	**21.6805**	**0.0395**	**18.2141**	**2.0454**	**20.2595**	**9.9699**	**1.8817**	**11.8516**	**0.0000**	**3,831.0629**	**3,831.0629**	**1.1957**	**0.0000**	**3,860.9540**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	3.9698	40.5380	21.6805	0.0395	8.2777	2.0454	10.3230	4.5080	1.8817	6.3898	0.0000	3,831.0629	3,831.0629	1.1957	0.0000	3,860.9540
2022	82.9653	13.7475	14.2509	0.0280	0.4181	0.6470	1.0651	0.1128	0.6086	0.7214	0.0000	2,701.5231	2,701.5231	0.5335	0.0000	2,714.8617
Maximum	**82.9653**	**40.5380**	**21.6805**	**0.0395**	**8.2777**	**2.0454**	**10.3230**	**4.5080**	**1.8817**	**6.3898**	**0.0000**	**3,831.0629**	**3,831.0629**	**1.1957**	**0.0000**	**3,860.9540**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	53.33	0.00	46.60	54.17	0.00	43.44	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	10.1395	1.8691	54.5510	0.1532		7.4399	7.4399		7.4399	7.4399	1,078.2167	1,332.9041	2,411.1208	5.0819	0.0241	2,545.3578
Energy	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Mobile	2.4366	6.6494	23.7797	0.0736	6.6845	0.0592	6.7437	1.7850	0.0553	1.8403		7,441.9374	7,441.9374	0.4674		7,453.6212
Total	**12.6634**	**9.2644**	**78.6481**	**0.2315**	**6.6845**	**7.5594**	**14.2440**	**1.7850**	**7.5555**	**9.3405**	**1,078.2167**	**9,727.1096**	**10,805.3263**	**5.5675**	**0.0416**	**10,956.9060**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.2046	1.1379	9.7042	7.0700e-003		0.1345	0.1345		0.1345	0.1345	0.0000	1,332.7529	1,332.7529	0.0412	0.0241	1,340.9730
Energy	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Mobile	2.3997	6.3973	22.4215	0.0688	6.2233	0.0556	6.2789	1.6619	0.0519	1.7138		6,960.5511	6,960.5511	0.4461		6,971.7024
Total	**7.6916**	**8.2812**	**32.4431**	**0.0806**	**6.2233**	**0.2504**	**6.4737**	**1.6619**	**0.2468**	**1.9086**	**0.0000**	**9,245.5722**	**9,245.5722**	**0.5055**	**0.0416**	**9,270.6024**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	39.26	10.61	58.75	65.17	6.90	96.69	54.55	6.90	96.73	79.57	100.00	4.95	14.44	90.92	0.00	15.39

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/15/2021	8/27/2021	5	10	
2	Grading	Grading	8/28/2021	9/24/2021	5	20	
3	Building Construction	Building Construction	10/23/2021	12/2/2022	5	290	
4	Paving	Paving	9/25/2021	10/22/2021	5	20	
5	Architectural Coating	Architectural Coating	12/3/2022	12/30/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 411,885; Residential Outdoor: 137,295; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	5.60	231	0.29
Building Construction	Forklifts	3	6.30	89	0.20
Building Construction	Generator Sets	1	6.30	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	5.60	97	0.37
Building Construction	Welders	1	6.30	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	41.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.656 9	3,685.656 9	1.1920		3,715.457 3
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.656 9**	**3,685.656 9**	**1.1920**		**3,715.457 3**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0816	0.0409	0.5263	1.4600e-003	0.1479	9.0000e-004	0.1488	0.0392	8.2000e-004	0.0401		145.4060	145.4060	3.6300e-003		145.4967
Total	**0.0816**	**0.0409**	**0.5263**	**1.4600e-003**	**0.1479**	**9.0000e-004**	**0.1488**	**0.0392**	**8.2000e-004**	**0.0401**		**145.4060**	**145.4060**	**3.6300e-003**		**145.4967**

3.2 Site Preparation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**8.1298**	**2.0445**	**10.1743**	**4.4688**	**1.8809**	**6.3497**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0816	0.0409	0.5263	1.4600e-003	0.1479	9.0000e-004	0.1488	0.0392	8.2000e-004	0.0401		145.4060	145.4060	3.6300e-003		145.4967
Total	**0.0816**	**0.0409**	**0.5263**	**1.4600e-003**	**0.1479**	**9.0000e-004**	**0.1488**	**0.0392**	**8.2000e-004**	**0.0401**		**145.4060**	**145.4060**	**3.6300e-003**		**145.4967**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.2903	24.7367	15.8575	0.0296		1.1599	1.1599		1.0671	1.0671		2,871.9285	2,871.9285	0.9288		2,895.1495
Total	**2.2903**	**24.7367**	**15.8575**	**0.0296**	**6.5523**	**1.1599**	**7.7123**	**3.3675**	**1.0671**	**4.4346**		**2,871.9285**	**2,871.9285**	**0.9288**		**2,895.1495**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0680	0.0341	0.4385	1.2200e-003	0.1232	7.5000e-004	0.1240	0.0327	6.9000e-004	0.0334		121.1716	121.1716	3.0200e-003		121.2472
Total	**0.0680**	**0.0341**	**0.4385**	**1.2200e-003**	**0.1232**	**7.5000e-004**	**0.1240**	**0.0327**	**6.9000e-004**	**0.0334**		**121.1716**	**121.1716**	**3.0200e-003**		**121.2472**

3.3 Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	2.2903	24.7367	15.8575	0.0296		1.1599	1.1599		1.0671	1.0671	0.0000	2,871.928 5	2,871.928 5	0.9288		2,895.149 5
Total	**2.2903**	**24.7367**	**15.8575**	**0.0296**	**2.9486**	**1.1599**	**4.1085**	**1.5154**	**1.0671**	**2.5825**	**0.0000**	**2,871.928 5**	**2,871.928 5**	**0.9288**		**2,895.149 5**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0680	0.0341	0.4385	1.2200e-003	0.1232	7.5000e-004	0.1240	0.0327	6.9000e-004	0.0334		121.1716	121.1716	3.0200e-003		121.2472
Total	**0.0680**	**0.0341**	**0.4385**	**1.2200e-003**	**0.1232**	**7.5000e-004**	**0.1240**	**0.0327**	**6.9000e-004**	**0.0334**		**121.1716**	**121.1716**	**3.0200e-003**		**121.2472**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5076	13.8430	13.1488	0.0214		0.7607	0.7607		0.7151	0.7151		2,026.7586	2,026.7586	0.4903		2,039.0156
Total	**1.5076**	**13.8430**	**13.1488**	**0.0214**		**0.7607**	**0.7607**		**0.7151**	**0.7151**		**2,026.7586**	**2,026.7586**	**0.4903**		**2,039.0156**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0356	1.3351	0.1896	3.4200e-003	0.0813	3.5700e-003	0.0849	0.0234	3.4100e-003	0.0268		358.0847	358.0847	0.0403		359.0932
Worker	0.1859	0.0931	1.1987	3.3300e-003	0.3368	2.0400e-003	0.3389	0.0893	1.8800e-003	0.0912		331.2025	331.2025	8.2600e-003		331.4091
Total	**0.2215**	**1.4282**	**1.3882**	**6.7500e-003**	**0.4181**	**5.6100e-003**	**0.4237**	**0.1128**	**5.2900e-003**	**0.1180**		**689.2872**	**689.2872**	**0.0486**		**690.5022**

3.4 Building Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5076	13.8430	13.1488	0.0214		0.7607	0.7607		0.7151	0.7151	0.0000	2,026.7586	2,026.7586	0.4903		2,039.0156
Total	**1.5076**	**13.8430**	**13.1488**	**0.0214**		**0.7607**	**0.7607**		**0.7151**	**0.7151**	**0.0000**	**2,026.7586**	**2,026.7586**	**0.4903**		**2,039.0156**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0356	1.3351	0.1896	3.4200e-003	0.0813	3.5700e-003	0.0849	0.0234	3.4100e-003	0.0268		358.0847	358.0847	0.0403		359.0932
Worker	0.1859	0.0931	1.1987	3.3300e-003	0.3368	2.0400e-003	0.3389	0.0893	1.8800e-003	0.0912		331.2025	331.2025	8.2600e-003		331.4091
Total	**0.2215**	**1.4282**	**1.3882**	**6.7500e-003**	**0.4181**	**5.6100e-003**	**0.4237**	**0.1128**	**5.2900e-003**	**0.1180**		**689.2872**	**689.2872**	**0.0486**		**690.5022**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3532	12.3981	12.9803	0.0214		0.6420	0.6420		0.6039	0.6039		2,027.5343	2,027.5343	0.4871		2,039.7113
Total	**1.3532**	**12.3981**	**12.9803**	**0.0214**		**0.6420**	**0.6420**		**0.6039**	**0.6039**		**2,027.5343**	**2,027.5343**	**0.4871**		**2,039.7113**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0331	1.2663	0.1754	3.3800e-003	0.0813	3.0600e-003	0.0844	0.0234	2.9300e-003	0.0263		354.6977	354.6977	0.0391		355.6750
Worker	0.1724	0.0831	1.0952	3.2000e-003	0.3368	1.9800e-003	0.3388	0.0893	1.8200e-003	0.0912		319.2911	319.2911	7.3700e-003		319.4754
Total	**0.2055**	**1.3494**	**1.2706**	**6.5800e-003**	**0.4181**	**5.0400e-003**	**0.4232**	**0.1128**	**4.7500e-003**	**0.1175**		**673.9888**	**673.9888**	**0.0465**		**675.1504**

3.4 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3532	12.3981	12.9803	0.0214		0.6420	0.6420		0.6039	0.6039	0.0000	2,027.5343	2,027.5343	0.4871		2,039.7113
Total	**1.3532**	**12.3981**	**12.9803**	**0.0214**		**0.6420**	**0.6420**		**0.6039**	**0.6039**	**0.0000**	**2,027.5343**	**2,027.5343**	**0.4871**		**2,039.7113**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0331	1.2663	0.1754	3.3800e-003	0.0813	3.0600e-003	0.0844	0.0234	2.9300e-003	0.0263		354.6977	354.6977	0.0391		355.6750
Worker	0.1724	0.0831	1.0952	3.2000e-003	0.3368	1.9800e-003	0.3388	0.0893	1.8200e-003	0.0912		319.2911	319.2911	7.3700e-003		319.4754
Total	**0.2055**	**1.3494**	**1.2706**	**6.5800e-003**	**0.4181**	**5.0400e-003**	**0.4232**	**0.1128**	**4.7500e-003**	**0.1175**		**673.9888**	**673.9888**	**0.0465**		**675.1504**

3.5 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2556**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**		**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0680	0.0341	0.4385	1.2200e-003	0.1232	7.5000e-004	0.1240	0.0327	6.9000e-004	0.0334		121.1716	121.1716	3.0200e-003		121.2472
Total	**0.0680**	**0.0341**	**0.4385**	**1.2200e-003**	**0.1232**	**7.5000e-004**	**0.1240**	**0.0327**	**6.9000e-004**	**0.0334**		**121.1716**	**121.1716**	**3.0200e-003**		**121.2472**

3.5 Paving - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2556**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**	**0.0000**	**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0680	0.0341	0.4385	1.2200e-003	0.1232	7.5000e-004	0.1240	0.0327	6.9000e-004	0.0334		121.1716	121.1716	3.0200e-003		121.2472
Total	**0.0680**	**0.0341**	**0.4385**	**1.2200e-003**	**0.1232**	**7.5000e-004**	**0.1240**	**0.0327**	**6.9000e-004**	**0.0334**		**121.1716**	**121.1716**	**3.0200e-003**		**121.2472**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	82.7271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**82.9316**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0336	0.0162	0.2137	6.3000e-004	0.0657	3.9000e-004	0.0661	0.0174	3.6000e-004	0.0178		62.3007	62.3007	1.4400e-003		62.3367
Total	**0.0336**	**0.0162**	**0.2137**	**6.3000e-004**	**0.0657**	**3.9000e-004**	**0.0661**	**0.0174**	**3.6000e-004**	**0.0178**		**62.3007**	**62.3007**	**1.4400e-003**		**62.3367**

3.6 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	82.7271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**82.9316**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0336	0.0162	0.2137	6.3000e-004	0.0657	3.9000e-004	0.0661	0.0174	3.6000e-004	0.0178		62.3007	62.3007	1.4400e-003		62.3367
Total	**0.0336**	**0.0162**	**0.2137**	**6.3000e-004**	**0.0657**	**3.9000e-004**	**0.0661**	**0.0174**	**3.6000e-004**	**0.0178**		**62.3007**	**62.3007**	**1.4400e-003**		**62.3367**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.3997	6.3973	22.4215	0.0688	6.2233	0.0556	6.2789	1.6619	0.0519	1.7138		6,960.5511	6,960.5511	0.4461		6,971.7024
Unmitigated	2.4366	6.6494	23.7797	0.0736	6.6845	0.0592	6.7437	1.7850	0.0553	1.8403		7,441.9374	7,441.9374	0.4674		7,453.6212

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,066.72	1,078.02	966.15	3,087,775	2,874,719
Total	1,066.72	1,078.02	966.15	3,087,775	2,874,719

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.534300	0.203000	0.167300	0.054500	0.001300	0.000900	0.008600	0.020700	0.000000	0.004400	0.002500	0.000700	0.001800

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
NaturalGas Unmitigated	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	8094.28	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Total		**0.0873**	**0.7459**	**0.3174**	**4.7600e-003**		**0.0603**	**0.0603**		**0.0603**	**0.0603**		**952.2682**	**952.2682**	**0.0183**	**0.0175**	**957.9271**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	8.09428	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Total		**0.0873**	**0.7459**	**0.3174**	**4.7600e-003**		**0.0603**	**0.0603**		**0.0603**	**0.0603**		**952.2682**	**952.2682**	**0.0183**	**0.0175**	**957.9271**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.2046	1.1379	9.7042	7.0700e-003		0.1345	0.1345		0.1345	0.1345	0.0000	1,332.7529	1,332.7529	0.0412	0.0241	1,340.9730
Unmitigated	10.1395	1.8691	54.5510	0.1532		7.4399	7.4399		7.4399	7.4399	1,078.2167	1,332.9041	2,411.1208	5.0819	0.0241	2,545.3578

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4533					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3528					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	5.0515	1.7615	45.2183	0.1527		7.3884	7.3884		7.3884	7.3884	1,078.2167	1,316.1177	2,394.3344	5.0657	0.0241	2,528.1665
Landscaping	0.2819	0.1076	9.3327	4.9000e-004		0.0516	0.0516		0.0516	0.0516		16.7864	16.7864	0.0162		17.1913
Total	**10.1395**	**1.8691**	**54.5510**	**0.1532**		**7.4399**	**7.4399**		**7.4399**	**7.4399**	**1,078.2167**	**1,332.9041**	**2,411.1208**	**5.0819**	**0.0241**	**2,545.3578**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4533					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3528					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1206	1.0310	0.4387	6.5800e-003		0.0834	0.0834		0.0834	0.0834	0.0000	1,316.1177	1,316.1177	0.0252	0.0241	1,323.9387
Landscaping	0.2779	0.1070	9.2655	4.9000e-004		0.0512	0.0512		0.0512	0.0512		16.6352	16.6352	0.0160		17.0343
Total	**5.2046**	**1.1379**	**9.7042**	**7.0700e-003**		**0.1345**	**0.1345**		**0.1345**	**0.1345**	**0.0000**	**1,332.7529**	**1,332.7529**	**0.0412**	**0.0241**	**1,340.9730**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Output

Construction and Operations

(Winter Daily)

Wilson Tract 6241 Phase 1

Fresno County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	113.00	Dwelling Unit	9.91	203,400.00	323

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.025	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E Intensity Factors for 2020

Land Use - Site plan acreage.

Construction Phase - Developers schedule

Off-road Equipment - Developers equipment estimates

Off-road Equipment -

Trips and VMT -

Vehicle Trips - ITE 10th Ed. Trip Generation 9.44, 9.54, 8.55

Woodstoves - Rule 4901 Compliance

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation - Rule 4601 Compliant Coatings

Fleet Mix - SJVAPCD Residential Fleet Mix

Off-road Equipment -

Architectural Coating - Rule 4601 Architectural Coatings compliance

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	65.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	65.00
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	150	65
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	150	65
tblConstructionPhase	NumDays	230.00	285.00
tblConstructionPhase	PhaseEndDate	8/20/2021	12/3/2021
tblConstructionPhase	PhaseEndDate	9/17/2021	10/30/2020
tblConstructionPhase	PhaseEndDate	10/15/2021	12/31/2021
tblConstructionPhase	PhaseStartDate	10/3/2020	10/31/2020

tblConstructionPhase	PhaseStartDate	8/21/2021	10/3/2020
tblConstructionPhase	PhaseStartDate	9/18/2021	12/4/2021
tblFleetMix	HHD	0.12	0.02
tblFleetMix	LDA	0.49	0.54
tblFleetMix	LDT1	0.03	0.20
tblFleetMix	LDT2	0.17	0.17
tblFleetMix	LHD1	0.02	1.4000e-003
tblFleetMix	LHD2	4.7320e-003	9.0000e-004
tblFleetMix	MCY	5.1540e-003	2.6000e-003
tblFleetMix	MDV	0.12	0.05
tblFleetMix	MH	6.2900e-004	1.6000e-003
tblFleetMix	MHD	0.03	9.0000e-003
tblFleetMix	OBUS	2.3660e-003	0.00
tblFleetMix	SBUS	1.0970e-003	9.0000e-004
tblFleetMix	UBUS	1.5900e-003	4.4000e-003
tblLandUse	LotAcreage	36.69	9.91
tblOffRoadEquipment	UsageHours	7.00	5.65
tblOffRoadEquipment	UsageHours	8.00	6.46
tblOffRoadEquipment	UsageHours	8.00	6.46
tblOffRoadEquipment	UsageHours	7.00	5.65
tblOffRoadEquipment	UsageHours	8.00	6.46
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.025
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.1585	42.4713	22.0066	0.0393	18.2141	2.1983	20.4125	9.9699	2.0225	11.9924	0.0000	3,817.0605	3,817.0605	1.1954	0.0000	3,846.9462
2021	82.9797	15.5289	14.6263	0.0280	0.4181	0.7797	1.1978	0.1128	0.7331	0.8458	0.0000	2,698.5314	2,698.5314	0.5503	0.0000	2,712.2899
Maximum	**82.9797**	**42.4713**	**22.0066**	**0.0393**	**18.2141**	**2.1983**	**20.4125**	**9.9699**	**2.0225**	**11.9924**	**0.0000**	**3,817.0605**	**3,817.0605**	**1.1954**	**0.0000**	**3,846.9462**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.1585	42.4713	22.0066	0.0393	8.2777	2.1983	10.4760	4.5080	2.0225	6.5305	0.0000	3,817.0605	3,817.0605	1.1954	0.0000	3,846.9462
2021	82.9797	15.5289	14.6263	0.0280	0.4181	0.7797	1.1978	0.1128	0.7331	0.8458	0.0000	2,698.5314	2,698.5314	0.5503	0.0000	2,712.2899
Maximum	**82.9797**	**42.4713**	**22.0066**	**0.0393**	**8.2777**	**2.1983**	**10.4760**	**4.5080**	**2.0225**	**6.5305**	**0.0000**	**3,817.0605**	**3,817.0605**	**1.1954**	**0.0000**	**3,846.9462**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	53.33	0.00	45.98	54.17	0.00	42.54	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	10.7285	1.8686	54.5161	0.1530		7.4325	7.4325		7.4325	7.4325	1,077.129 8	1,332.904 1	2,410.033 9	5.0769	0.0241	2,544.145 6
Energy	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Mobile	1.8480	7.6377	23.3040	0.0678	6.6880	0.0635	6.7515	1.7865	0.0594	1.8459		6,868.290 2	6,868.290 2	0.5024		6,880.850 5
Total	**12.6637**	**10.2522**	**78.1375**	**0.2256**	**6.6880**	**7.5563**	**14.2443**	**1.7865**	**7.5522**	**9.3387**	**1,077.129 8**	**9,153.462 5**	**10,230.59 23**	**5.5975**	**0.0416**	**10,382.92 32**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.2058	1.1381	9.7143	7.0700e-003		0.1345	0.1345		0.1345	0.1345	0.0000	1,332.752 9	1,332.752 9	0.0413	0.0241	1,340.974 7
Energy	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Mobile	1.8111	7.3243	22.1579	0.0635	6.2265	0.0597	6.2862	1.6632	0.0558	1.7190		6,424.134 4	6,424.134 4	0.4812		6,436.163 8
Total	**7.1042**	**9.2084**	**32.1896**	**0.0753**	**6.2265**	**0.2545**	**6.4809**	**1.6632**	**0.2506**	**1.9138**	**0.0000**	**8,709.155 4**	**8,709.155 4**	**0.5407**	**0.0416**	**8,735.065 6**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	43.90	10.18	58.80	66.64	6.90	96.63	54.50	6.90	96.68	79.51	100.00	4.85	14.87	90.34	0.00	15.87

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/24/2020	9/4/2020	5	10	
2	Grading	Grading	9/5/2020	10/2/2020	5	20	
3	Paving	Paving	10/3/2020	10/30/2020	5	20	
4	Building Construction	Building Construction	10/31/2020	12/3/2021	5	285	
5	Architectural Coating	Architectural Coating	12/4/2021	12/31/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 411,885; Residential Outdoor: 137,295; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	5.65	231	0.29
Building Construction	Forklifts	3	6.46	89	0.20
Building Construction	Generator Sets	1	6.46	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	5.65	97	0.37
Building Construction	Welders	1	6.46	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	41.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216		3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**18.0663**	**2.1974**	**20.2637**	**9.9307**	**2.0216**	**11.9523**		**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0820	0.0540	0.4930	1.3300e-003	0.1479	9.3000e-004	0.1488	0.0392	8.5000e-004	0.0401		131.9590	131.9590	3.5900e-003		132.0487
Total	**0.0820**	**0.0540**	**0.4930**	**1.3300e-003**	**0.1479**	**9.3000e-004**	**0.1488**	**0.0392**	**8.5000e-004**	**0.0401**		**131.9590**	**131.9590**	**3.5900e-003**		**132.0487**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**8.1298**	**2.1974**	**10.3272**	**4.4688**	**2.0216**	**6.4904**	**0.0000**	**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0820	0.0540	0.4930	1.3300e-003	0.1479	9.3000e-004	0.1488	0.0392	8.5000e-004	0.0401		131.9590	131.9590	3.5900e-003		132.0487
Total	**0.0820**	**0.0540**	**0.4930**	**1.3300e-003**	**0.1479**	**9.3000e-004**	**0.1488**	**0.0392**	**8.5000e-004**	**0.0401**		**131.9590**	**131.9590**	**3.5900e-003**		**132.0487**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.4288	26.3859	16.0530	0.0297		1.2734	1.2734		1.1716	1.1716		2,872.4851	2,872.4851	0.9290		2,895.7106
Total	**2.4288**	**26.3859**	**16.0530**	**0.0297**	**6.5523**	**1.2734**	**7.8258**	**3.3675**	**1.1716**	**4.5390**		**2,872.4851**	**2,872.4851**	**0.9290**		**2,895.7106**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0683	0.0450	0.4108	1.1000e-003	0.1232	7.7000e-004	0.1240	0.0327	7.1000e-004	0.0334		109.9658	109.9658	2.9900e-003		110.0406
Total	**0.0683**	**0.0450**	**0.4108**	**1.1000e-003**	**0.1232**	**7.7000e-004**	**0.1240**	**0.0327**	**7.1000e-004**	**0.0334**		**109.9658**	**109.9658**	**2.9900e-003**		**110.0406**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	2.4288	26.3859	16.0530	0.0297		1.2734	1.2734		1.1716	1.1716	0.0000	2,872.4851	2,872.4851	0.9290		2,895.7106
Total	**2.4288**	**26.3859**	**16.0530**	**0.0297**	**2.9486**	**1.2734**	**4.2220**	**1.5154**	**1.1716**	**2.6869**	**0.0000**	**2,872.4851**	**2,872.4851**	**0.9290**		**2,895.7106**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0683	0.0450	0.4108	1.1000e-003	0.1232	7.7000e-004	0.1240	0.0327	7.1000e-004	0.0334		109.9658	109.9658	2.9900e-003		110.0406
Total	**0.0683**	**0.0450**	**0.4108**	**1.1000e-003**	**0.1232**	**7.7000e-004**	**0.1240**	**0.0327**	**7.1000e-004**	**0.0334**		**109.9658**	**109.9658**	**2.9900e-003**		**110.0406**

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926		2,207.733 4	2,207.733 4	0.7140		2,225.584 1
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3566**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**		**2,207.733 4**	**2,207.733 4**	**0.7140**		**2,225.584 1**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0683	0.0450	0.4108	1.1000e-003	0.1232	7.7000e-004	0.1240	0.0327	7.1000e-004	0.0334		109.9658	109.9658	2.9900e-003		110.0406
Total	**0.0683**	**0.0450**	**0.4108**	**1.1000e-003**	**0.1232**	**7.7000e-004**	**0.1240**	**0.0327**	**7.1000e-004**	**0.0334**		**109.9658**	**109.9658**	**2.9900e-003**		**110.0406**

3.4 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926	0.0000	2,207.733 4	2,207.733 4	0.7140		2,225.584 1
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3566**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**	**0.0000**	**2,207.733 4**	**2,207.733 4**	**0.7140**		**2,225.584 1**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0683	0.0450	0.4108	1.1000e-003	0.1232	7.7000e-004	0.1240	0.0327	7.1000e-004	0.0334		109.9658	109.9658	2.9900e-003		110.0406
Total	**0.0683**	**0.0450**	**0.4108**	**1.1000e-003**	**0.1232**	**7.7000e-004**	**0.1240**	**0.0327**	**7.1000e-004**	**0.0334**		**109.9658**	**109.9658**	**2.9900e-003**		**110.0406**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7114	15.4891	13.6024	0.0217		0.9018	0.9018		0.8480	0.8480		2,061.1418	2,061.1418	0.5028		2,073.7121
Total	**1.7114**	**15.4891**	**13.6024**	**0.0217**		**0.9018**	**0.9018**		**0.8480**	**0.8480**		**2,061.1418**	**2,061.1418**	**0.5028**		**2,073.7121**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0461	1.4835	0.2613	3.3400e-003	0.0813	7.9800e-003	0.0893	0.0234	7.6400e-003	0.0311		350.1785	350.1785	0.0473		351.3611
Worker	0.1868	0.1230	1.1230	3.0200e-003	0.3368	2.1100e-003	0.3389	0.0893	1.9400e-003	0.0913		300.5732	300.5732	8.1800e-003		300.7777
Total	**0.2329**	**1.6065**	**1.3842**	**6.3600e-003**	**0.4181**	**0.0101**	**0.4282**	**0.1128**	**9.5800e-003**	**0.1223**		**650.7517**	**650.7517**	**0.0555**		**652.1387**

3.5 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7114	15.4891	13.6024	0.0217		0.9018	0.9018		0.8480	0.8480	0.0000	2,061.1418	2,061.1418	0.5028		2,073.7121
Total	**1.7114**	**15.4891**	**13.6024**	**0.0217**		**0.9018**	**0.9018**		**0.8480**	**0.8480**	**0.0000**	**2,061.1418**	**2,061.1418**	**0.5028**		**2,073.7121**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0461	1.4835	0.2613	3.3400e-003	0.0813	7.9800e-003	0.0893	0.0234	7.6400e-003	0.0311		350.1785	350.1785	0.0473		351.3611
Worker	0.1868	0.1230	1.1230	3.0200e-003	0.3368	2.1100e-003	0.3389	0.0893	1.9400e-003	0.0913		300.5732	300.5732	8.1800e-003		300.7777
Total	**0.2329**	**1.6065**	**1.3842**	**6.3600e-003**	**0.4181**	**0.0101**	**0.4282**	**0.1128**	**9.5800e-003**	**0.1223**		**650.7517**	**650.7517**	**0.0555**		**652.1387**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5347	14.0731	13.3817	0.0217		0.7739	0.7739		0.7276	0.7276		2,061.3847	2,061.3847	0.4973		2,073.8168
Total	**1.5347**	**14.0731**	**13.3817**	**0.0217**		**0.7739**	**0.7739**		**0.7276**	**0.7276**		**2,061.3847**	**2,061.3847**	**0.4973**		**2,073.8168**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0375	1.3464	0.2277	3.3100e-003	0.0813	3.7100e-003	0.0850	0.0234	3.5500e-003	0.0270		346.8709	346.8709	0.0458		348.0156
Worker	0.1726	0.1094	1.0169	2.9100e-003	0.3368	2.0400e-003	0.3389	0.0893	1.8800e-003	0.0912		290.2759	290.2759	7.2700e-003		290.4575
Total	**0.2101**	**1.4558**	**1.2446**	**6.2200e-003**	**0.4181**	**5.7500e-003**	**0.4239**	**0.1128**	**5.4300e-003**	**0.1182**		**637.1467**	**637.1467**	**0.0531**		**638.4732**

3.5 Building Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5347	14.0731	13.3817	0.0217		0.7739	0.7739		0.7276	0.7276	0.0000	2,061.3847	2,061.3847	0.4973		2,073.8168
Total	**1.5347**	**14.0731**	**13.3817**	**0.0217**		**0.7739**	**0.7739**		**0.7276**	**0.7276**	**0.0000**	**2,061.3847**	**2,061.3847**	**0.4973**		**2,073.8168**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0375	1.3464	0.2277	3.3100e-003	0.0813	3.7100e-003	0.0850	0.0234	3.5500e-003	0.0270		346.8709	346.8709	0.0458		348.0156
Worker	0.1726	0.1094	1.0169	2.9100e-003	0.3368	2.0400e-003	0.3389	0.0893	1.8800e-003	0.0912		290.2759	290.2759	7.2700e-003		290.4575
Total	**0.2101**	**1.4558**	**1.2446**	**6.2200e-003**	**0.4181**	**5.7500e-003**	**0.4239**	**0.1128**	**5.4300e-003**	**0.1182**		**637.1467**	**637.1467**	**0.0531**		**638.4732**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	82.7271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**82.9460**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0337	0.0213	0.1984	5.7000e-004	0.0657	4.0000e-004	0.0661	0.0174	3.7000e-004	0.0178		56.6392	56.6392	1.4200e-003		56.6746
Total	**0.0337**	**0.0213**	**0.1984**	**5.7000e-004**	**0.0657**	**4.0000e-004**	**0.0661**	**0.0174**	**3.7000e-004**	**0.0178**		**56.6392**	**56.6392**	**1.4200e-003**		**56.6746**

3.6 Architectural Coating - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	82.7271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**82.9460**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0337	0.0213	0.1984	5.7000e-004	0.0657	4.0000e-004	0.0661	0.0174	3.7000e-004	0.0178		56.6392	56.6392	1.4200e-003		56.6746
Total	**0.0337**	**0.0213**	**0.1984**	**5.7000e-004**	**0.0657**	**4.0000e-004**	**0.0661**	**0.0174**	**3.7000e-004**	**0.0178**		**56.6392**	**56.6392**	**1.4200e-003**		**56.6746**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8111	7.3243	22.1579	0.0635	6.2265	0.0597	6.2862	1.6632	0.0558	1.7190		6,424.134 4	6,424.134 4	0.4812		6,436.163 8
Unmitigated	1.8480	7.6377	23.3040	0.0678	6.6880	0.0635	6.7515	1.7865	0.0594	1.8459		6,868.290 2	6,868.290 2	0.5024		6,880.850 5

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,066.72	1,078.02	966.15	3,087,775	2,874,719
Total	1,066.72	1,078.02	966.15	3,087,775	2,874,719

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.537300	0.200000	0.167100	0.054200	0.001400	0.000900	0.009000	0.020600	0.000000	0.004400	0.002600	0.000900	0.001600

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
NaturalGas Unmitigated	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	8094.28	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Total		**0.0873**	**0.7459**	**0.3174**	**4.7600e-003**		**0.0603**	**0.0603**		**0.0603**	**0.0603**		**952.2682**	**952.2682**	**0.0183**	**0.0175**	**957.9271**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	8.09428	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Total		**0.0873**	**0.7459**	**0.3174**	**4.7600e-003**		**0.0603**	**0.0603**		**0.0603**	**0.0603**		**952.2682**	**952.2682**	**0.0183**	**0.0175**	**957.9271**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.2058	1.1381	9.7143	7.0700e-003		0.1345	0.1345		0.1345	0.1345	0.0000	1,332.7529	1,332.7529	0.0413	0.0241	1,340.9747
Unmitigated	10.7285	1.8686	54.5161	0.1530		7.4325	7.4325		7.4325	7.4325	1,077.1298	1,332.9041	2,410.0339	5.0769	0.0241	2,544.1456

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.0461					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3528					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	5.0465	1.7607	45.1732	0.1525		7.3810	7.3810		7.3810	7.3810	1,077.1298	1,316.1177	2,393.2474	5.0606	0.0241	2,526.9525
Landscaping	0.2831	0.1079	9.3429	4.9000e-004		0.0515	0.0515		0.0515	0.0515		16.7864	16.7864	0.0163		17.1931
Total	**10.7285**	**1.8686**	**54.5161**	**0.1530**		**7.4325**	**7.4325**		**7.4325**	**7.4325**	**1,077.1298**	**1,332.9041**	**2,410.0339**	**5.0769**	**0.0241**	**2,544.1456**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4533					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3528					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1206	1.0310	0.4387	6.5800e-003		0.0834	0.0834		0.0834	0.0834	0.0000	1,316.1177	1,316.1177	0.0252	0.0241	1,323.9387
Landscaping	0.2791	0.1072	9.2756	4.9000e-004		0.0511	0.0511		0.0511	0.0511		16.6352	16.6352	0.0160		17.0361
Total	**5.2058**	**1.1381**	**9.7143**	**7.0700e-003**		**0.1345**	**0.1345**		**0.1345**	**0.1345**	**0.0000**	**1,332.7529**	**1,332.7529**	**0.0413**	**0.0241**	**1,340.9747**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Wilson Tract 6241 Phase 2

Fresno County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	113.00	Dwelling Unit	9.92	203,400.00	323

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.025	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E Intensity Factors

Land Use - Site plan acreage.

Construction Phase - Developers schedule

Off-road Equipment - Equipment hours adjusted for longer schedule while retaining default hours of operation

Off-road Equipment -

Trips and VMT -

Vehicle Trips - ITE 10th Ed. Trip Generation 9.44, 9.54, 8.55

Woodstoves - Rule 4901 Compliance

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Fleet Mix - SJVAPCD Residential Fleet Mix

Off-road Equipment -

Architectural Coating - Rule 4601 Compliant Coatings

Area Coating - Rule 4601 Architectural Coatings compliance

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	65.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	65.00
tblAreaCoating	Area_EF_Residential_Exterior	150	65
tblAreaCoating	Area_EF_Residential_Interior	150	65
tblConstructionPhase	NumDays	230.00	290.00
tblConstructionPhase	PhaseEndDate	8/12/2022	12/2/2022
tblConstructionPhase	PhaseEndDate	9/9/2022	10/22/2021
tblConstructionPhase	PhaseEndDate	10/7/2022	12/30/2022

tblConstructionPhase	PhaseStartDate	9/25/2021	10/23/2021
tblConstructionPhase	PhaseStartDate	8/13/2022	9/25/2021
tblConstructionPhase	PhaseStartDate	9/10/2022	12/3/2022
tblFleetMix	HHD	0.13	0.02
tblFleetMix	LDA	0.49	0.53
tblFleetMix	LDT1	0.03	0.20
tblFleetMix	LDT2	0.17	0.17
tblFleetMix	LHD1	0.02	1.3000e-003
tblFleetMix	LHD2	4.5020e-003	9.0000e-004
tblFleetMix	MCY	5.0620e-003	2.5000e-003
tblFleetMix	MDV	0.12	0.05
tblFleetMix	MH	5.9400e-004	1.8000e-003
tblFleetMix	MHD	0.03	8.6000e-003
tblFleetMix	OBUS	2.3630e-003	0.00
tblFleetMix	SBUS	1.0830e-003	7.0000e-004
tblFleetMix	UBUS	1.5190e-003	4.4000e-003
tblLandUse	LotAcreage	36.69	9.92
tblOffRoadEquipment	UsageHours	7.00	5.60
tblOffRoadEquipment	UsageHours	8.00	6.30
tblOffRoadEquipment	UsageHours	8.00	6.30
tblOffRoadEquipment	UsageHours	7.00	5.60
tblOffRoadEquipment	UsageHours	8.00	6.30
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.025
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55

tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	3.9640	40.5451	21.6007	0.0393	18.2141	2.0454	20.2595	9.9699	1.8817	11.8516	0.0000	3,813.0951	3,813.0951	1.1952	0.0000	3,842.9752
2022	82.9629	13.7709	14.1163	0.0275	0.4181	0.6471	1.0653	0.1128	0.6088	0.7215	0.0000	2,650.9060	2,650.9060	0.5380	0.0000	2,664.3562
Maximum	**82.9629**	**40.5451**	**21.6007**	**0.0393**	**18.2141**	**2.0454**	**20.2595**	**9.9699**	**1.8817**	**11.8516**	**0.0000**	**3,813.0951**	**3,813.0951**	**1.1952**	**0.0000**	**3,842.9752**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	3.9640	40.5451	21.6007	0.0393	8.2777	2.0454	10.3230	4.5080	1.8817	6.3898	0.0000	3,813.0951	3,813.0951	1.1952	0.0000	3,842.9752
2022	82.9629	13.7709	14.1163	0.0275	0.4181	0.6471	1.0653	0.1128	0.6088	0.7215	0.0000	2,650.9060	2,650.9060	0.5380	0.0000	2,664.3562
Maximum	**82.9629**	**40.5451**	**21.6007**	**0.0393**	**8.2777**	**2.0454**	**10.3230**	**4.5080**	**1.8817**	**6.3898**	**0.0000**	**3,813.0951**	**3,813.0951**	**1.1952**	**0.0000**	**3,842.9752**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	53.33	0.00	46.60	54.17	0.00	43.44	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	10.1395	1.8691	54.5510	0.1532		7.4399	7.4399		7.4399	7.4399	1,078.2167	1,332.9041	2,411.1208	5.0819	0.0241	2,545.3578
Energy	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Mobile	1.6996	7.0257	21.3062	0.0657	6.6845	0.0596	6.7442	1.7850	0.0557	1.8407		6,658.1134	6,658.1134	0.4736		6,669.9535
Total	**11.9263**	**9.6407**	**76.1746**	**0.2236**	**6.6845**	**7.5599**	**14.2444**	**1.7850**	**7.5559**	**9.3409**	**1,078.2167**	**8,943.2856**	**10,021.5023**	**5.5737**	**0.0416**	**10,173.2384**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.2046	1.1379	9.7042	7.0700e-003		0.1345	0.1345		0.1345	0.1345	0.0000	1,332.7529	1,332.7529	0.0412	0.0241	1,340.9730
Energy	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Mobile	1.6660	6.7454	20.2537	0.0615	6.2233	0.0560	6.2793	1.6619	0.0523	1.7142		6,227.9809	6,227.9809	0.4538		6,239.3267
Total	**6.9579**	**8.6292**	**30.2753**	**0.0733**	**6.2233**	**0.2509**	**6.4742**	**1.6619**	**0.2472**	**1.9090**	**0.0000**	**8,513.0020**	**8,513.0020**	**0.5133**	**0.0416**	**8,538.2267**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	41.66	10.49	60.26	67.22	6.90	96.68	54.55	6.90	96.73	79.56	100.00	4.81	15.05	90.79	0.00	16.07

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/15/2021	8/27/2021	5	10	
2	Grading	Grading	8/28/2021	9/24/2021	5	20	
3	Building Construction	Building Construction	10/23/2021	12/2/2022	5	290	
4	Paving	Paving	9/25/2021	10/22/2021	5	20	
5	Architectural Coating	Architectural Coating	12/3/2022	12/30/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 411,885; Residential Outdoor: 137,295; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	5.60	231	0.29
Building Construction	Forklifts	3	6.30	89	0.20
Building Construction	Generator Sets	1	6.30	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	5.60	97	0.37
Building Construction	Welders	1	6.30	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	41.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.656 9	3,685.656 9	1.1920		3,715.457 3
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.656 9**	**3,685.656 9**	**1.1920**		**3,715.457 3**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0758	0.0480	0.4465	1.2800e-003	0.1479	9.0000e-004	0.1488	0.0392	8.2000e-004	0.0401		127.4382	127.4382	3.1900e-003		127.5179
Total	**0.0758**	**0.0480**	**0.4465**	**1.2800e-003**	**0.1479**	**9.0000e-004**	**0.1488**	**0.0392**	**8.2000e-004**	**0.0401**		**127.4382**	**127.4382**	**3.1900e-003**		**127.5179**

3.2 Site Preparation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**8.1298**	**2.0445**	**10.1743**	**4.4688**	**1.8809**	**6.3497**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0758	0.0480	0.4465	1.2800e-003	0.1479	9.0000e-004	0.1488	0.0392	8.2000e-004	0.0401		127.4382	127.4382	3.1900e-003		127.5179
Total	**0.0758**	**0.0480**	**0.4465**	**1.2800e-003**	**0.1479**	**9.0000e-004**	**0.1488**	**0.0392**	**8.2000e-004**	**0.0401**		**127.4382**	**127.4382**	**3.1900e-003**		**127.5179**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.2903	24.7367	15.8575	0.0296		1.1599	1.1599		1.0671	1.0671		2,871.928 5	2,871.928 5	0.9288		2,895.149 5
Total	**2.2903**	**24.7367**	**15.8575**	**0.0296**	**6.5523**	**1.1599**	**7.7123**	**3.3675**	**1.0671**	**4.4346**		**2,871.928 5**	**2,871.928 5**	**0.9288**		**2,895.149 5**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0632	0.0400	0.3720	1.0700e-003	0.1232	7.5000e-004	0.1240	0.0327	6.9000e-004	0.0334		106.1985	106.1985	2.6600e-003		106.2650
Total	**0.0632**	**0.0400**	**0.3720**	**1.0700e-003**	**0.1232**	**7.5000e-004**	**0.1240**	**0.0327**	**6.9000e-004**	**0.0334**		**106.1985**	**106.1985**	**2.6600e-003**		**106.2650**

3.3 Grading - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	2.2903	24.7367	15.8575	0.0296		1.1599	1.1599		1.0671	1.0671	0.0000	2,871.9285	2,871.9285	0.9288		2,895.1495
Total	**2.2903**	**24.7367**	**15.8575**	**0.0296**	**2.9486**	**1.1599**	**4.1085**	**1.5154**	**1.0671**	**2.5825**	**0.0000**	**2,871.9285**	**2,871.9285**	**0.9288**		**2,895.1495**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0632	0.0400	0.3720	1.0700e-003	0.1232	7.5000e-004	0.1240	0.0327	6.9000e-004	0.0334		106.1985	106.1985	2.6600e-003		106.2650
Total	**0.0632**	**0.0400**	**0.3720**	**1.0700e-003**	**0.1232**	**7.5000e-004**	**0.1240**	**0.0327**	**6.9000e-004**	**0.0334**		**106.1985**	**106.1985**	**2.6600e-003**		**106.2650**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5076	13.8430	13.1488	0.0214		0.7607	0.7607		0.7151	0.7151		2,026.7586	2,026.7586	0.4903		2,039.0156
Total	**1.5076**	**13.8430**	**13.1488**	**0.0214**		**0.7607**	**0.7607**		**0.7151**	**0.7151**		**2,026.7586**	**2,026.7586**	**0.4903**		**2,039.0156**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0375	1.3464	0.2277	3.3100e-003	0.0813	3.7100e-003	0.0850	0.0234	3.5500e-003	0.0270		346.8709	346.8709	0.0458		348.0156
Worker	0.1726	0.1094	1.0169	2.9100e-003	0.3368	2.0400e-003	0.3389	0.0893	1.8800e-003	0.0912		290.2759	290.2759	7.2700e-003		290.4575
Total	**0.2101**	**1.4558**	**1.2446**	**6.2200e-003**	**0.4181**	**5.7500e-003**	**0.4239**	**0.1128**	**5.4300e-003**	**0.1182**		**637.1467**	**637.1467**	**0.0531**		**638.4732**

3.4 Building Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5076	13.8430	13.1488	0.0214		0.7607	0.7607		0.7151	0.7151	0.0000	2,026.7586	2,026.7586	0.4903		2,039.0156
Total	**1.5076**	**13.8430**	**13.1488**	**0.0214**		**0.7607**	**0.7607**		**0.7151**	**0.7151**	**0.0000**	**2,026.7586**	**2,026.7586**	**0.4903**		**2,039.0156**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0375	1.3464	0.2277	3.3100e-003	0.0813	3.7100e-003	0.0850	0.0234	3.5500e-003	0.0270		346.8709	346.8709	0.0458		348.0156
Worker	0.1726	0.1094	1.0169	2.9100e-003	0.3368	2.0400e-003	0.3389	0.0893	1.8800e-003	0.0912		290.2759	290.2759	7.2700e-003		290.4575
Total	**0.2101**	**1.4558**	**1.2446**	**6.2200e-003**	**0.4181**	**5.7500e-003**	**0.4239**	**0.1128**	**5.4300e-003**	**0.1182**		**637.1467**	**637.1467**	**0.0531**		**638.4732**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3532	12.3981	12.9803	0.0214		0.6420	0.6420		0.6039	0.6039		2,027.5343	2,027.5343	0.4871		2,039.7113
Total	**1.3532**	**12.3981**	**12.9803**	**0.0214**		**0.6420**	**0.6420**		**0.6039**	**0.6039**		**2,027.5343**	**2,027.5343**	**0.4871**		**2,039.7113**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0349	1.2753	0.2109	3.2800e-003	0.0813	3.2000e-003	0.0845	0.0234	3.0600e-003	0.0265		343.5165	343.5165	0.0445		344.6279
Worker	0.1604	0.0976	0.9251	2.8100e-003	0.3368	1.9800e-003	0.3388	0.0893	1.8200e-003	0.0912		279.8552	279.8552	6.4700e-003		280.0170
Total	**0.1953**	**1.3729**	**1.1360**	**6.0900e-003**	**0.4181**	**5.1800e-003**	**0.4233**	**0.1128**	**4.8800e-003**	**0.1176**		**623.3717**	**623.3717**	**0.0509**		**624.6449**

3.4 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3532	12.3981	12.9803	0.0214		0.6420	0.6420		0.6039	0.6039	0.0000	2,027.5343	2,027.5343	0.4871		2,039.7113
Total	**1.3532**	**12.3981**	**12.9803**	**0.0214**		**0.6420**	**0.6420**		**0.6039**	**0.6039**	**0.0000**	**2,027.5343**	**2,027.5343**	**0.4871**		**2,039.7113**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0349	1.2753	0.2109	3.2800e-003	0.0813	3.2000e-003	0.0845	0.0234	3.0600e-003	0.0265		343.5165	343.5165	0.0445		344.6279
Worker	0.1604	0.0976	0.9251	2.8100e-003	0.3368	1.9800e-003	0.3388	0.0893	1.8200e-003	0.0912		279.8552	279.8552	6.4700e-003		280.0170
Total	**0.1953**	**1.3729**	**1.1360**	**6.0900e-003**	**0.4181**	**5.1800e-003**	**0.4233**	**0.1128**	**4.8800e-003**	**0.1176**		**623.3717**	**623.3717**	**0.0509**		**624.6449**

3.5 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2556**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**		**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0632	0.0400	0.3720	1.0700e-003	0.1232	7.5000e-004	0.1240	0.0327	6.9000e-004	0.0334		106.1985	106.1985	2.6600e-003		106.2650
Total	**0.0632**	**0.0400**	**0.3720**	**1.0700e-003**	**0.1232**	**7.5000e-004**	**0.1240**	**0.0327**	**6.9000e-004**	**0.0334**		**106.1985**	**106.1985**	**2.6600e-003**		**106.2650**

3.5 Paving - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2556**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**	**0.0000**	**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0632	0.0400	0.3720	1.0700e-003	0.1232	7.5000e-004	0.1240	0.0327	6.9000e-004	0.0334		106.1985	106.1985	2.6600e-003		106.2650
Total	**0.0632**	**0.0400**	**0.3720**	**1.0700e-003**	**0.1232**	**7.5000e-004**	**0.1240**	**0.0327**	**6.9000e-004**	**0.0334**		**106.1985**	**106.1985**	**2.6600e-003**		**106.2650**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	82.7271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**82.9316**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0313	0.0191	0.1805	5.5000e-004	0.0657	3.9000e-004	0.0661	0.0174	3.6000e-004	0.0178		54.6059	54.6059	1.2600e-003		54.6375
Total	**0.0313**	**0.0191**	**0.1805**	**5.5000e-004**	**0.0657**	**3.9000e-004**	**0.0661**	**0.0174**	**3.6000e-004**	**0.0178**		**54.6059**	**54.6059**	**1.2600e-003**		**54.6375**

3.6 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	82.7271					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**82.9316**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0313	0.0191	0.1805	5.5000e-004	0.0657	3.9000e-004	0.0661	0.0174	3.6000e-004	0.0178		54.6059	54.6059	1.2600e-003		54.6375
Total	**0.0313**	**0.0191**	**0.1805**	**5.5000e-004**	**0.0657**	**3.9000e-004**	**0.0661**	**0.0174**	**3.6000e-004**	**0.0178**		**54.6059**	**54.6059**	**1.2600e-003**		**54.6375**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	1.6660	6.7454	20.2537	0.0615	6.2233	0.0560	6.2793	1.6619	0.0523	1.7142		6,227.9809	6,227.9809	0.4538		6,239.3267
Unmitigated	1.6996	7.0257	21.3062	0.0657	6.6845	0.0596	6.7442	1.7850	0.0557	1.8407		6,658.1134	6,658.1134	0.4736		6,669.9535

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,066.72	1,078.02	966.15	3,087,775	2,874,719
Total	1,066.72	1,078.02	966.15	3,087,775	2,874,719

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.534300	0.203000	0.167300	0.054500	0.001300	0.000900	0.008600	0.020700	0.000000	0.004400	0.002500	0.000700	0.001800

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
NaturalGas Unmitigated	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	8094.28	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Total		**0.0873**	**0.7459**	**0.3174**	**4.7600e-003**		**0.0603**	**0.0603**		**0.0603**	**0.0603**		**952.2682**	**952.2682**	**0.0183**	**0.0175**	**957.9271**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	8.09428	0.0873	0.7459	0.3174	4.7600e-003		0.0603	0.0603		0.0603	0.0603		952.2682	952.2682	0.0183	0.0175	957.9271
Total		**0.0873**	**0.7459**	**0.3174**	**4.7600e-003**		**0.0603**	**0.0603**		**0.0603**	**0.0603**		**952.2682**	**952.2682**	**0.0183**	**0.0175**	**957.9271**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.2046	1.1379	9.7042	7.0700e-003		0.1345	0.1345		0.1345	0.1345	0.0000	1,332.7529	1,332.7529	0.0412	0.0241	1,340.9730
Unmitigated	10.1395	1.8691	54.5510	0.1532		7.4399	7.4399		7.4399	7.4399	1,078.2167	1,332.9041	2,411.1208	5.0819	0.0241	2,545.3578

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4533					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3528					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	5.0515	1.7615	45.2183	0.1527		7.3884	7.3884		7.3884	7.3884	1,078.2167	1,316.1177	2,394.3344	5.0657	0.0241	2,528.1665
Landscaping	0.2819	0.1076	9.3327	4.9000e-004		0.0516	0.0516		0.0516	0.0516		16.7864	16.7864	0.0162		17.1913
Total	**10.1395**	**1.8691**	**54.5510**	**0.1532**		**7.4399**	**7.4399**		**7.4399**	**7.4399**	**1,078.2167**	**1,332.9041**	**2,411.1208**	**5.0819**	**0.0241**	**2,545.3578**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4533					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3528					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1206	1.0310	0.4387	6.5800e-003		0.0834	0.0834		0.0834	0.0834	0.0000	1,316.1177	1,316.1177	0.0252	0.0241	1,323.9387
Landscaping	0.2779	0.1070	9.2655	4.9000e-004		0.0512	0.0512		0.0512	0.0512		16.6352	16.6352	0.0160		17.0343
Total	**5.2046**	**1.1379**	**9.7042**	**7.0700e-003**		**0.1345**	**0.1345**		**0.1345**	**0.1345**	**0.0000**	**1,332.7529**	**1,332.7529**	**0.0412**	**0.0241**	**1,340.9730**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Output

GHG Business as Usual

Wilson Tract 6241 GHG Ops BAU

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	226.00	Dwelling Unit	19.83	406,800.00	646

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2005
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E Intensity Factors

Land Use - Site plan acreage.

Construction Phase - GHG Ops only

Off-road Equipment -

Off-road Equipment - Equipment hours adjusted for longer schedule while retaining default hours of operation

Trips and VMT -

Architectural Coating - Rule 4601 Compliant Coatings

Vehicle Trips - ITE 10th Ed. Trip Generation 9.44, 9.54, 8.55

Woodstoves - Rule 4901 Compliance

Area Coating - Rule 4601 Architectural Coatings compliance

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Water Mitigation -

Waste Mitigation -

Fleet Mix - SJVAPCD Residential Fleet Mix

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	PhaseEndDate	1/27/2023	1/3/2022
tblConstructionPhase	PhaseStartDate	12/31/2022	1/1/2022
tblFleetMix	HHD	0.11	0.02
tblFleetMix	LDA	0.42	0.53
tblFleetMix	LDT1	0.06	0.20
tblFleetMix	LDT2	0.15	0.17
tblFleetMix	LHD1	0.04	1.3000e-003
tblFleetMix	LHD2	6.9730e-003	9.0000e-004
tblFleetMix	MCY	5.2690e-003	2.5000e-003
tblFleetMix	MDV	0.18	0.05
tblFleetMix	MH	1.5690e-003	1.8000e-003
tblFleetMix	MHD	0.03	8.6000e-003
tblFleetMix	OBUS	2.0990e-003	0.00
tblFleetMix	SBUS	1.2120e-003	7.0000e-004
tblFleetMix	UBUS	1.7870e-003	4.4000e-003
tblLandUse	LotAcreage	73.38	19.83
tblVehicleTrips	HO_TTP	35.70	36.00
tblVehicleTrips	HS_TTP	15.90	16.00
tblVehicleTrips	HW_TTP	48.40	48.00
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022											0.0000	0.1792	0.1792	1.0000e-005	0.0000	0.1794
Maximum											**0.0000**	**0.1792**	**0.1792**	**1.0000e-005**	**0.0000**	**0.1794**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022											0.0000	0.1792	0.1792	1.0000e-005	0.0000	0.1794
Maximum											**0.0000**	**0.1792**	**0.1792**	**1.0000e-005**	**0.0000**	**0.1794**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											80.1672	100.6460	180.8132	0.3810	1.7900e-003	190.8739
Energy											0.0000	891.3009	891.3009	0.0321	0.0112	895.4316
Mobile											0.0000	2,762.7390	2,762.7390	0.4635	0.0000	2,774.3262
Waste											47.2076	0.0000	47.2076	2.7899	0.0000	116.9548
Water											4.6715	32.6305	37.3020	0.4813	0.0116	52.8012
Total											**132.0463**	**3,787.3165**	**3,919.3627**	**4.1478**	**0.0246**	**4,030.3876**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	100.6213	100.6213	6.2000e-003	1.7900e-003	101.3111
Energy											0.0000	891.3009	891.3009	0.0321	0.0112	895.4316
Mobile											0.0000	2,582.5534	2,582.5534	0.4451	0.0000	2,593.6802
Waste											35.4057	0.0000	35.4057	2.0924	0.0000	87.7161
Water											3.7372	26.1044	29.8416	0.3850	9.3100e-003	42.2410
Total											**39.1429**	**3,600.5801**	**3,639.7229**	**2.9608**	**0.0223**	**3,720.3799**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**70.36**	**4.93**	**7.13**	**28.62**	**9.43**	**7.69**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	1/1/2022	1/3/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 823,770; Residential Outdoor: 274,590; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48

<u>Trips and VMT</u>

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	16.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total											**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0515	0.0515	0.0000	0.0000	0.0516
Total											**0.0000**	**0.0515**	**0.0515**	**0.0000**	**0.0000**	**0.0516**

3.2 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total											**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0515	0.0515	0.0000	0.0000	0.0516
Total											**0.0000**	**0.0515**	**0.0515**	**0.0000**	**0.0000**	**0.0516**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	2,582.5534	2,582.5534	0.4451	0.0000	2,593.6802
Unmitigated											0.0000	2,762.7390	2,762.7390	0.4635	0.0000	2,774.3262

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	2,133.44	2,156.04	1932.30	6,166,426	5,740,942
Total	2,133.44	2,156.04	1,932.30	6,166,426	5,740,942

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.00	16.00	36.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.534300	0.203000	0.167300	0.054500	0.001300	0.000900	0.008600	0.020700	0.000000	0.004400	0.002500	0.000700	0.001800

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated											0.0000	575.9835	575.9835	0.0260	5.3900e-003	578.2404
Electricity Unmitigated											0.0000	575.9835	575.9835	0.0260	5.3900e-003	578.2404
NaturalGas Mitigated											0.0000	315.3174	315.3174	6.0400e-003	5.7800e-003	317.1911
NaturalGas Unmitigated											0.0000	315.3174	315.3174	6.0400e-003	5.7800e-003	317.1911

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	5.90882e+006											0.0000	315.3174	315.3174	6.0400e-003	5.7800e-003	317.1911
Total												**0.0000**	**315.3174**	**315.3174**	**6.0400e-003**	**5.7800e-003**	**317.1911**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	5.90882e+006											0.0000	315.3174	315.3174	6.0400e-003	5.7800e-003	317.1911
Total												**0.0000**	**315.3174**	**315.3174**	**6.0400e-003**	**5.7800e-003**	**317.1911**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.97993e +006	575.9835	0.0260	5.3900e-003	578.2404
Total		**575.9835**	**0.0260**	**5.3900e-003**	**578.2404**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.97993e +006	575.9835	0.0260	5.3900e-003	578.2404
Total		**575.9835**	**0.0260**	**5.3900e-003**	**578.2404**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	100.6213	100.6213	6.2000e-003	1.7900e-003	101.3111
Unmitigated											80.1672	100.6460	180.8132	0.3810	1.7900e-003	190.8739

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											80.1672	97.9049	178.0721	0.3766	1.7900e-003	188.0230
Landscaping											0.0000	2.7411	2.7411	4.3900e-003	0.0000	2.8509
Total											**80.1672**	**100.6460**	**180.8132**	**0.3810**	**1.7900e-003**	**190.8739**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	97.9049	97.9049	1.8800e-003	1.7900e-003	98.4867
Landscaping											0.0000	2.7164	2.7164	4.3200e-003	0.0000	2.8244
Total											**0.0000**	**100.6213**	**100.6213**	**6.2000e-003**	**1.7900e-003**	**101.3111**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	29.8416	0.3850	9.3100e-003	42.2410
Unmitigated	37.3020	0.4813	0.0116	52.8012

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	14.7248 / 9.28303	37.3020	0.4813	0.0116	52.8012
Total		**37.3020**	**0.4813**	**0.0116**	**52.8012**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	11.7798 / 7.42643	29.8416	0.3850	9.3100e-003	42.2410
Total		**29.8416**	**0.3850**	**9.3100e-003**	**42.2410**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	35.4057	2.0924	0.0000	87.7161
Unmitigated	47.2076	2.7899	0.0000	116.9548

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	232.56	47.2076	2.7899	0.0000	116.9548
Total		**47.2076**	**2.7899**	**0.0000**	**116.9548**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	174.42	35.4057	2.0924	0.0000	87.7161
Total		**35.4057**	**2.0924**	**0.0000**	**87.7161**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Output

GHG 2030 Mitigated

Wilson Tract 6241 GHG Ops 2030

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	226.00	Dwelling Unit	19.83	406,800.00	646

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2030
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.025	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - PG&E Intensity Factors

Land Use - Site plan acreage.

Construction Phase - GHG Ops only

Off-road Equipment -

Off-road Equipment - Equipment hours adjusted for longer schedule while retaining default hours of operation

Trips and VMT -

Architectural Coating - Rule 4601 Compliant Coatings

Vehicle Trips - ITE 10th Ed. Trip Generation 9.44, 9.54, 8.55

Woodstoves - Rule 4901 Compliance

Area Coating - Rule 4601 Architectural Coatings compliance

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Water Mitigation -

Waste Mitigation -

Fleet Mix - SJVAPCD Residential Fleet Mix

Wilson Tract 6241 GHG Ops 2030 - Fresno County, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	PhaseEndDate	1/27/2023	1/3/2022
tblConstructionPhase	PhaseStartDate	12/31/2022	1/1/2022
tblFleetMix	HHD	0.13	0.02
tblFleetMix	LDA	0.52	0.53
tblFleetMix	LDT1	0.03	0.20
tblFleetMix	LDT2	0.18	0.17
tblFleetMix	LHD1	9.7000e-003	1.3000e-003
tblFleetMix	LHD2	3.4040e-003	9.0000e-004
tblFleetMix	MCY	4.5630e-003	2.5000e-003
tblFleetMix	MDV	0.09	0.05
tblFleetMix	MH	4.3600e-004	1.8000e-003
tblFleetMix	MHD	0.03	8.6000e-003
tblFleetMix	OBUS	2.3060e-003	0.00
tblFleetMix	SBUS	9.9800e-004	7.0000e-004
tblFleetMix	UBUS	1.1850e-003	4.4000e-003
tblLandUse	LotAcreage	73.38	19.83
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.025
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblVehicleTrips	HO_TTP	35.70	36.00
tblVehicleTrips	HS_TTP	15.90	16.00
tblVehicleTrips	HW_TTP	48.40	48.00
tblVehicleTrips	ST_TR	9.91	9.54
tblVehicleTrips	SU_TR	8.62	8.55
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022											0.0000	0.1792	0.1792	1.0000e-005	0.0000	0.1794
Maximum											**0.0000**	**0.1792**	**0.1792**	**1.0000e-005**	**0.0000**	**0.1794**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022											0.0000	0.1792	0.1792	1.0000e-005	0.0000	0.1794
Maximum											**0.0000**	**0.1792**	**0.1792**	**1.0000e-005**	**0.0000**	**0.1794**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											80.1672	100.6460	180.8132	0.3793	1.7900e-003	190.8294
Energy											0.0000	575.7605	575.7605	0.0285	0.0103	579.5337
Mobile											0.0000	1,764.4245	1,764.4245	0.0916	0.0000	1,766.7146
Waste											47.2076	0.0000	47.2076	2.7899	0.0000	116.9548
Water											4.6715	14.7546	19.4261	0.4811	0.0116	34.9050
Total											**132.0463**	**2,455.5856**	**2,587.6319**	**3.7703**	**0.0236**	**2,688.9376**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	100.6213	100.6213	4.4500e-003	1.7900e-003	101.2674
Energy											0.0000	575.7605	575.7605	0.0285	0.0103	579.5337
Mobile											0.0000	1,651.1011	1,651.1011	0.0877	0.0000	1,653.2936
Waste											35.4057	0.0000	35.4057	2.0924	0.0000	87.7161
Water											3.7372	11.8037	15.5409	0.3849	9.2700e-003	27.9240
Total											**39.1429**	**2,339.2866**	**2,378.4295**	**2.5979**	**0.0213**	**2,449.7349**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**70.36**	**4.74**	**8.08**	**31.10**	**9.77**	**8.90**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	1/1/2022	1/3/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 823,770; Residential Outdoor: 274,590; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48

<u>Trips and VMT</u>

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	16.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total											**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0515	0.0515	0.0000	0.0000	0.0516
Total											**0.0000**	**0.0515**	**0.0515**	**0.0000**	**0.0000**	**0.0516**

3.2 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total											**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0515	0.0515	0.0000	0.0000	0.0516
Total											**0.0000**	**0.0515**	**0.0515**	**0.0000**	**0.0000**	**0.0516**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	1,651.1011	1,651.1011	0.0877	0.0000	1,653.2936
Unmitigated											0.0000	1,764.4245	1,764.4245	0.0916	0.0000	1,766.7146

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	2,133.44	2,156.04	1932.30	6,166,426	5,740,942
Total	2,133.44	2,156.04	1,932.30	6,166,426	5,740,942

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.00	16.00	36.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.534300	0.203000	0.167300	0.054500	0.001300	0.000900	0.008600	0.020700	0.000000	0.004400	0.002500	0.000700	0.001800

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated											0.0000	260.4432	260.4432	0.0225	4.4900e-003	262.3426
Electricity Unmitigated											0.0000	260.4432	260.4432	0.0225	4.4900e-003	262.3426
NaturalGas Mitigated											0.0000	315.3174	315.3174	6.0400e-003	5.7800e-003	317.1911
NaturalGas Unmitigated											0.0000	315.3174	315.3174	6.0400e-003	5.7800e-003	317.1911

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	5.90882e+006											0.0000	315.3174	315.3174	6.0400e-003	5.7800e-003	317.1911
Total												**0.0000**	**315.3174**	**315.3174**	**6.0400e-003**	**5.7800e-003**	**317.1911**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	5.90882e+006											0.0000	315.3174	315.3174	6.0400e-003	5.7800e-003	317.1911
Total												**0.0000**	**315.3174**	**315.3174**	**6.0400e-003**	**5.7800e-003**	**317.1911**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.97993e +006	260.4432	0.0225	4.4900e-003	262.3426
Total		**260.4432**	**0.0225**	**4.4900e-003**	**262.3426**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.97993e +006	260.4432	0.0225	4.4900e-003	262.3426
Total		**260.4432**	**0.0225**	**4.4900e-003**	**262.3426**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	100.6213	100.6213	4.4500e-003	1.7900e-003	101.2674
Unmitigated											80.1672	100.6460	180.8132	0.3793	1.7900e-003	190.8294

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											80.1672	97.9049	178.0721	0.3766	1.7900e-003	188.0230
Landscaping											0.0000	2.7411	2.7411	2.6100e-003	0.0000	2.8064
Total											**80.1672**	**100.6460**	**180.8132**	**0.3793**	**1.7900e-003**	**190.8294**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	97.9049	97.9049	1.8800e-003	1.7900e-003	98.4867
Landscaping											0.0000	2.7164	2.7164	2.5700e-003	0.0000	2.7808
Total											**0.0000**	**100.6213**	**100.6213**	**4.4500e-003**	**1.7900e-003**	**101.2674**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	15.5409	0.3849	9.2700e-003	27.9240
Unmitigated	19.4261	0.4811	0.0116	34.9050

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	14.7248 / 9.28303	19.4261	0.4811	0.0116	34.9050
Total		**19.4261**	**0.4811**	**0.0116**	**34.9050**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	11.7798 / 7.42643	15.5409	0.3849	9.2700e-003	27.9240
Total		**15.5409**	**0.3849**	**9.2700e-003**	**27.9240**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	35.4057	2.0924	0.0000	87.7161
Unmitigated	47.2076	2.7899	0.0000	116.9548

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	232.56	47.2076	2.7899	0.0000	116.9548
Total		**47.2076**	**2.7899**	**0.0000**	**116.9548**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	174.42	35.4057	2.0924	0.0000	87.7161
Total		**35.4057**	**2.0924**	**0.0000**	**87.7161**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B: San Joaquin Valley Air Pollution Control District Amicus Brief on Friant Ranch Supreme Court Decision

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

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CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

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APPLICATION

Pursuant to California Rules of Court 8.520(f)(1), proposed Amicus Curiae San Joaquin Valley Unified Air Pollution Control District hereby requests permission from the Chief Justice to file an amicus brief in support of Defendant and Respondent, County of Fresno, and Defendant and Real Parties in Interest Friant Ranch, L.P. Pursuant to Rule 8.520(f)(5) of the California Rules of Court, the proposed amicus curiae brief is combined with this Application. The brief addresses the following issue certified by this Court for review:

> Is an EIR adequate when it identifies the health impacts of air pollution and quantifies a project's expected emissions, or does CEQA further require the EIR to *correlate* a project's air quality emissions to specific health impacts?

As of the date of this filing, the deadline for the final reply brief on the merits was March 5, 2015. Accordingly, under Rule 8.520(f)(2), this application and brief are timely.

1. Background and Interest of San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District ("Air District") regulates air quality in the eight counties comprising the San Joaquin Valley ("Central Valley"): Kern, Tulare, Madera, Fresno, Merced, San Joaquin, Stanislaus, and Kings, and is primarily responsible for attaining air quality standards within its jurisdiction. After billions of dollars of investment by Central Valley businesses, pioneering air quality regulations, and consistent efforts by residents, the Central Valley air basin has made historic improvements in air quality.

The Central Valley's geographical, topographical and meteorological features create exceptionally challenging air quality conditions. For example, it receives air pollution transported from the San Francisco Bay Area and northern Central Valley communities, and the southern portion of the Central Valley includes three mountain ranges (Sierra, Tehachapi, and Coastal) that, under some meteorological conditions, effectively trap air pollution. Central Valley air pollution is only a fraction of what the Bay Area and Los Angeles produce, but these natural conditions result in air quality conditions that are only marginally better than Los Angeles, even though about ten times more pollution is emitted in the Los Angeles region. Bay Area air quality is much better than the Central Valley's, even though the Bay Area produces about six times more pollution. The Central Valley also receives air pollution transported from the Bay Area and northern counties in the Central Valley, including Sacramento, and transboundary anthropogenic ozone from as far away as China.

Notwithstanding these challenges, the Central Valley has reduced emissions at the same or better rate than other areas in California and has achieved unparalleled milestones in protecting public health and the environment:

- In the last decade, the Central Valley became the first air basin classified by the federal government under the Clean Air Act as a "serious nonattainment" area to come into attainment of health-based National Ambient Air Quality Standard ("NAAQS") for coarse particulate matter (PM10), an achievement made even more notable given the Valley's extensive agricultural sector. Unhealthy levels of particulate matter can cause and exacerbate a range of chronic and acute illnesses.
- In 2013, the Central Valley became the first air basin in the country to improve from a federal designation of "extreme" nonattainment to

actually attain (and quality for an attainment designation) of the 1-hour ozone NAAQS; ozone creates "smog" and, like PM10, causes adverse health impacts.

- The Central Valley also is in full attainment of federal standards for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.
- The Central Valley continues to make progress toward compliance with its last two attainment standards, with the number of exceedences for the 8-hour ozone NAAQS reduced by 74% (for the 1997 standard) and 38% (for the 2008 standard) since 1991, and for the small particulate matter (PM2.5) NAAQS reduced by 85% (for the 1997 standard) and 61% (for the 2006 standard).

Sustained improvement in Central Valley air quality requires a rigorous and comprehensive regulatory framework that includes prohibitions (e.g., on wood-burning fireplaces in new residences), mandates (e.g., requiring the installation of best available pollution reduction technologies on new and modified equipment and industrial operations), innovations (e.g., fees assessed against residential development to fund pollution reduction actions to "offset" vehicular emissions associated with new residences), incentive programs (e.g., funding replacements of older, more polluting heavy duty trucks and school buses)[1], ongoing planning for continued air quality improvements, and enforcement of Air District permits and regulations.

The Air District is also an expert air quality agency for the eight counties and cities in the San Joaquin Valley. In that capacity, the Air District has developed air quality emission guidelines for use by the Central

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[1] San Joaquin's incentive program has been so successful that through 2012, it has awarded over $ 432 million in incentive funds and has achieved 93,349 tons of lifetime emissions reductions. *See* SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2012 PM2.5 PLAN, 6-6 (2012) *available at* http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/06%20Chapter%206%20Incentives.pdf.

Valley counties and cities that implement the California Environment Quality Act (CEQA).[2] In its guidance, the Air District has distinguished between toxic air contaminants and criteria air pollutants.[3] Recognizing this distinction, the Air District's CEQA Guidance has adopted distinct thresholds of significance for *criteria* pollutants (i.e., ozone, PM2.5 and their respective precursor pollutants) based upon scientific and factual data which demonstrates the level that can be accommodated on a cumulative basis in the San Joaquin Valley without affecting the attainment of the applicable NAAQS.[4] For *toxic air* pollutants, the District has adopted different thresholds of significance which scientific and factual data demonstrates has the potential to expose sensitive receptors (i.e., children, the elderly) to levels which may result in localized health impacts.[5]

The Air District's CEQA Guidance was followed by the County of Fresno in its environment review of the Friant Ranch project, for which the Air District also served as a commenting agency. The Court of Appeal's holding, however, requiring correlation between the project's criteria

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[2] *See, e.g.*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, PLANNING DIVISION, GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS (2015), *available at* http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf ("CEQA Guidance").

[3] Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from toxic air contaminants and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of toxic air contaminants occurs solely under section 112 of the Act. Compare 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 with 42 U.S.C. § 7411.

[4] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 64-66, 80.

[5] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 66, 99-101.

pollutants and local health impacts, departs from the Air District's Guidance and approved methodology for assessing criteria pollutants. A close reading of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants (for which a local health risk assessment is feasible and routinely performed) and criteria air pollutants (for which a local health risk assessment is not feasible and would result in speculative results).[6] The Air District has a direct interest in ensuring the lawfulness and consistent application of its CEQA Guidance, and will explain how the Court of Appeal departed from the Air District's long-standing CEQA Guidance in addressing criteria pollutants and toxic air contaminants in this amicus brief.

2. How the Proposed Amicus Curiae Brief Will Assist the Court

As counsel for the proposed amicus curiae, we have reviewed the briefs filed in this action. In addition to serving as a "commentary agency" for CEQA purposes over the Friant Ranch project, the Air District has a strong interest in assuring that CEQA is used for its intended purpose, and believes that this Court would benefit from additional briefing explaining the distinction between criteria pollutants and toxic air contaminants and the different methodologies employed by local air pollution control agencies such as the Air District to analyze these two categories of air pollutants under CEQA. The Air District will also explain how the Court of Appeal's opinion is based upon a fundamental misunderstanding of these two different approaches by requiring the County of Fresno to correlate the project's *criteria* pollution emissions with *local* health impacts. In doing

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6 CEQA does not require speculation. *See, e.g.*, *Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1137 (1993) (upholding EIR that failed to evaluate cumulative toxic air emission increases given absence of any acceptable means for doing so).

so, the Air District will provide helpful analysis to support its position that at least insofar as criteria pollutants are concerned, CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible.

Rule 8.520 Disclosure

Pursuant to Cal. R. 8.520(f)(4), neither the Plaintiffs nor the Defendant or Real Party In Interest or their respective counsel authored this brief in whole or in part. Neither the Plaintiffs nor the Defendant or Real Party in Interest or their respective counsel made any monetary contribution towards or in support of the preparation of this brief.

CONCLUSION

On behalf of the San Joaquin Valley Unified Air Pollution Control District, we respectfully request that this Court accept the filing of the attached brief.

Dated: April 2, 2015

Annette A. Ballatore-Williamson
District Counsel
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL
DISTRICT

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I. INTRODUCTION.

The San Joaquin Valley Unified Air Pollution Control District ("Air District") respectfully submits that the Court of Appeal erred when it held that the air quality analysis contained in the Environmental Impact Report ("EIR") for the Friant Ranch development project was inadequate under the California Environmental Quality Act ("CEQA") because it did not include an analysis of the correlation between the project's criteria air pollutants and the potential adverse human health impacts. A close reading of the portion of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants and criteria air pollutants.

Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants (hereinafter referred to as "TACs") regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from TACs and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of TACs occurs solely under section 112 of the Act. *Compare* 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 *with* 42 U.S.C. § 7411.

The most relevant difference between criteria pollutants and TACs for purposes of this case is the manner in which human health impacts are accounted for. While it is common practice to analyze the correlation between an individual facility's TAC emissions and the expected localized human health impacts, such is not the case for criteria pollutants. Instead, the human health impacts associated with criteria air pollutants are analyzed and taken into consideration when EPA sets the national ambient air quality standard ("NAAQS") for each criteria pollutant. 42 U.S.C. § 7409(b)(1). The health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the NAAQS. Accordingly, while the type of individual facility / health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task.

It is clear from a reading of both the administrative record and the Court of Appeal's decision that the Court did not have the expertise to fully appreciate the difference between TACs and criteria air pollutants. As a result, the Court has ordered the County of Fresno to conduct an analysis that is not practicable and not likely yield valid information. The Air District respectfully requests that this portion of the Court of Appeal's decision be reversed.

II. THE COURT OF APPEAL ERRED IN FINDING THE FRIANT RANCH EIR INADEQUATE FOR FAILING TO ANALYZE THE SPECIFIC HUMAN HEALTH IMPACTS ASSOCIATED CRITERIA AIR POLLUTANTS.

Although the Air District does not take lightly the amount of air emissions at issue in this case, it submits that the Court of Appeal got it wrong when it required Fresno County to revise the Friant Ranch EIR to include an analysis correlating the criteria air pollutant emissions associated with the project with specific, localized health-impacts. The type of analysis the Court of Appeal has required will not yield reliable information because currently available modeling tools are not well suited for this task. Further, in reviewing this issue de novo, the Court of Appeal failed to appreciate that it lacked the scientific expertise to appreciate the significant differences between a health risk assessment commonly performed for toxic air contaminants and a similar type of analysis it felt should have been conducted for criteria air pollutants.

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A. **Currently Available Modeling Tools are not Equipped to Provide a Meaningful Analysis of the Correlation between an Individual Development Project's Air Emissions and Specific Human Health Impacts.**

In order to appreciate the problematic nature of the Court of Appeals' decision requiring a health risk type analysis for criteria air pollutants, it is important to understand how the relevant criteria pollutants (ozone and particulate matter) are formed, dispersed and regulated.

Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NOx) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.[1] Once formed, ozone can be transported long distances by wind.[2] Because of the complexity of ozone formation, a specific tonnage amount of NOx or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area. In fact, even rural areas that have relatively low tonnages of emissions of NOx or VOCs can have high levels of ozone concentration simply due to wind transport.[3] Conversely, the San Francisco Bay Area has six times more NOx and VOC emissions per square mile than the San Joaquin Valley, but experiences lower

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[1] *See* United States Environmental Protection Agency, *Ground-level Ozone: Basic Information*, available at: http://www.epa.gov/airquality/ozonepollution/basic.html (visited March 10, 2015).
[2] *Id.*
[3] *Id.*

concentrations of ozone (and better air quality) simply because sea breezes disperse the emissions.[4]

Particulate matter ("PM") can be divided into two categories: directly emitted PM and secondary PM.[5] While directly emitted PM can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because it can be transported long distances by wind.[6] Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SOx) and NOx.[7] Because of the complexity of secondary PM formation, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.

The disconnect between the *tonnage* of precursor pollutants (NOx, SOx and VOCs) and the *concentration* of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Indeed, the national ambient air quality standards ("NAAQS"), which are statutorily required to be set by the United States Environmental Protection

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[4] *San Joaquin Valley Air Pollution Control District 2007 Ozone Plan*, Executive Summary p. ES-6, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).

[5] United States Environmental Protection Agency, *Particulate Matter: Basic Information*, available at: http://www.epa.gov/airquality/particlepollution/basic.html (visited March 10, 2015).

[6] *Id.*

[7] *Id.*

Agency ("EPA") at levels that are "requisite to protect the public health," 42 U.S.C. § 7409(b)(1), are established as concentrations of ozone or particulate matter and not as tonnages of their precursor pollutants.[8]

Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period.[9] Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District's tools and plans for attaining the NAAQS are regional in nature.

For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NOx, SOx and VOCs) and the atmospheric chemistry and meteorology of the Valley.[10] At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor

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[8] See, e.g., United States Environmental Protection Agency, *Table of National Ambient Air Quality Standards*, available at: http://www.epa.gov/air/criteria.html#3 (visited March 10, 2015).

[9] *San Joaquin Valley Unified Air Pollution Control District 2013 Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16, available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015).

[10] *Id.* at Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified Air Pollution Control District 2008 PM2.5 Plan*, Appendix F, pp. F-2 – F-5, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted_PM2.5/20%20Appendix%20F.pdf
(visited March 19, 2015).

emissions Valley wide.[11] Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which *all* of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.[12]

Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the Valley can accommodate without affecting the attainment date for the NAAQS.[13] The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources permitted by the Air District must "offset" their emissions.[14] This "offset"

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[11] *Id.*

[12] Although the Air District does have a dispersion modeling tool used during its air permitting process that is used to predict whether a particular project's directly emitted PM will either cause an exceedance of the PM NAAQS or contribute to an existing exceedance, this model bases the prediction on a worst case scenario of emissions and meteorology and has no provision for predicting any associated human health impacts. Further, this analysis is only performed for stationary sources (factories, oil refineries, etc.) that are required to obtain a New Source Review permit from the Air District and not for development projects such as Friant Ranch over which the Air District has no preconstruction permitting authority. *See* San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0; 3.3.9; 4.14.1, available at: http://www.valleyair.org/rules/currntrules/Rule2201041l.pdf (visited March 19, 2015).

[13] *San Joaquin Valley Unified Air Pollution Control District Guide to Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22, available at: http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf (visited March 30, 2015).

[14] *Id.* at pp. 22, 25.

level allows for growth while keeping the cumulative effects of all new sources at a level that will not impede attainment of the NAAQS.[15] In the Valley, these thresholds are 15 tons per year of PM, and 10 tons of NOx or VOC per year. *Sierra Club*, *supra*, 172 Cal.Rptr.3d at 303; AR 4554. Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project-level impact analysis but one of regional, "cumulative impacts."

Accordingly, the significance thresholds applied in the Friant Ranch EIR (15 tons per year of PM and 10 tons of NOx or VOCs) are not intended to be indicative of any localized human health impact that the project may have. While the health effects of air pollution are of primary concern to the Air District (indeed, the NAAQS are established to protect human health), the Air District is simply not equipped to analyze whether and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area. This is true even for projects with relatively high levels of emissions of criteria pollutant precursor emissions.

For instance, according to the EIR, the Friant Ranch project is estimated to emit 109.52 tons per year of ROG (VOC), 102.19 tons per year of NOx, and 117.38 tons per year of PM. Although these levels well

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[15] [15] *San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines* (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).

exceed the Air District's CEQA significance thresholds, this does not mean that one can easily determine the concentration of ozone or PM that will be created at or near the Friant Ranch site on a particular day or month of the year, or what specific health impacts will occur. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone or PM. This is especially true for a project like Friant Ranch where most of the criteria pollutant emissions derive not from a single "point source," but from area wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from and around the site.

In addition, it would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have. As discussed above, the currently available modeling tools are equipped to model the impact of *all* emission sources in the Valley on attainment. According to the most recent EPA-approved emission inventory, the NOx inventory for the Valley is for the year 2014 is 458.2 tons per day, or 167,243 tons per year and the VOC (or ROG) inventory is 361.7 tons per day, or 132,020.5 tons per year.[16] Running the photochemical grid model used for predicting ozone attainment with the

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[16] *San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan*, Appendix B pp. B-6, B-9,
available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).

emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information given the relative scale involved.

Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.

For these reasons, it is not the norm for CEQA practitioners, including the Air District, to conduct an analysis of the localized health impacts associated with a project's criteria air pollutant emissions as part of the EIR process. When the accepted scientific method precludes a certain type of analysis, "the court cannot impose a legal standard to the contrary." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 717 n. 8. However, that is exactly what the Court of Appeal has done in this case. Its decision upends the way CEQA air quality analysis of criteria pollutants occurs and should be reversed.

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B. The Court of Appeal Improperly Extrapolated a Request for a Health Risk Assessment for Toxic Air Contaminants into a Requirement that the EIR contain an Analysis of Localized Health Impacts Associated with Criteria Air Pollutants.

The Court of Appeal's error in requiring the new health impact analysis for criteria air pollutants clearly stems from a misunderstanding of terms of art commonly used in the air pollution field. More specifically, the Court of Appeal (and Appellants Sierra Club et al.) appear to have confused the health risk analysis ("HRA") performed to determine the health impacts associated with a project's toxic air contaminants ("TACs"), with an analysis correlating a project's criteria air pollutants (ozone, PM and the like) with specific localized health impacts.

The first type of analysis, the HRA, is commonly performed during the Air District's stationary source permitting process for projects that emit TACs and is, thus, incorporated into the CEQA review process. An HRA is a comprehensive analysis to evaluate and predict the dispersion of TACs emitted by a project and the potential for exposure of human populations. It also assesses and quantifies both the individual and population-wide health risks associated with those levels of exposure. There is no similar analysis conducted for criteria air pollutants. Thus, the second type of analysis (required by the Court of Appeal), is not currently part of the Air District's process because, as outlined above, the health risks associated with exposure to criteria pollutants are evaluated on a regional level based on the region's attainment of the NAAQS.

The root of this confusion between the types of analyses conducted for TACs versus criteria air pollutants appears to stem from a comment that was presented to Fresno County by the City of Fresno during the administrative process.

In its comments on the draft EIR, the City of Fresno (the only party to raise this issue) stated:

> [t]he EIR must disclose the human health related effects of the Project's air pollution impacts. (CEQA Guidelines section 15126.2(a).) The EIR fails completely in this area. The EIR should be revised to disclose and determine the significance of TAC impacts, and of human health risks due to exposure to Project-related air emissions.

(AR 4602.)

In determining that the issue regarding the correlation between the Friant Ranch project's criteria air pollutants and adverse health impacts was adequately exhausted at the administrative level, the Court of Appeal improperly read the first two sentences of the City of Fresno's comment in isolation rather than in the context of the entire comment. *See Sierra Club v. County of Fresno* (2014) 172 Cal.Rptr.3d 271, 306. Although the comment first speaks generally in terms of "human health related effects" and "air pollution," it requests only that the EIR be revised to disclose "the significance of TACs" and the "human health risks due to exposure."

The language of this request in the third sentence of the comment is significant because, to an air pollution practitioner, the language would only have indicated only that a HRA for TACs was requested, and not a separate analysis of the health impacts associated with the project's criteria air pollutants. Fresno County clearly read the comment as a request to perform an HRA for TACs and limited its response accordingly. (AR 4602.)[17] The Air District submits that it would have read the City's comment in the same manner as the County because the City's use of the terms "human health risks" and "TACs" signal that an HRA for TACs is being requested. Indeed, the Air District was also concerned that an HRA be conducted, but understood that it was not possible to conduct such an analysis until the project entered the phase where detailed site specific information, such as the types of emission sources and the proximity of the sources to sensitive receptors became available. (AR 4553.)[18] The City of Fresno was apparently satisfied with the County's discussion of human health risks, as it did not raise the issue again when it commented on the final EIR. (AR 8944 – 8960.)

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[17] Appellants do not challenge the manner in which the County addressed TACs in the EIR. (Appellants' Answer Brief p. 28 fn. 7.)

[18] Appellants rely on the testimony of Air District employee, Dan Barber, as support for their position that the County should have conducted an analysis correlating the project's criteria air pollutant emissions with localized health impacts. (Appellants Answer Brief pp. 10-11; 28.) However, Mr. Barber's testimony simply reinforces the Air District's concern that a risk assessment (HRA) be conducted once the actual details of the project become available. (AR 8863.) As to criteria air pollutants, Mr. Barber's comments are aimed at the Air District's concern about the amount of emissions and the fact that the emissions will make it "more difficult for Fresno County and the Valley to reach attainment which means that the health of Valley residents maybe [sic] adversely impacted." Mr. Barber says nothing about conducting a separate analysis of the localized health impacts the project's emissions may have.

The Court of Appeal's holding, which incorrectly extrapolates a request for an HRA for TACs into a new analysis of the localized health impacts of the project's criteria air pollutants, highlights two additional errors in the Court's decision.

First, the Court of Appeal's holding illustrates why the Court should have applied the deferential substantial evidence standard of review to the issue of whether the EIR's air quality analysis was sufficient. The regulation of air pollution is a technical and complex field and the Court of Appeal lacked the expertise to fully appreciate the difference between TACs and criteria air pollutants and tools available for analyzing each type of pollutant.

Second, it illustrates that the Court likely got it wrong when it held that the issue regarding the criteria pollutant / localized health impact analysis was properly exhausted during the administrative process. In order to preserve an issue for the court, '[t]he "exact issue" must have been presented to the administrative agency....' [Citation.] *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521; *Sierra Club v. City of Orange* (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13. "'[T]he objections must be sufficiently specific so that the agency has the opportunity to evaluate and respond to them.' [Citation.]" *Sierra Club v. City of Orange*,163 Cal.App.4th at 536.[19]

As discussed above, the City's comment, while specific enough to request a commonly performed HRA for TACs, provided the County with no notice that it should perform a new type of analysis correlating criteria pollutant tonnages to specific human health effects. Although the parties have not directly addressed the issue of failure to exhaust administrative remedies in their briefs, the Air District submits that the Court should consider how it affects the issues briefed by the parties since "[e]xhaustion of administrative remedies is a jurisdictional prerequisite to maintenance of a CEQA action." *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203.

III. CONCLUSION

For all of the foregoing reasons, the Air District respectfully requests that the portion of the Court of Appeal's decision requiring an analysis correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

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[19] *Sierra Club v. City of Orange*, is illustrative here. In that case, the plaintiffs challenged an EIR approved for a large planned community on the basis that the EIR improperly broke up the various environmental impacts by separate project components or "piecemealed" the analysis in violation of CEQA. In evaluating the defense that the plaintiffs had failed to adequately raise the issue at the administrative level, the Court held that comments such as *"the use of a single document for both a project-level and a program-level EIR [is] 'confusing',"* and *"[t]he lead agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project,"* were too vague to fairly raise the argument of piecemealing before the agency. *Sierra Club v. City of Orange*, 163 Cal.App.4th at 537.

correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

Respectfully submitted,

Dated: April 2, 2015

Catherine T. Redmond
Attorney for Proposed Amicus
Curiae

SAN JOAQUIN VALLEY
UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.204 of the California Rules of Court, I hereby certify that this document, based on the Word County feature of the Microsoft Word software program used to compose and print this document, contains, exclusive of caption, tables, certificate of word count, signature block and certificate of service, 3806 words.

Dated: April 2, 2015

Annette A. Ballatore-Williamson
District Counsel (SBN 192176)

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

PROOF OF SERVICE

I am over the age of 18 years and not a p[arty to the above-captioned action; that my business address is San Joaquin Valley Unified Air Pollution Control District located at 1990 E. Gettysburg Avenue, Fresno, California 93726.

On April 2, 2015, I served the document described below:

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO

On all parties to this action at the following addresses and in the following manner:

PLEASE SEE ATTACHED SERVICE LIST

(XX) **(BY MAIL)** I caused a true copy of each document(s) to be laced in a sealed envelope with first-class postage affixed and placed the envelope for collection. Mail is collected daily at my office and placed in a United State Postal Service collection box for pick-up and delivery that same day.

( ) **(BY ELECTRONIC MAIL)** I caused a true and correct scanned image (.PDF file) copy to be transmitted via electronic mail transfer system in place at the San Joaquin Valley Unified Air Pollution Control District ("District"), originating from the undersigned at 1990 E. Gettysburg Avenue, Fresno, CA, to the address(es) indicated below.

( ) **(BY OVERNIGHT MAIL)** I caused a true and correct copy to be delivered via Federal Express to the following person(s) or their representative at the address(es) listed below.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I executed this document on April 2, 2015, at Fresno, California.

Esthela Soto

Esthela Soto

SERVICE LIST

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

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BIOLOGICAL HABITAT ASSESSMENT
Metzler Reorganization Area
and
Tentative Tract 6241 Development,
Fresno County, California

Prepared For:
Wilson Homes
7550 N. Palm Avenue, Suite 201
Fresno, California 83711

January 2020

BIOLOGICAL HABITAT ASSESSMENT

Metzler Reorganization Area

and

Tentative Tract 6241 Development,

Fresno County, California

Prepared For:

Wilson Homes

Prepared By:

ARGONAUT ECOLOGICAL CONSULTING, INC.

2377 Gold Meadow Way, Suite 100
Gold River, CA 95670

January 2020

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1.0 EXECUTIVE SUMMARY AND INTRODUCTI

EXECUTIVE SUMMARY

Argonaut Ecological, Inc. conducted a biological review of the 96.85-acre Study Area, which includes Tract 6241and other potential annexation lands within the Metzler Reorganization area. The biological study focused on mapping existing habitat types based on a field review aerial photographs, and other published reports and available data. The study included assessment of the types of habitats present and sensitive species that may be associated with those habitats. The study found that the majority of the Study Area has been used and managed for decades as agricultural land.

The findings of this report are that the likelihood of the Study Area to support special status species is low. All habitat within Tract 6241 is intensively managed cropland and does not support any habitat suitable to support special status species. Habitat within the potential annexation lands also has a low probability to support special status species. No evidence of raptor nesting was found but there are suitable mature trees that could be used for nesting. There are no sensitive biological habitats (waters/wetlands, critical habitat, etc.) present within the reorganization Study Area (or within Tract 6241).

1.1 INTRODUCTION

The Metzler Reorganization Study Area (Figure 1) consists of a two areas: Tract 6241 (19.83 acres) and other potential annexation lands (77.2 acres). The annexation area lies in Section 27 Township 13 South, Range 21 East.

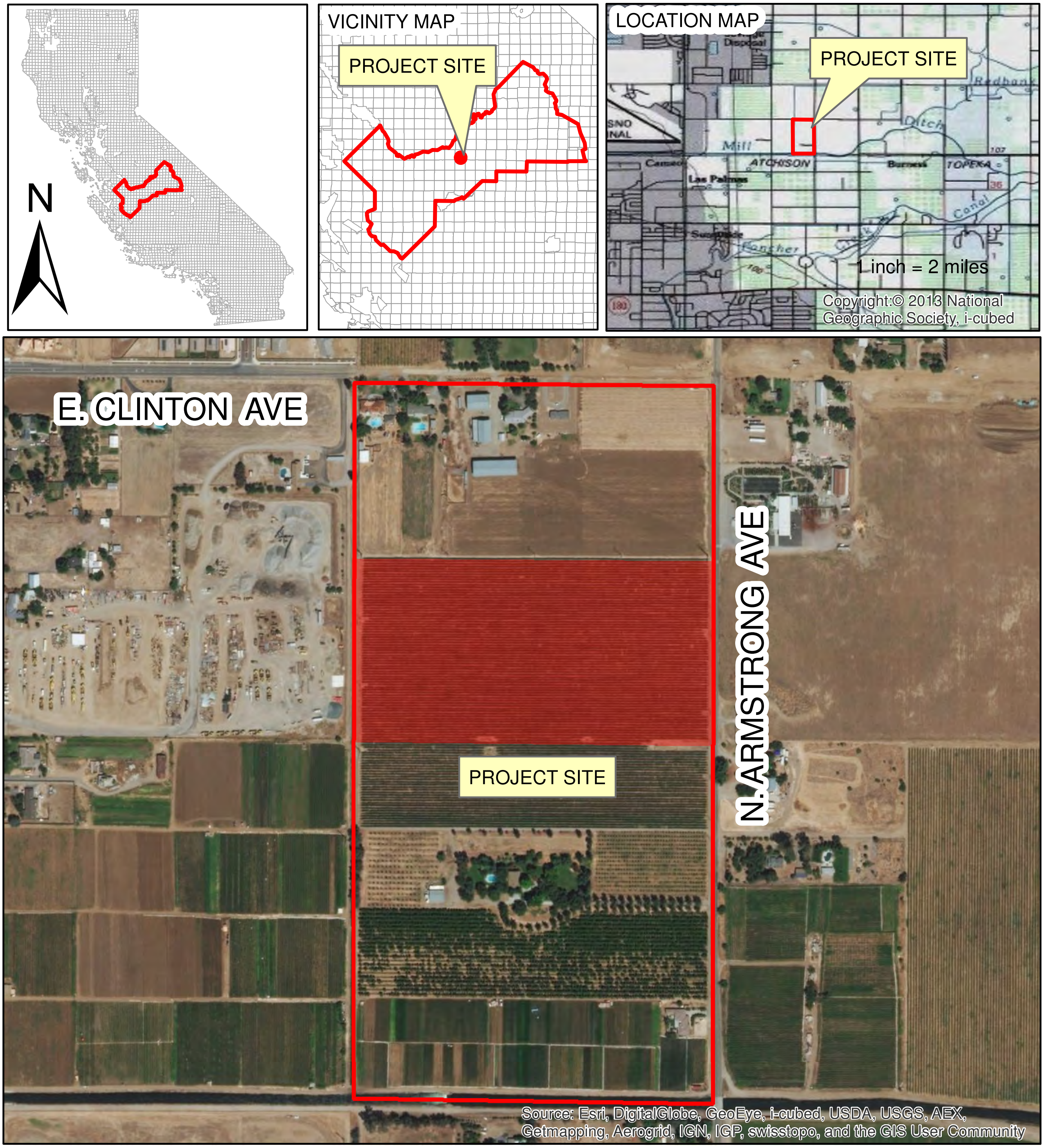
This biological assessment provides a project level analysis (i.e., detailed analysis) for Tract 6241 and a programmatic level analysis (reconnaissance level analysis) of the remainder of the annexation lands. Within this report, “Study Area” is broadly defined to refer to the entire annexation area (both Tract 6241 and the remainder of the annexation area).

1.2 STUDY OBJECTIVES

This biological assessment presents the findings of a biological study conducted within the study area. This report provides an overall assessment of the biological resources potentially present, describes the biological characteristics of the area, and the likelihood of the area to support sensitive biological resources (such as wetlands or creeks/drainages). This study used available literature, aerial photography, historic topographic and aerial maps, and several site visits conducted during different time periods to verify the aerial photography. The focus of the review was to determine the potential for the study area to support habitat that may be used or occupied by special status species, especially within Tract 624. “Wetland habitat” for purposes of this study, includes those areas that may be considered both “Waters of the U.S., as defined by the U.S. Army Corps of Engineers, and/or wetlands as defined by the Army Corps and the State of California. As described in Section 1.2.1, wetlands are a subset of "Waters of the U.S." under the Federal Clean Water Act.

VICINITY AND LOCATION MAP (FIGURE 1)

CLIENT NAME: Wilson Homes PROJECT NAME: Metzler Reorginization Area
PROJECT LOCATION: Part of Sections 27, T. 13S., R.21E., Mount Diablo Base and Meridian
Fresno County California,



Legend

Metzler Reorganzation Area (77.2 AC.)

TRACT 6241 (19.83 AC.)

500 250 0 500 Feet

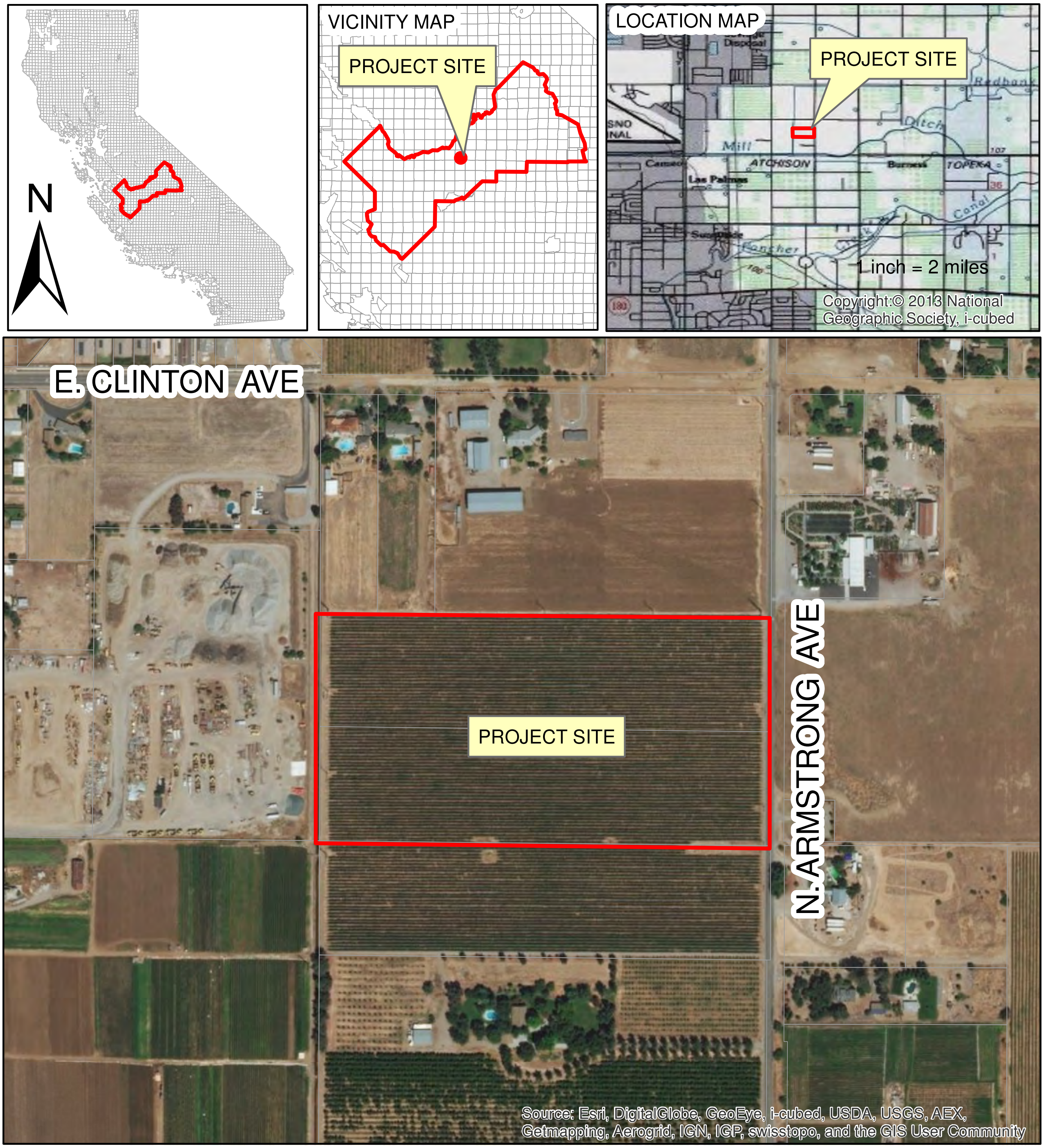
1 in = 500 ft

ARGONAUT ECOLOGICAL CONSULTING, INC.

Date: 9/13/2019

VICINITY AND LOCATION MAP (FIGURE 2)

CLIENT NAME: Wilson Homes PROJECT NAME: Tract No.6241
PROJECT LOCATION: Part of Sections 27, T. 13S., R.21E., Mount Diablo Base and Meridian
Fresno County California,



Legend

APPROXIMATE BOUNDARY (19.83 AC.)

400 200 0 400 Feet

1 in = 400 ft

ARGONAUT ECOLOGICAL CONSULTING, INC.

Date: 9/13/2019

This report is intended to be used to assess the potential effects on biological resources if the current land use changes. The specific type of land use change would dictate the type of regulatory approvals or permits required. This review focused on the extent of the Waters of the U.S., including any wetlands or waters of the State that would potentially be subject to regulation under Section 404 of the Clean Water Act or by the State of California which is designed to protect all waters of the State, including wetlands dredge and fill discharges. The review also focused on assessing and identifying any potential impacts site development may have on species protected by the Federal Endangered Species Act or protected under the California Environmental Quality Act or State Endangered Species Act.

1.3 REGULATORY JURISDICTION AND BACKGROUND

Regulatory jurisdiction over biological resources within the Study Area is shared by several agencies. The following is a brief description of the primary agencies and their respective jurisdiction.

Wetland Protection

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (Army Corps) and the U.S. Environmental Protection Agency regulates placement of fill into the Waters of the U.S under Section 404 of the Federal Clean Water Act and Section 10 of the Rivers and Harbor Act. The term “Waters of the U.S.” include wetlands, special aquatic sites, and other non-wetland waters such as bays, rivers, and lakes. The jurisdictional limit of tidal Waters of the U.S. under Section 10 of the Rivers and Harbor Act is the Mean High-Water line. However, Section 404 of the Federal Clean Water Act extends the jurisdictional limit to the High Tide line. The High Tide Line is the highest elevation of the tide in a normal year, excluding storm events. Wetlands adjacent to the Mean High-Water line or High Tide Line are also under the USACE jurisdiction. For purposes of this document, the term “Waters of the U.S.” is legally defined under Section 404 of the Federal Clean Water Act. It includes seasonal drainages that have a defined channel and support wetland species but lack positive indicators of wetland soils.

As previously stated, Waters of the U.S. includes wetlands. The Army Corps defines wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (Environmental Laboratory 1987). Seasonally inundated areas that meet the criteria of all three wetland parameters as defined in the recently issued Wetland Delineation Manual for the Arid West (USACE 2006) are also considered jurisdictional wetlands. However, drainage ditches excavated on dry land that do not convey flows from historical streams and/or channels are usually considered non-jurisdictional as defined in Title 33 CFR Part 328.3 (a). A determination of whether any particular area is considered non-jurisdictional varies on a case-by-case basis.

Since 2001, the U.S. Supreme Court found in several court rulings that regulation of isolated intrastate waters by the Army Corps under the Migratory Bird Rule and other arguments is unconstitutional and impinges on state rights to regulate intrastate commerce. The decisions, which include both *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC) and *Rapanos v. United States* (Rapanos) limited the scope of federal jurisdiction under the Federal Clean Water Act and excluded many California wetlands from federal regulation.

In May 2015 the U.S. Environmental Protection Agency and the U.S. Army finalized the "Clean Water Rule "with the intent of clarifying what constitutes a waters of the U.S., and presumably, acts to more precisely define and making permitting more predictable, thus less costly and easier. The rule was not intended to create any new permitting requirements for agriculture and maintains all previous exemptions and exclusions. However, many in the regulated community believe the rule is really intended to expand the definition of waters/wetlands and broaden the Federal government's regulatory reach. The new Clean Water Rule went in effect at the end of August, 2015. On October 9, 2015 the Sixth U.S. Circuit Court of Appeals issued a stay of the rule pending further court action. Therefore, currently, application of the Clean Water Rule is not enforced in numerous states and the current regulatory definition of waters of the U.S. remains unchanged in those states. California is one of 11 states where the rule is in effect.

Executive Order 11990

Executive Order 11990 (signed May 24, 1977) directs all federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately-owned wetlands. It further requires that federal agencies support a policy to minimize the destruction, loss, or degradation of wetlands. A federal project that encroaches on wetlands may not be undertaken unless the agency in question has determined that: (1) there are no practicable alternatives to such construction; (2) the project includes all practicable measures to minimize harm to wetlands that would be affected by the project; and (3) the resulting impact will be minor.

The Executive Order does not apply to issuance by Federal Agencies of permits, licenses, or allocation to private parties for activities involving wetland on non-Federal property. Executive Order 1190 is also not intended to be applied on a project by project basis. Section 1 of the order states the following: "*This Order does not apply to the issuance by Federal agencies of permits, licenses, or allocations to private parties for activities involving wetlands on non-Federal property."*

California State Water Resources Control Board

Since 1993, California has had a Wetlands Conservation Policy (a.k.a., the Executive Order W-51 59-93). Commonly referred to as the *No Net Loss Policy* for wetlands, this order establishes for the State the mandate that it develops and adopts a policy framework and strategy to protect the State's wetland ecosystems. However, contrary to common belief, and the State Water Resources Control Board's insistence, this policy was <u>only</u> meant to be implemented on a voluntary basis and is was expressly <u>not</u> to be implemented on a "project-by-project" basis (See EO W-59-93, Section III).

After 11 years of trying to find a means to regulate wetlands in CA, in April 2019 the State adopted its proposed *State Wetland Definition and Procedures for Discharges of Dredge or Fill Material to Waters of the State*. According to the State, these new procedures" (i.e., regulation by anyone's definition but the State's) conform with EO W-59-93. However, in conflict with EO W-59-93 there is nothing "voluntary" about the procedures and they are, in fact, applied on a project by project basis. The newly adopted "procedure" is intended to bring uniformity throughout the state with respect to wetland regulation and to capture those waters/wetland not subject to jurisdiction under Section 404. The procedure is also supposed to use the same definition of "wetlands" as the federal definition, but it does not (it's much broader).

On April 2, 2019 the State adopted the new wetland definition and procedures for discharge of fill materials. The new requirements (the "Procedures") will be implemented through the existing state permitting structures (401 WQC Program). Thus, most often they will be applied through regional water board sign-off (or "certification") of Corps of Engineers wetland permits. They will also be applied where the federal government has no jurisdiction.

The application requirements are detailed, and this will increase the regulatory complexity and will make it hard to get applications deemed complete by the regional boards. Coordination with the Corps will be likewise difficult and the regional water boards do not yet have the staffing or resources to implement the program effectively. The regulations become effective in May 2020.

Listed Protected Species and Habitat Protection

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) implements the Migratory Bird Treaty Act (16 USC Section 703-711), Bald and Golden Eagle Protection Act (16 United States Code [USC] Section 668), and Federal Endangered Species Act (FESA; 16 USC § 153 *et seq.)*. Projects that would result in "take" of any federally-listed threatened or endangered species can obtain authorization from the USFWS through either Section 7 (interagency consultation) or Section 10(a) (incidental take permit) of FESA, depending on whether the federal government is involved in permitting or funding the project. The authorization process is used to determine if a project would jeopardize the continued existence of a listed species and what mitigation measures would be required to avoid jeopardizing the species.

The **Migratory Bird Treaty Act (MBTA**) was first enacted in 1916 in order to implement the convention for protection of migratory birds between the United States and Great Britain (acting on behalf of Canada). The MBTA makes it illegal for anyone to take, possess, import, transport, purchase, barter or offer for sale or purchase any migratory birds, its nests or eggs unless a permit has been issued by the federal agency. The USFWS has statutory authority and responsibility for enforcing the MBTA. In accordance with the MBTA Reform Act (MBTARA) of 2004 all species native to the U.S. or its territories which occur as a result of natural biological or ecological processes (70 FR 12710, March 15, 2005) and does not include nonnative species whose occurrences in the US are solely the result of intentional or unintentional human introduction. The USFWS maintains a list of bird species protected under the MCTA and the MBTRA. However, on December 22, 2017 the Deputy Solicitor General issued an opinion (Order 3345) that the

MBTA does not prohibit "incidental take" of a migratory bird as the result of an otherwise lawful activity.

Federal Endangered Species Act prohibits "take" of any federally listed species**.** "Take" under the federal definition means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. "Candidate species" do not have the full protection of FESA. However, the USFWS advises project applicants that it is prudent to address these species since they could be elevated to "listed status" prior to completion of projects with long planning or development schedules. "Incidental take" is take that may occur during implementation of an otherwise lawful activity.

Under the Endangered Species Act (federal or state), an Incidental Take Permit or Take Permit is required when an activity would either kill, harm, harass, or interrupt the breeding or nesting of a listed species or remove a known population of endangered plants. However, the ESA definition of "harm" has been somewhat less definitive in that it captures activities that are more ubiquitous. In 1999 the USFWS published in the Federal Register a clarification of the term "harm" as it applies to the ESA. As stated, the final ruled defined the term "harm" to include any act which <u>actually</u> kills or injures fish or wildlife and emphasizes that such acts may include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. Further clarification within the Federal Register includes the following: "In order for a modification to be significant, it must be capable of resulting in the death or injury of fish or wildlife. Habitat modification or degradation may be considered significant even if it is of limited physical extent, if it causes injury or death to fish or wildlife", however the mere potential for harm is not in and of its "take". Assessing the significance of a given act of habitat modification or degradation will depend on an evaluation of all the related factors.

There are two regulatory processes under the Federal ESA that allows an individual to obtain legal coverage from prosecution. A landowner/permittee can either obtain authorization for "take" under Section 7 or under Section 10 of the ESA. Section 7 is triggered when there is a federal nexus that requires a federal agency to initiate consultation with the USFWS under Section 7 of the ESA. If there is no federal agency involvement (i.e., a landowner does not need a federal entitlement or is not receiving federal funding) then an Incidental Take permit can be obtained through Section 10(a)(1)(B) of the Act.

The USFWS <u>cannot</u> require or compel a landowner to obtain an Incidental Take permit, especially under Section 10. On April 25, 2018, the USFWS issued a guidance memorandum that was intended to help the USFWS' Regional Directors clarify the appropriate trigger for an incidental take permit (ITP) under the Endangered Species Act (ESA). While this guidance was directed internally to USFWS staff to aid in determination of whether project-related habitat modification is likely to result in "take" of a listed species, it also provides a tool for project proponents to determine whether to seek an ITP. The guidance emphasizes that the decision to pursue an ITP or whether to cover a species is the project proponent's choice to make and is not up to the USFWS. Further, the guidance recognizes that "[t]he biological, legal, and economic risk assessment regarding whether to seek a permit belongs with the private party determining how to proceed."

Of significance is that the guidance provides that habitat modification, in and of itself, does not constitute "take" unless the three components of "harm" are met. Thus, in order to find that habitat modification constitutes an incidental take of listed species, the following questions must all be answered in the affirmative:

- Is the modification of habitat significant?
- Does that modification also significantly impair an essential behavior pattern of a listed species?
- Is the significant modification of the habitat likely to result in the actual killing or injury of wildlife?

California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW), formally known as the California Department of Fish and Game, is a Trustee Agency with responsibility under the CEQA for commenting/providing recommendations on projects that could impact plant and wildlife resources. In addition, pursuant to the Fish and Game Code Section 1802, the CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species. The California Fish and Game Code also provide authority for the CDFW to regulate projects that could result in the "take" of any species listed by the State as threatened or endangered (Section 2081). CDFW also has authority over all state streams, as described below.

Perennial and intermittent streams also fall under the jurisdiction of CDFW pursuant to Sections 1601-1603 of the Fish and Game Code (Streambed Alteration Agreements). The CDFW's jurisdiction over work within the stream zone includes, but is not limited to, the diversion or obstruction of the natural flow or changes in the channel, bed, or bank of any river, stream or lake. Prior to issuing a 1601 or 1603 Streambed Alteration Agreement, the CDFW must demonstrate compliance with CEQA. In most cases, CDFW relies on the CEQA review performed by the local lead agency. However, in cases where no CEQA review was required for the project, CDFW would act as the lead agency under CEQA.

The CDFW also has authority for protection state-listed species issues under Section 2081 Incidental Take Permit if a project has the potential to negatively affect state-protected plant or animal species or their habitats, either directly or indirectly. Protected species include those "listed" by the state as endangered or threatened. Besides listed species, there are other categories of species protection, including "fully protected" and California Species of Special Concern (CSC). Adverse impacts to species that have the "fully protected" designation is prohibited.

Under current California Fish & Game Code (FGC Section 3503) "it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird…" Birds of prey (falcons, hawks, owls, and eagles) get extra protection under the law (FGC Section 3503.5). As is the case with USFW, CDFW does not have the authority to require a landowner to apply for an Incidental Take Permit (ITP) authorizing take. Instead, it is the landowner that has the legal obligation to avoid any take of CTS if it does not seek an ITP, or to apply for and receive an ITP which authorizes take. That said, CDFW (and USFWS) can initiate an enforcement action if they believe that illegal take has occurred or will occur.

California Endangered Species Act

The California Endangered Species Act (CESA) provides protection for candidate plants and animal species as well as those listed as rare, threatened, or endangered by the California Department of Fish and Game (CDFG). This act prohibits the take of any such species unless authorized. Section 2081 authorizes the state to issue incidental take permits. The state definition of take applies only to acts that result in the death of or adverse impacts to protected species. The CAESA mirrors the federal regulation as it relates to "take"; however, there is no state equivalent definition of "harm" or "harass". Incidental take is also not defined by the CAESA statute or regulation. Unlike the federal ESA, CAESA does qualify that "accidental take" is not prohibited "if it is the result of an act that occurs on a farm or ranch in the course of an otherwise lawful routine and ongoing agricultural activity". Where disagreement occurs (and in some cases this has been the subject of court cases) is in the common understanding of "routine and ongoing agricultural activity".

California Environmental Quality Act

The CEQA Guidelines require review of projects to determine their environmental effects and to identify mitigation for significant effects. The Guidelines state an effect may be significant if it affects rare and endangered species. Section 15380 of the Guidelines defines *rare* to include listed species and allows agencies to consider rare species other than those designated as State or Federal threatened or endangered, but that meet the standards for rare under the Federal or State endangered species acts. On this basis, plants designated as rare by non-regulatory organizations (e.g., California Native Plant Society), species of special concern as defined by CDFW, candidate species as defined by USFWS and other designations may need to be considered in CEQA analyses.

Land Use Entitlements

Fresno County

The Study Area falls within the Fresno County, California. The Study Area is located just southeast of the Fresno Yosemite International Airport within Fresno County. The County is responsible for all local land use decisions within its jurisdictional boundary. Fresno County is responsible for issuance of all local land use entitlements and for compliance with CEQA. As the lead agency under CEQA, the County will consider recommendations made by other responsible agencies during the CEQA review.

2.0 RESOURCES CONSULTED AND METHODS

The following section describes the methods were used to assess the Study Area and includes a combination of data review and evaluation, field studies, and aerial photograph interpretations.

2.1 DATA AND LITERATURE REVIEW

The Study Area is located in a historically agricultural area in Fresno, California. The following documents and/or sources were used in preparing this report.

- U.S. Department of Agricultural, Natural Resources Conservation Service, Soil Survey of Fresno Area (Soils mapper).
- Aerial photography (Google Earth®, Bing®, and historic aerials dating back to 1983).
- The California Department of Fish and Game, California Natural Diversity Database (CNDDB/RareFind - Recent version with updates)
- U.S. Fish and Wildlife Service National Wetland Inventory Map
- U.S. Geologic Survey, Historic topographic Map, Clovis Quadrangle, 1919, University of Texas, Austin, Perry-Castañeda Map Collection
- Henry Madden Library, Fresno State University. Historic Aerial Photography collection dating back to 1938
- Fresno County General Plan, Background Report (October 3, 2003).

2.2 AERIAL PHOTOGRAPHY AND WETLAND MAPPING

A series of aerial photographs of the Study Area were reviewed to assess changes in land use over time, dating back to 1998. Both black and white and color aerial photographs ranging in resolution from 0.5 meters to 1.0 meter were used. We also reviewed historic aerial photographs to evaluate historic land use dating from the 1950s.

Also reviewed was wetland mapping and the aerials to determine if the Study Area recently supported wetlands.

2.3 FIELD REVIEW

Prior to conducting a site review, we reviewed the California Natural Diversity Database/ RareFind (CNDDB/RareFind). The CNDDB includes records of reported observations for special status plant and animal species. A search radius of USGS quadrangles was conducted. The results of the CNDDB/RareFind were reviewed to identify which species would present the greatest likelihood of being present on the site based on the distance of the site from known records and the similarity in habitats between the Study Area and the habitats that the species required and/or preferred. Also prior to the field work, high resolution aerials photographs were reviewed to determine if there are any areas on the site that appear to support waters of the U.S., or other water features.

A site visits were conducted in May 2019 and Tracts 6241 was walked to identify habitat types, identify any wetlands potentially present, and assess habitat conditions and land use. This information was used to evaluate site suitability for species of concern. In addition, the remainder of the annexation lands were assessed without gaining access to the parcels but were viewed from public roadways.

3.0 RESULTS AND CONCLUSIONS

The following section describes the physical (i.e., topography, drainage, and soils) and the biological resources present, or potentially present, within the Study Area. Section 3.1 describes the physical components (i.e., soils, hydrology, etc.) of the Study Area. The physical components strongly influence the types of plants and animals present. Section 3.2 is an overview of the resources and habitats present within the Study Area, including descriptions of the specific biological resources observed.

The information presented is not an exhaustive inventory of plants or animals present. Rather it is designed to provide sufficient information to identify what, if any, biological resources are present that may be considered unique, sensitive, or protected by current law and the potential impacts to those resources if the site is developed. This section also includes recommended avoidance and minimization measures to minimize potential impacts.

3.1 PHYSICAL RESOURCES AND ELEMENTS

Climate

Climate in the Study Area is typical of the central San Joaquin Valley with summers that are long, hot, and dry and winters that are cool and mild. Rainfall in the winter averages approximately 10.9 inches per year, falling mainly between November and April (Western Regional Climate Center, 2004). During this rainy season (Oct – May/to date) the total rainfall has been over 11 inches as recorded at Fresno State University, Fresno. The latest rainstorm occurred on May 26, 2019.

Land Use and Habitat Types

The Study Area is located within the unincorporated area of Fresno County. The existing General Plan land use designation is "Agricultural", specifically AE20, Exclusive Agricultural. Based on aerial photographs the site has been developed as agricultural since at least 1950s. No significant changes have been made to the property in that time. The surrounding area has also been developed as agricultural and rural residential since at least 1938 with little change. Based on historical aerials, the Study Area has been in near continuous agricultural production with Tract 6241 supporting a variety of different row crops/cover types. The remainder of the annexation lands have also been in near continuous agricultural production. A single home was located in the northern end of the potential annexation lands (along Clinton) in 1938. Currently there are three homes along Clinton Avenue and a single home within the annexation area off of Armstrong Avenue. There are no homes within Tract 6241.

The surrounding lands also support a combination of agricultural lands and rural residential homes.

Habitat within the Study Area is a mixture of agricultural land, fallow agricultural land, rural residential, landscaped lawns, and ruderal habitat. The ruderal habitat is primarily composed of weedy species such as bindweed, dove weed, mustard, and star-thistle.

Site Topography

The property outlined in red in the historic (1919) topographic map (right, Figure 3), lies within the San Joaquin Valley and is fairly flat remaining between 384 and around 390 feet above sea level throughout the site. The site topography has not changed significantly since 1919 (See Figure 4). Mill Ditch and the Temperance Ditch are visible just south of the Study Area.

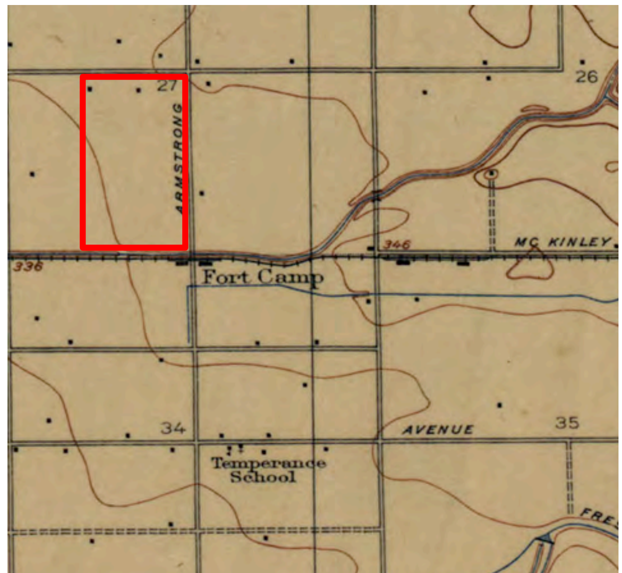


Figure 3 - USGS Historic Topographic Map (1919)

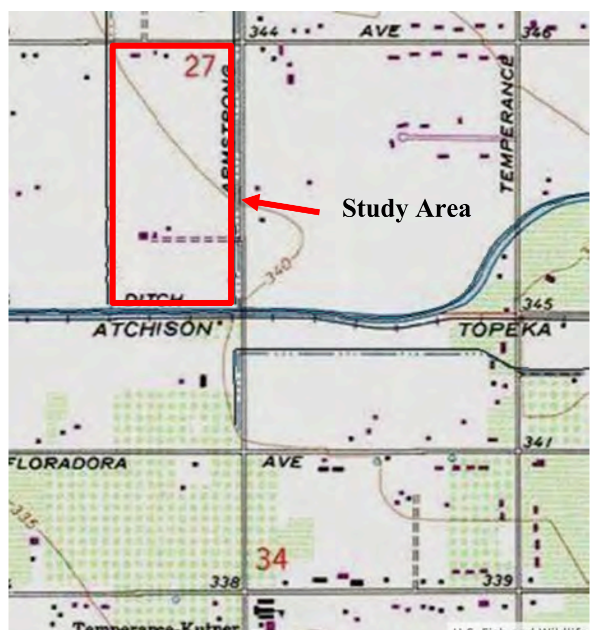


Figure 4 - USGS Topographic Map (Current)

Drainage and Waters/Wetlands

Drainage

The Study Area is located within the Upper Dry Watershed (HUC 18030009).

Mill Ditch and Temperance Ditch No 37 are operated by the Fresno Irrigation District. Mill Ditch No. 36 crosses just south of the Study Area. Temperance Ditch No 37 is connected to the Mill Ditch east of Armstrong Avenue. The Study Area is located between Red Bank Creek system to the north and Fancher Creek to the south. The Study Area drains to the southwest.

There are no historic drainages within the Study Area. The Mill Ditch runs along the southern boundary of the Study Area and an unnamed farm ditch that separates the western boundary of the Study Area from an adjacent parcel.

The FID canal system was acquired from the Fresno Canal and Irrigation Co. in 1921 was built to serve 1 CFS per 160 acres of stock ownership. Releases from the FID distribution system are collected in regulating reservoirs and/or groundwater recharge basins with no net loss of water. Water enters back into the system through groundwater wells operated by area water users. FID does have the ability to release water to the San Joaquin River through a spillway, but this spillway is only periodically used to discharge winter storm flows and is not used to spill any water during the irrigation season.

Waters/Wetland

A query of the National Wetland Inventory (NWI) Map (Figure 5) shows no waters, wetlands, ponds, or rivers within the Study Are, including within Tract 6241. The Mill Ditch are not identified as streams or creeks with the NWI mapping. However, in recent years, both the U.S. Army Corps of Engineers and the State of California have been assuming jurisdiction over many ditches that are hydrologically connected to natural and/or historic waters. Unlike "on-farm" ditches which are temporary and created in upland areas, many ditches are permanent structures that were sometimes excavated within historic drainages. Ditches/canals typically are sometimes

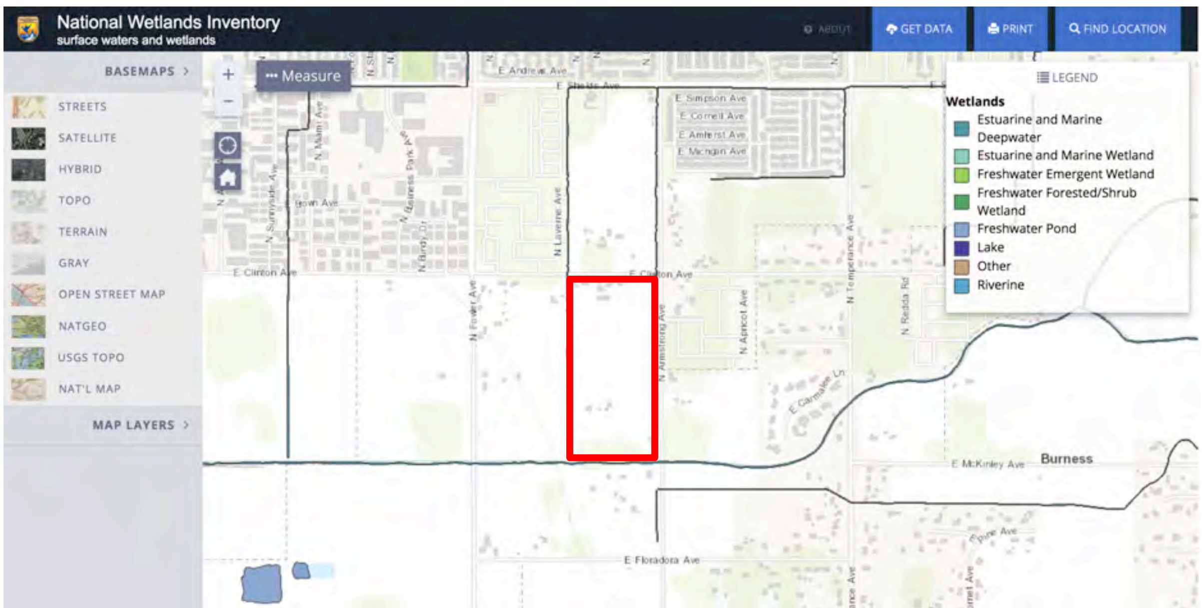


Figure 5
National Wetland Inventory Map
Metzler Reorganization and Tract 6241 Study Area

classified as other waters of the U.S., since they are connected to other canal, and larger navigable rivers via a network of other water features. Since they often exhibit an OHWM and are hydrologically connected to other waters of the U.S., they are often considered themselves waters of the U.S.

However, the Mill Ditch conveys water to on-farm ditches. Thus, the Mill Ditch is strictly a conveyance ditch and does not convey flow from an existing waters of the US/state to another waters. For this reason, Mill Ditch is not a potential waters of the US/state. Moreover, even if the ditches were waters of the US, the Sacramento District of the USACE Regulatory Guidance Letter (RGL) 16-01 on jurisdictional determination clarifies that no jurisdictional determination by the USACE is required (or given) in instances where an activity is not subject to a jurisdictional determination because the activity is either not regulated or is exempt under Section 404. Furthermore, RGL 07-02 *Exemptions for Construction or Maintenance of Irrigation Ditches and Maintenance of Drainage Ditches Under Section 404 of Clean Water Act* clarifies that defined categories of ar not subject to Section 404.

FID includes numerous requirements and conditions that must be met before for any modification to the ditches or work near the ditches is allowed to commence. We assume the project will be conditioned to meet those requirements.

Soils

The Natural Resources Conservation Service (NRCS) soil survey mapped 3soil types within the Study Area. None of the soils are rated as a hydric soil. Hydric soil is readily formed under ponded condition and is a strong indicator of areas experiencing prolonged ponding (e.g., wetlands). The presence of mapped hydric soils may indicate that the soils could support wetlands but, there is no direct correlation. Wetlands can occur in areas where no hydric soil are mapped and may be absent in areas mapped as hydric soils. The following is a summary of the soil type present and the full soils report is included in Attachment A.

Table 1
NRCS Soils Within Study Area

Table 1 – USGS Soils Summary						
Map Unit Symbol	Map Unit Name	Hydric		Approximate Acres in Area of Interest	Percent of Area of Interest
		Yes	No		
GtA	Greenfield sandy loam, 0 to 3 percent slopes		✓	6.2	8.1%
Rc	Ramona loam		✓	67.2	87.5.%
Re	Ramona loam, hard substratum		✓	3.4	4.4%

Special Status Species

A search of the California Natural Diversity Database (CNDDB) and the U.S. Fish and Wildlife IPAC database were reviewed to determine which special status species could be present within the Study Area. There is no critical habitat for any listed species within or near the Study Area. Table 2 provides a summary of the species identified in the CNDDB and by the by the U.S. Fish and Wildlife Service that would have the highest likelihood of being present based on habitat requirements.

Reorganization Area Lands

There are potential suitable nesting trees within portions of the reorganization area lands within the Study Area. No evident of nesting was found but this does not preclude nesting to occur in the future. It is unlikely the area within the reorganization lands supports any species of concern. The habitat present include landscaped area, agricultural land, and ruderal habitat. Mill Ditch located along the southern boundary may provide suitable habitat for Sanford's arrowhead but this would of concern only if Mill Ditch would be relocated or disturbed during buildout of any area within the reorganization Study Area.

Tract 6241

Tract 6241 is composed of highly managed agricultural land. The site has been in near constant agricultural production (row crops) for several decades. There is no suitable habitat for any species of concern, including nesting raptors because there are no nest trees within or near the parcel. The site does not support any waters of the U.S. or wetlands.

Table 2
Special Status Species Summary For the Metzler Reorganization Area and Tract 6241

Common Name	Scientific Name	Status[1]	Effects[2]	Occurrence in the Study Area[3]
Birds				
Swainson's hawk	*Buteo swainsoni*	CT	NE	**Absent.** No raptor nests were observed. Species may use the site for foraging.
Tricolored blackbird	*Agesaius tricolor*	CT	NE	**Absent.** Suitable breeding habitat is not within the Study Area.
Burrowing owl	*Athene Cunicularia*	BCC	NE	**Absent**. For the most part the Study Area does not appear to provide suitable habitat. However, small areas of the study area may be provide some prey base. No evidence of occupation was observed but within Tract 6241 and it is unlikely the species is present within the Study Area.
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FT/CE	NE	**Absent.** The study area does not support riparian streams or riparian habitat that this species requires.
least Bell's vireo	*Vireo bellii pusillus*	FE/CE	NE	**Absent.** Breeding habitat historically found in Southern California and the Central Valley, but population was greatly decreased, and breeding was restricted to Southern California. However, riparian restoration in the Central Valley is beginning to show promise of the species resuming breeding in the Central Valley. No suitable breeding habitat is present within the Study Area.
Mammals				
Fresno kangaroo rat	*Dipodomys nitratoides*	CE, FE	NE	**Absent**. Species requires a land surface with hummocks as sites for its extensive, but shallow burrow system, and a substrate of suitable compactness to permit burrowing. Critical habitat limited to area within western Fresno County. No suitable habitat is not present.
San Joaquin kit fox	*Vulpes macrotis mutica*	CT, FE	NE	**Absent**. No suitable habitat present to support species, no dens.
Plants				

Hartweg's golden Sunburst	*Pseudobahia bahiifolia*	CE, FE 1B	NE	**Absent.** Found in Valley grassland habitat. The study area does not support grassland habitat. Habitat appears to be routinely disturbed by agricultural activities and likely precludes establishment.
San Joaquin adobe sunburst	*Pseudobahia peirsonii*	CE, FT 1B	NE	**Absent.** Found in Valley grassland habitat. The study area does not support grassland habitat.
Sanford's arrowhead	*Sagittaria sandordii*	1B	NE	**Likely Absent:** Occurs in slow moving waters and irrigation canals, ditches, and detention basins. The Mill Ditch supports suitable habitat, but no plants were observed during the field survey.

1 Status= Listing of special status species, unless otherwise indicated
CE: California listed as Endangered
CT: California listed as Threatened
FE: Federally listed as Endangered
FT: Federally listed as Threatened
2 Effects = Effect determination
NE: No Effect
ME: May effect, not likely to adversely affect
3 Definition Of Occurrence Indicators
Present/Potentially: Species recorded in area
Absent/Likely Absent: Species not recorded in study area and/or
CNDDB = California Natural Diversity Database provided by CDFG

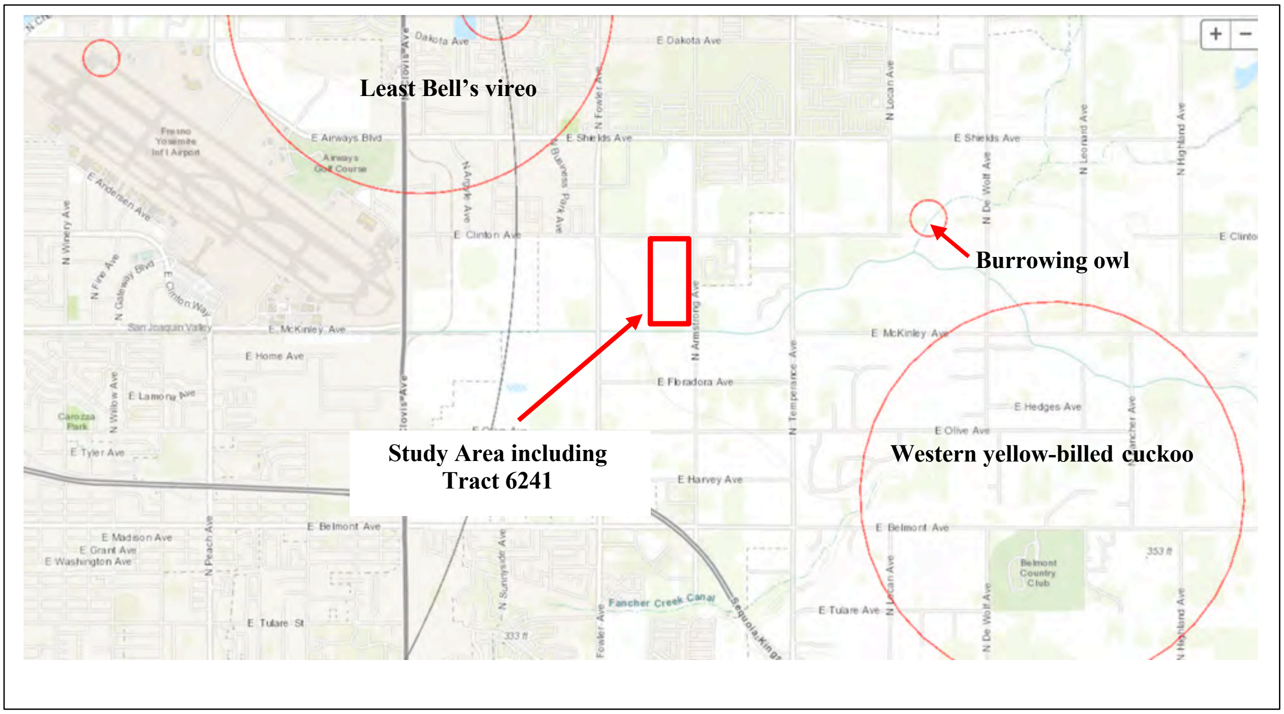


Figure 6
CNDDB Records

3.2 CONCLUSIONS

- There is no jurisdictional waters/wetlands within the Study Area (reorganization area).
- The reorganization lands support several mature trees that may provide suitable nesting habitat for tree nesting raptors.
- There are no waters/wetland or special status habitat within Tract 6241. No adverse impacts to biological resources would be expected to occur if the site is developed.

Recommendations

- Tree removal within the reorganization lands study area should be performed outside the nesting period of raptors (trees should be removed from September 1 – January 3. If trees must be removed during the nesting period (February 1-August 31) the project proponent shall submit a nesting raptor survey prepared by a qualified biologist to Fresno County Planning Department prior to issuance of a grading permit.

- Prior to approval of entitlements or issuance of grading permits on the reorganization lands outside of Tract 6241, a qualified biologist should evaluate each proposal on a project-level basis prior to issuance of a grading permit.

Attachment A -Soils Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Eastern Fresno Area, California

Metzler Study Area

September 13, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map


119° 40' 45" W
119° 40' 17" W
36° 46' 21" N
36° 45' 51" N
260900
261000
261100
261200
261300
261400
261500
4073000
4072900
4072800
4072700
4072600
4072500
4072400
4072300
4072200
4072100
Re
Rc
GtA
N Armstrong Ave
Soil Map may not be valid at this scale.
Map Scale: 1:4,570 if printed on A portrait (8.5" x 11") sheet.
Meters
0 50 100 200 300
Feet
0 200 400 800 1200
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Fresno Area, California
Survey Area Data: Version 11, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 1, 2018—Jul 1, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GtA	Greenfield sandy loam, 0 to 3 percent slopes	6.2	8.1%
Rc	Ramona loam	67.2	87.5%
Re	Ramona loam, hard substratum	3.4	4.4%
Totals for Area of Interest		**76.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Eastern Fresno Area, California

GtA—Greenfield sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hl58
Elevation: 250 to 500 feet
Mean annual precipitation: 9 to 17 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 200 to 275 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Greenfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Greenfield

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 16 inches: sandy loam
Bt - 16 to 38 inches: sandy loam
C - 38 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Hanford

Percent of map unit: 8 percent
Landform: Alluvial fans
Hydric soil rating: No

Ramona

Percent of map unit: 7 percent
Landform: Alluvial fans
Hydric soil rating: No

Rc—Ramona loam

Map Unit Setting

National map unit symbol: hl8m
Elevation: 250 to 500 feet
Mean annual precipitation: 9 to 15 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 225 to 275 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ramona and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramona

Setting

Landform: Stream terraces, alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

A - 0 to 12 inches: loam
BAt - 12 to 24 inches: loam
Bt - 24 to 38 inches: clay loam
C - 38 to 60 inches: coarse sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): 1

Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Unnamed, fine sandy loam

Percent of map unit: 10 percent
Landform: Stream terraces, alluvial fans
Hydric soil rating: No

Unnamed, gently sloping

Percent of map unit: 5 percent
Landform: Alluvial fans, stream terraces
Hydric soil rating: No

Unnamed, clay loam

Percent of map unit: 5 percent
Landform: Alluvial fans, stream terraces
Hydric soil rating: No

Re—Ramona loam, hard substratum

Map Unit Setting

National map unit symbol: hl8p
Elevation: 250 to 500 feet
Mean annual precipitation: 9 to 15 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 225 to 275 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ramona and similar soils: 10 percent
Minor components: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramona

Setting

Landform: Alluvial fans, stream terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

A - 0 to 12 inches: loam
BAt - 12 to 24 inches: loam
Bt - 24 to 40 inches: clay loam
Bqm - 40 to 50 inches: cemented

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to duripan
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Ramona

Percent of map unit: 85 percent
Landform: Stream terraces, alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent
Landform: Alluvial fans, stream terraces
Hydric soil rating: No

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Attachment B -Photographs

ARGONAUT ECOLOGICAL CONSULTING, INC.

Photographs

Location: Metzler Reorganization Area and Tract 6241
Photograph Date: April 17, 2019

Photograph No. 1
Tract 6241

Direction: West

Description: View Tract 6241 looking east

Photograph No. 2
Tract 6241

Direction: South

Description: View of eastern of agricultural field.

ARGONAUT ECOLOGICAL CONSULTING, INC.

Photographs

Location: Metzler Reorganization Area and Tract 6241
Photograph Date: April 17, 2019

Photograph No. 3
Reorganization Area

Direction: South

Description:
View of typical agricultural lands within Study Area.

Photograph No. 4
Reorganization Area

Direction: East

Description:
View of homes along Clinton Avenue at north end of Study Area

CULTURAL RESOURCE ASSESSMENT FOR

THE METZLER REORGANIZATION AREA AND

TENTATIVE TRACT 6241 DEVELOPMENT,

FRESNO COUNTY CALIFORNIA

Prepared by

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September 12, 2019
(Job #19-051)

INTRODUCTION

The Metzler reorganization project consists of a tentative subdivision map (TM6241), as well as adjacent lands that will provide a necessary connection to the existing City limit boundary and other lands necessary to square off the proposed annexation boundary, totaling about 77.2 acres (Figure 1). The area is bounded by E. Clinton Avenue on the north, N. Armstrong Avenue on the east side, and the Mill Ditch on the south side.

The tentative subdivision map (TM6241), totaling about 19.83 acres (Figure 2). The tract lies on the west side of N. Armstrong Avenue. A ditch runs north-south along the western boundary of the project site.

The reorganization area lies in the southwest quarter of section 27 Township 13 South, Range 21 East, mapped on the Clovis USGS topographic quadrangle (Figure 3).

Melinda A. Peak, senior historian/archeologist with Peak & Associates, Inc. served as principal investigator for the study with Michael Lawson (resumes, Appendix 1), completing the field survey of Tract 6241.

CALIFORNIA REGULATIONS

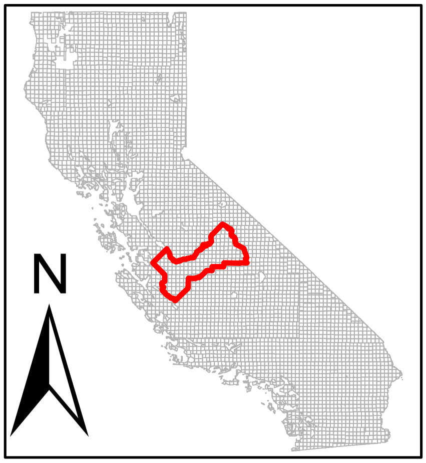
State historic preservation regulations affecting this project include the statutes and guidelines contained in the California Environmental Quality Act (CEQA; Public Resources Code sections 21083.2 and 21084.1 and sections 15064.5 and 15126.4 (b) of the CEQA Guidelines). CEQA Section 15064.5 requires that lead agencies determine whether projects may have a significant effect on archaeological and historical resources. Public Resources Code Section 21098.1 further cites: A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

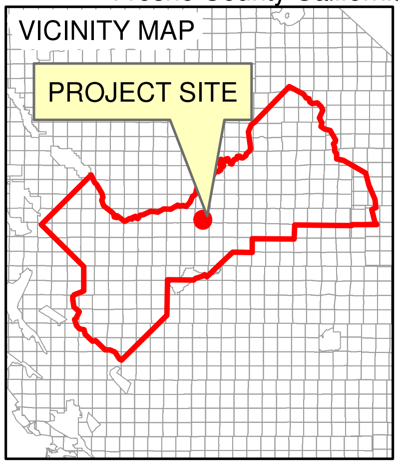
An "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript that is historically or archaeologically significant (Public Resources Code section 5020.1).

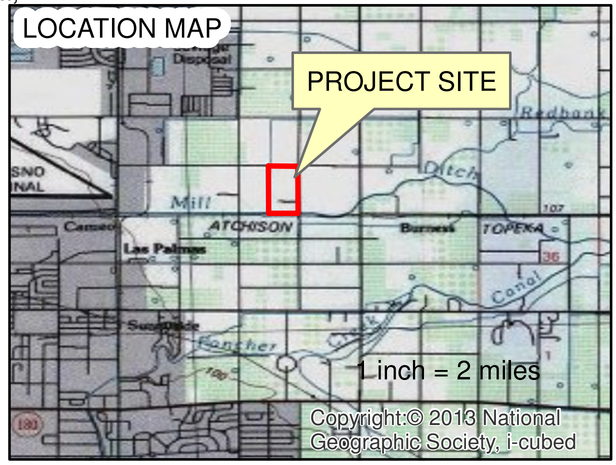
Advice on procedures to identify such resources, evaluate their importance, and estimate potential effects is given in several agency publications such as the series produced by the Governor's Office of Planning and Research (OPR), *CEQA and Archaeological Resources,* 1994. The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including, but not limited to, museums,

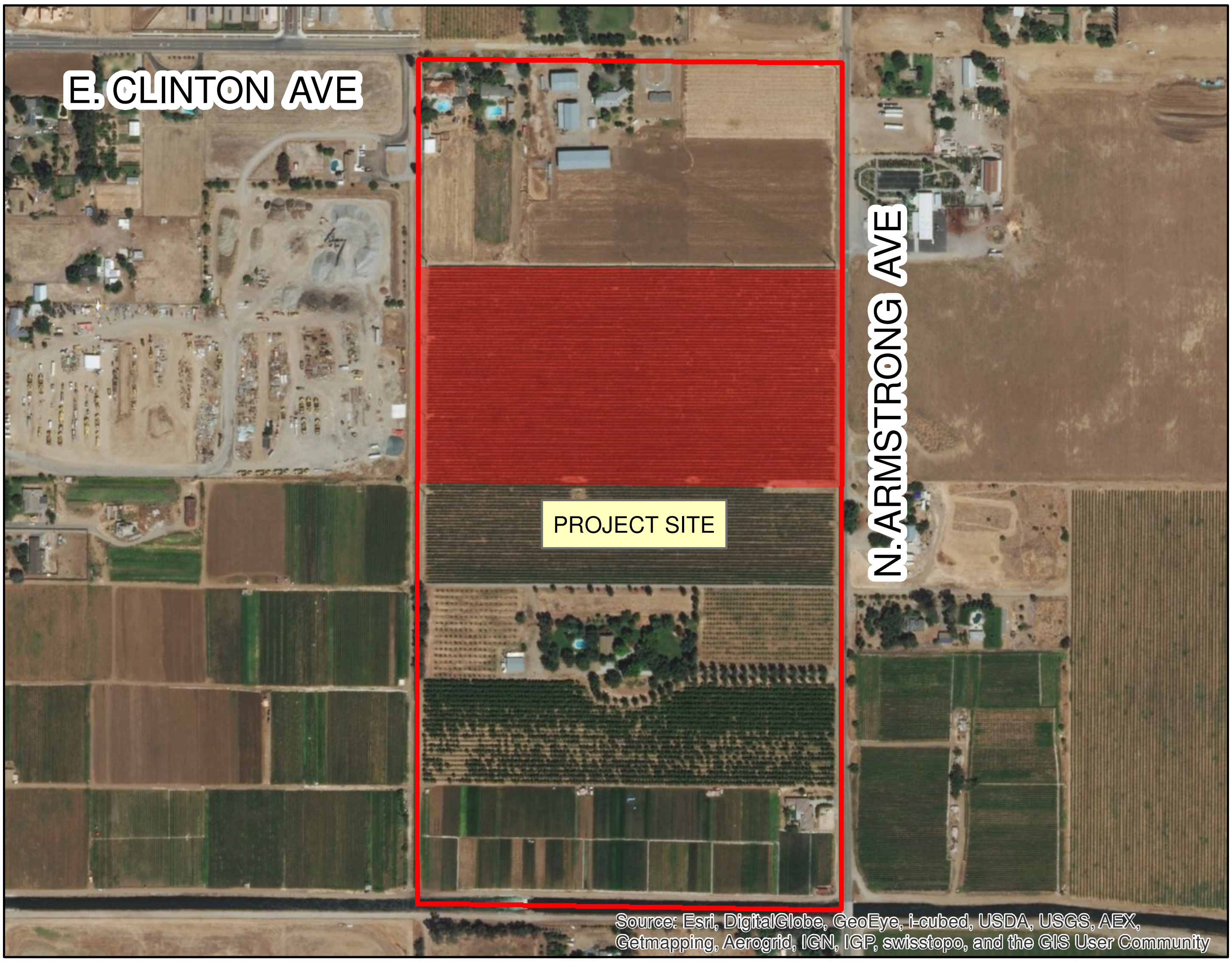
VICINITY AND LOCATION MAP (FIGURE 1)

CLIENT NAME: Wilson Homes PROJECT NAME: Metzler Reorganization Area
PROJECT LOCATION: Part of Sections 27, T. 13S., R.21E., Mount Diablo Base and Meridian
Fresno County California,









Legend

Metzler Reorganzation Area (77.2 AC.)

TRACT 6241 (19.83 AC.)

500 250 0 500 Feet

1 in = 500 ft

PEAK & ASSOCIATES, INC.
CONSULTING ARCHEOLOGY

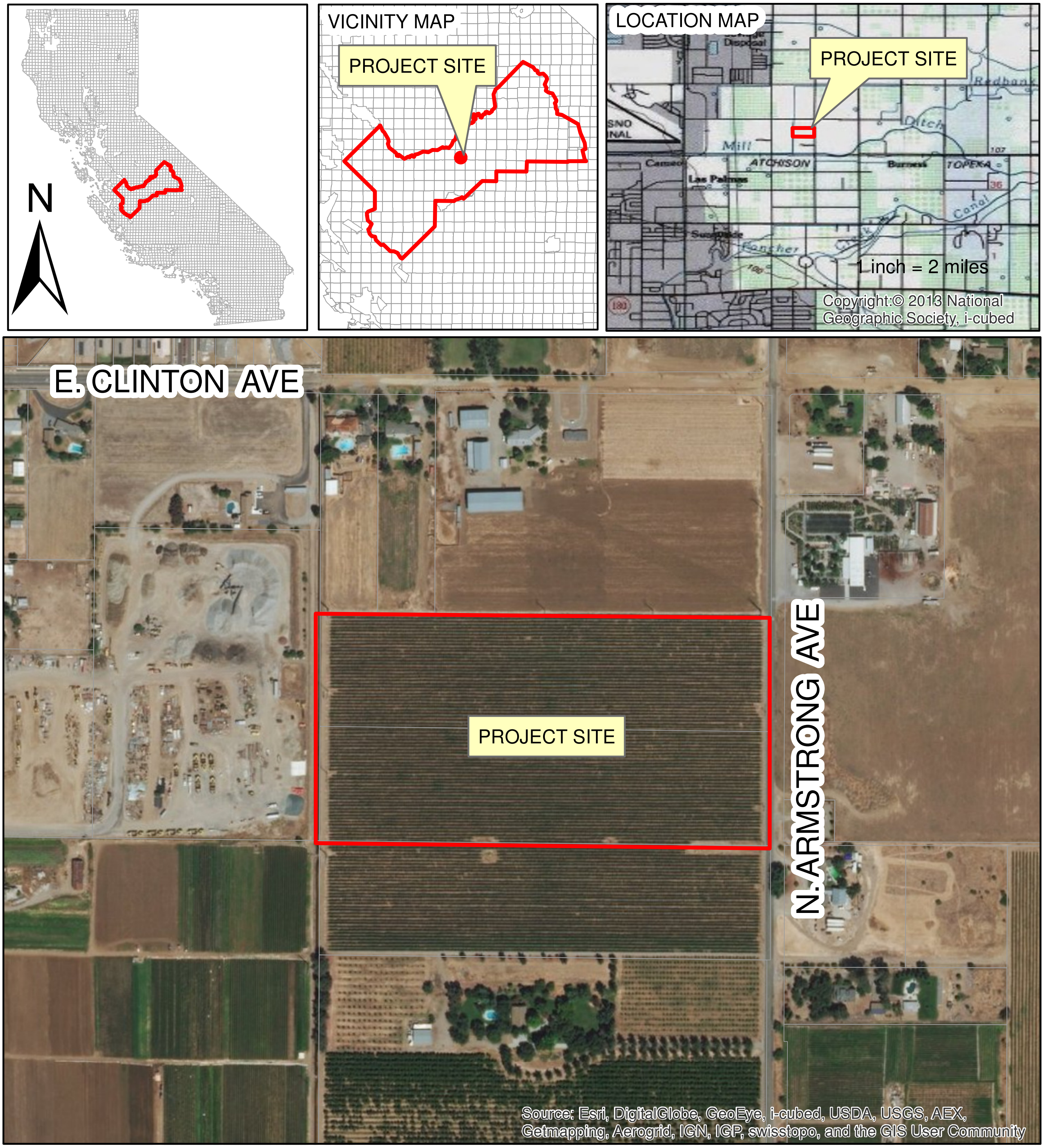
Date: 9/11/2019

VICINITY AND LOCATION MAP (FIGURE 2)

CLIENT NAME: Wilson Homes PROJECT NAME: Tract No.6241

PROJECT LOCATION: Part of Sections 27, T. 13S., R.21E., Mount Diablo Base and Meridian

Fresno County California,



Legend

APPROXIMATE BOUNDARY (19.83 AC.)

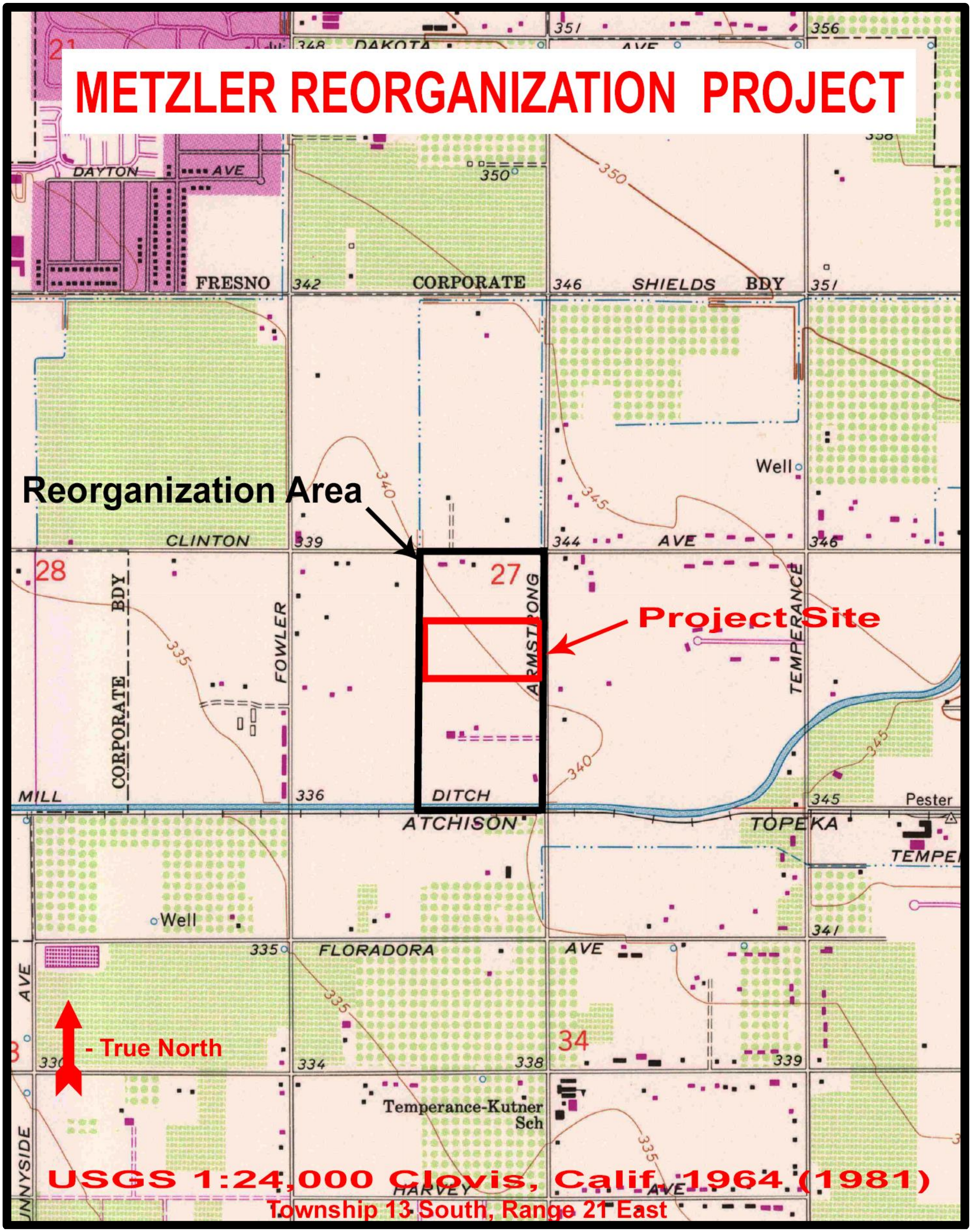
400 200 0 400 Feet

1 in = 400 ft

PEAK & ASSOCIATES, INC.

CONSULTING ARCHEOLOGY

Date: 9/11/2019



METZLER REORGANIZATION PROJECT
Reorganization Area
Project Site
- True North
USGS 1:24,000 Clovis, Calif. 1964 (1981)
Township 13 South, Range 21 East
DAKOTA
DAYTON AVE
FRESNO CORPORATE SHIELDS BDY
CLINTON AVE
CORPORATE BDY
FOWLER
ARMSTRONG
TEMPERANCE
MILL DITCH
ATCHISON TOPEKA
Pester
FLORADORA AVE
Temperance-Kutner Sch
HARVEY AVE
Well
21
27
28
34

Figure 3

historical commissions, associations and societies be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains and associated grave goods regardless of the antiquity and provides for the sensitive treatment and disposition of those remains (California Health and Safety Code Section 7050.5, California Public Resources Codes Sections 5097.94 et al).

The California Register of Historical Resources (Public Resources Code Section 5020 et seq.)

The State Historic Preservation Office (SHPO) maintains the California Register of Historical Resources (CRHR). Properties listed, or formally designated as eligible for listing, on the National Register of Historic Places are automatically listed on the CRHR, as are State Landmarks and Points of Interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

For the purposes of CEQA, an historical resource is a resource listed in, or determined eligible for listing in the California Register of Historical Resources. When a project will impact a site, it needs to be determined whether the site is an historical resource. The criteria are set forth in Section 15064.5(a) (3) of the CEQA Guidelines, and are defined as any resource that does any of the following:

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

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

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

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

In addition, the CEQA Guidelines, Section 15064.5(a) (4) states:

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

California Health and Safety Code Sections 7050.5, 7051, And 7054

These sections collectively address the illegality of interference with human burial remains, as well as the disposition of Native American burials in archaeological sites. The law protects such remains from disturbance, vandalism, or inadvertent destruction, and establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project, including the treatment of remains prior to, during, and after evaluation, and reburial procedures.

California Public Resources Code Section 15064.5(e)

This law addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction. The section establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project and establishes the Native American Heritage Commission as the entity responsible to resolve disputes regarding the disposition of such remains.

Assembly Bill 52

Assembly Bill (AB) 52 establishes a formal consultation process for California tribes as part of CEQA and equates significant impacts on tribal cultural resources with significant environmental impacts. AB 52 defines a "California Native American Tribe" as a Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission. AB 52 requires formal consultation with California Native American Tribes prior to determining the level of environmental document if a tribe has requested to be informed by the lead agency of proposed projects. AB 52 also requires that consultation address project alternatives, mitigation measures, for significant effects, if requested by the California Native American Tribe, and that consultation be considered concluded when either the parties agree to measures to mitigate or avoid a significant effect, or the agency concludes that mutual agreement cannot be reached. Under AB 52, such measures shall be recommended for inclusion in the environmental document and adopted mitigation monitoring program if determined to avoid or lessen a significant impact on a tribal cultural resource.

CULTURAL SETTING

Archeology

The Central Valley region was among the first in the state to attract intensive fieldwork, and research has continued to the present day. This has resulted in a substantial accumulation of data, but the emphasis has been in the northern portion of the valley. In the early decades of the 1900s, E.J. Dawson explored numerous sites near Stockton and Lodi, later collaborating with W.E. Schenck (Schenck and Dawson 1929). By 1933, the focus of work was directed to the Cosumnes locality, where survey and excavation were conducted by the Sacramento Junior College (Lillard and Purves 1936). Excavation data, in particular from the stratified Windmiller site (CA-SAC-107), suggested two temporally distinct cultural traditions.

Later work at other mounds by Sacramento Junior College and the University of California, Berkeley, enabled the investigators to identify a third cultural tradition, intermediate between the previously postulated Early and Late Horizons. The three-horizon sequence, based on discrete changes in ornamental artifacts and mortuary practices, as well as on observed differences in soils within sites (Lillard, Heizer and Fenenga 1939), was later refined by Beardsley (1954). An expanded definition of artifacts diagnostic of each time period was developed, and its application extended to parts of the central California coast. Traits held in common allow the application of this system within certain limits of time and space to other areas of prehistoric central California.

In the southern San Joaquin Valley, with the exception of Hewes's excavation at CA-FRE-48 (the Tranquility Site), the foci of early investigations have been the old shorelines of the interior lakes: Tulare, Kern, and Buena Vista. In 1899, Dr. P. M. Jones directed fieldwork in the Buena Vista-Tulare Lake area of Kern County. Jones investigated 150 mounds and conducted trenching of several sites including CA-KER-53. In 1909, N. C. Nelson investigated prehistoric Site CA-KER-49, which is located to the west of Buena Vista Lake. Later, four surveys and excavations were conducted in the same locale under the auspices of the University of California. A compilation of these investigation results was published in 1926 by Gifford and Schenck.

As a result of this early work, an elaborate culture complex was defined for the late prehistoric period. This complex can be ascribed probably to the Yokuts and their direct ancestors. The material culture of this late temporal period complex included steatite vessels and beads, finely-made projectile points, pottery, shaped stone mortars, *Tivela* disc beads, use of asphaltum, and the presence of metates and manos. Flexed burials were the predominant interment mode. Earlier complexes underlying the late cultural expressions were represented by chipped stone crescents, large projectile points, atlatl spurs, and weights. Mortuary practices, generally thought to be related, include extended rather than flexed burial position, a situation analogous to that of the northern valley (Gifford and Schenck 1926; Lillard, Heizer, and Fenenga 1939; Moratto 1972).
Presence of "Early Man," although not found in direct association with extinct animals, is demonstrated by the frequency of chipped stone crescents and fluted points similar to those of the Clovis-Folsom Complex in the American Southwest. Although fluted points have been found near the shores of Tulare Lake, an area that has also produced surface finds of extinct mammal bone of Pleistocene age, the association is not substantiated by controlled excavations and remains speculative (Riddell and Olsen 1969). Most of the point collection had been acquired by D. Witt over a period of 30 years.

Under the direction of Wedel (1941), the Civil Works Administration, in conjunction with the Smithsonian Institution, initiated the first major excavations using stratigraphic controls. Investigations of CA-KER-39 and CA-KER-60 as well as several smaller sites near Buena Vista Lake produced evidence of two distinct cultural entities or occupation periods. Wedel lacked methods for dating these two entities by cross-comparison of the assemblages, he tentatively stated that the early occupation at Buena Vista Lake appeared to be temporally older and less developed than the Early Horizon (Windmiller Pattern) of the Delta region. He compared this early component to the Oak Grove or Milling Stone culture of the Santa Barbara area (Rogers 1939). He divided the later cultural entity into two distinct phases, both clearly distinguished from the earlier cultural phase by artifact types. Wedel (1941:144-145) estimated that neither of these cultural periods exceeded 1500 B.P. (years Before the Present). Later, other investigators proposed far earlier ages for these early occupations, with dates ranging from 2000 to 7000 B.P. (Baumhoff and Olmstead 1963, 1964; Heizer 1964; Meighan 1959).

Later investigations in 1963 and 1964 at CA-KER-116 near Buena Vista Lake produced materials similar to Wedel's early occupation. These materials occurred in the lower levels of the "upper deposit," while an even deeper cultural deposit yielded materials similar to those of the San Dieguito Complex. Artifacts included a chipped stone crescent, crude point fragments, and an atlatl spur. Radiocarbon age determinations on shell from the lowest cultural levels returned a date of circa 8200 B.P. (Fredrickson and Grossman 1966, 1977; Fredrickson 1967).

Despite the previously mentioned investigations, the prehistory of the southern San Joaquin remains as yet poorly understood, without a tightly defined chronological sequence of cultural development.

Ethnology

Ethnographic literature is often uncertain in definition of cultural boundaries for Indian groups. Early displacement by white intrusion resulted in population shifts to avoid conflict with the Spanish, and later with the miners and settlers. The ravages of disease and warfare decimated the native people, further weakening cultural identity. Informants were often uncertain of original territories of the various tribal groupings.

The Yokuts were members of the Penutian language family which held all of the Central Valley, San Francisco Bay Area, and the Pacific Coast from Marin County to near Point Sur. The Yokuts differed from other ethnographic groups in California as they had true tribal divisions with group names (Kroeber 1925). Each tribe spoke a particular dialect, common to its members, but similar enough to other Yokuts that they were mutually intelligible (Kroeber 1925).

Trade was well developed, with mutually beneficial interchange of needed or desired goods. Obsidian, rare in the San Joaquin Valley, was obtained by trade with Paiute and Shoshoni groups on the eastern side of the Sierra Nevada, where numerous sources of this material are located, and to some extent from the Napa Valley to the north. Shell beads, obtained by the Yokuts from coastal people, and acorns, rare in the Great Basin, were among many items exported to the east by Yokuts traders (Davis 1961).

Economic subsistence was based on the acorn, with substantial dependency on gathering and processing of wild seeds and other vegetable foods. The rivers, streams, and sloughs which formed a maze within the valley provided abundant food resources such as fish, shellfish, and turtles. Game, wild fowl, and small mammals were trapped and hunted to provide protein augmentation of the diet. In general, the eastern portion of the San Joaquin Valley provided a lush environment of varied food resources, with the estimated large population centers reflecting this abundance (Cook 1955; Baumhoff 1963).

Settlements were oriented along the water ways, with their village sites normally placed adjacent to these features for their nearby water and food resources. House structures varied in size and shape (Latta 1949; Kroeber 1925). The housepit depressions ranged in diameter from between 3 to 18 meters.

Latta (1949:99) reported that a village of 200 to 300 Yokuts might have four or five large houses that were used for ten or twelve years or until a family member died, at which time the Indians burned the house in which the death had occurred. If a sick or aged person died outside the dwelling, the family did not burn the house. When a Northern Yokuts died, his body was cremated or buried in a flexed position. Southern tribes normally buried their dead, although they did cremate shamans, persons who died away from their village and, among the Tachi, persons of great importance.

The Yokuts experienced severe depopulation after contact with the Spanish and subsequent explores. The most devastating impacts of the Spanish colonization effort were not the result of military conflicts, but came from Old World diseases newly introduced to the native people.

Historical Context

Early Explorations

The early recorded inhabitants of the region were members of the Yokuts tribe. Although the Spanish missions were established closer to the Pacific coast between 1769 and 1817, the general project area was first visited in the early 1800s by Spanish explorers, who visited the San Joaquin

Valley with three goals: to search for runaway neophytes from the missions in the coastal regions, to punish the Indian raiders, and to select sites for new missions. In 1806, a group led by Gabriel Moraga and Father Pedro Muñoz, left Mission San Juan Bautista heading north to about the Mokelumne River**.** They then turned south, and travelled along the edge of the mountains crossing the San Joaquin River and passing through Tejon Pass, arriving at Mission San Fernando. In 1815, José Dolores Pico marched an expedition group from Monterey into the region. Following the San Joaquin River, he passed through the area in search of runaways, traveling as far south as the Kern River. The expedition returned to the starting point in Monterey with nine prisoners and a number of horses.

After control of California passed from Spain to Mexico in 1822, Mexican explorations into the interior continued, with José Dolores Pico conducting a major expedition along the San Joaquin River in 1825-1826. This expedition was considered successful in that some neophytes were captured, hostile Indians killed, some of the tribal groups intimidated, and some stolen horses recovered. In 1828, Sebastián Rodríguez led a similar expedition into the same region. His expedition captured a number of neophytes as well as some of the stolen horses, an item that had become an important dietary staple for the Indian tribes in the San Joaquin Valley region (Beck and Haase 1974).

The expeditions did not leave physical evidence, but there were definitely effects to the Native American populations. Causing even more of an effect on the native population were the diseases brought in to the Native populations of the Central Valley in the early 1830s.

Ranchos

In Fresno County, there was only one early land grant, a rancho along the current southern border of the county: Laguna de Tache. The era of the Spanish and Mexican land grants did not directly affect the project area.

Regional History

The lands of the project region were recognized early in time for their agricultural value. Early land use included grazing and dry lands crops such as grains. Over time, a system of ditches was constructed to bring a reliable source of water to much more of the county, allowing the planting of orchards and vineyards, as well as the cultivation of a wider variety of crops. In 1891, the entire section of land containing the reorganization area was owned by George H. Eggers.

In addition, transportation for the farm products to wider markets with the addition of railroad systems in the region. The north-south aligned Southern Pacific route was located about a mile and a half west of the annexation area. One-quarter mile south of the project area, the 1923 USGS topographic map showing a railroad alignment along the section 26/section 34, the Fresno Interurban railroad. By 1946, this route had become part of the Atchinson, Topeka and Santa Fe railroad system. The rail line has been completely removed in recent years.

To the south of the project area, at the intersection of crossing by N. Armstrong Avenue and on the south side of the tracks of the Fresno Interurban line, was the railroad siding/stop of "Forthcamp", named for the adjacent landowners. In 1923, there were two large packing sheds at the site. One shed had been removed by 1946. Forthcamp would have provided a shipping point for produce from the project area.

By 1891, the land in section 34 to the south of the reorganization area had been subdivided into the Temperance Colony, with land parcels of 20 acres each. Some individuals had acquired one parcel; some acquired two or more parcels. Water was brought to the Colony by the Mill Ditch.

A long-term feature in the region is the Temperance School, located to the south of Olive Street, built by 1891, apparently established as a feature of the Temperance Colony. This school is still present, now the Temperance-Kutner School.

RESEARCH

A record search was conducted for the reorganization area at the Southern San Joaquin Valley Archaeological Information Center of the California Historical Resources Information System on September 9, 2019 (RS#19-340, Appendix 2).

There are no known sites in the reorganization area nor within a 0.125-mile radius. No portion of the project area has ever been previously surveyed for cultural resources.

FIELD ASSESSMENT

Mike Lawson completed the field survey of Tract 6241 on May 1, 2019, with complete coverage (Figure 4). The rectangular parcel is bounded by an unnamed ditch to the west and private property to north and south. The parcel is flat and has a history of agricultural use. It is currently plowed and fallow, with no buildings or structures present.

The soil is loamy sand, high in granitic components, and medium brown in coloration. Little variation was noted throughout survey.

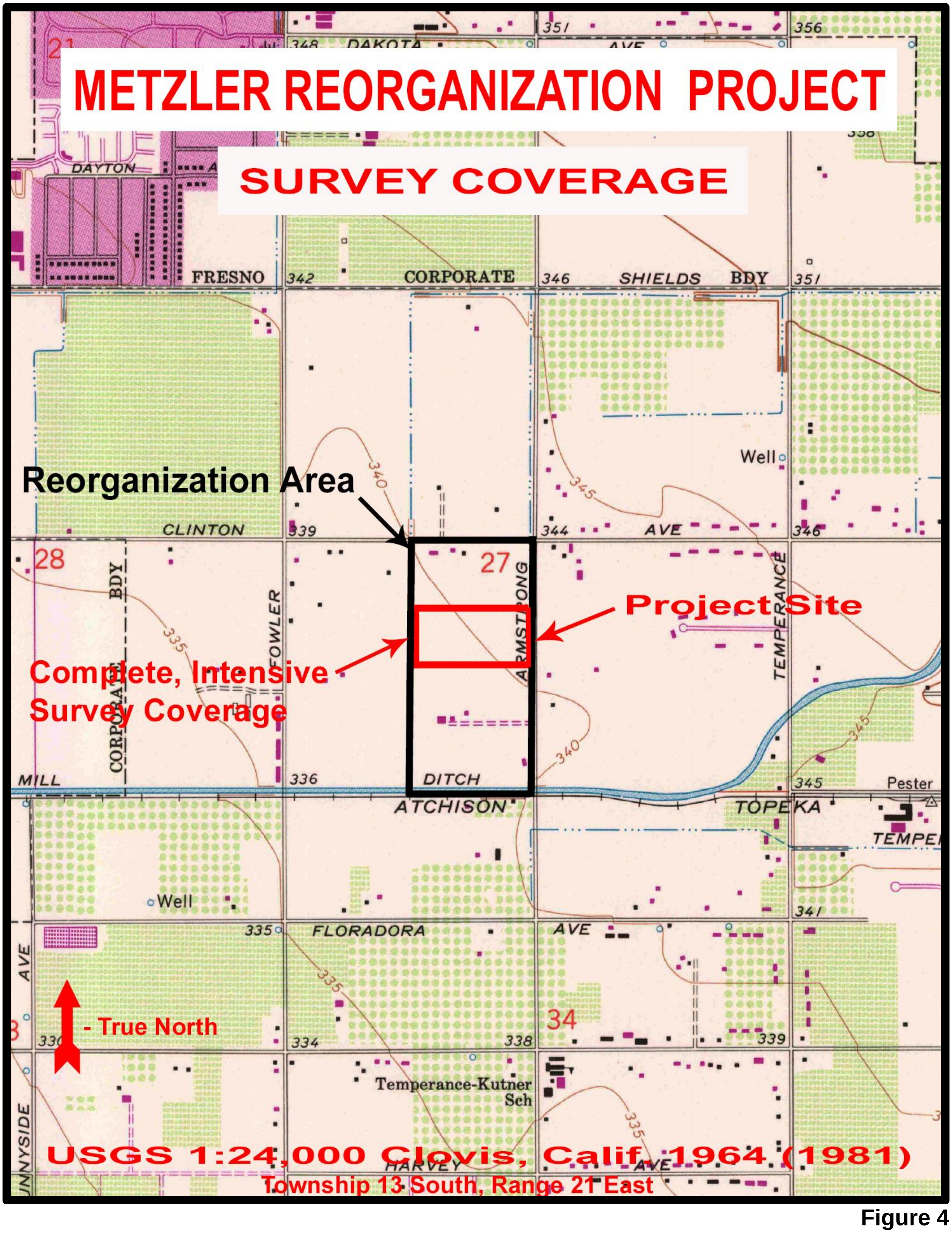

METZLER REORGANIZATION PROJECT
SURVEY COVERAGE
Reorganization Area
Project Site
Complete, Intensive
Survey Coverage
- True North
USGS 1:24,000 Clovis, Calif. 1964 (1981)
Township 13 South, Range 21 East
DAKOTA
AVE
DAYTON
FRESNO
CORPORATE
SHIELDS
BDY
CLINTON
AVE
28
27
34
21
BDY
CORPORATE
FOWLER
ARMSTRONG
TEMPERANCE
MILL
DITCH
ATCHISON
TOPEKA
Pester
TEMPER
Well
FLORADORA
AVE
SUNNYSIDE
Temperance-Kutner
Sch
HARVEY
AVE

Figure 4

Survey strategy included parallel transects of ten to fifteen meters apart with occasional overlapping where exceptional visibility occurred or slight undulation in surface occurred. Where warranted, there was occasional subsurface investigation by trowel. Along west edge and ditch line, slower travel speed occurred to allow thorough inspection of soil banks disturbed by ditch construction and maintenance. Visibility of the ground surface within the parcel was excellent at time of survey.

The ditch at west boundary of parcel is two feet wide with sloping, well-maintained earthen banks and unknown depth. Age is difficult to determine due to lack of diagnostic period-construction design, materials or associated equipment. No historic artifacts were observed along the bank or within the body of the ditch itself.

No cultural resources were observed during the investigation.

There are no resources eligible for the California Register of Historical Resources within the Tract 6241 area.

UNSURVEYED LANDS

No sites have been recorded in the remainder of the lands proposed for reorganization as shown on Figures 1 and 3, according to the recent records search through the Southern San Joaquin Valley Information Center. Historic USGS quadrangles show one building in the northern part of the reorganization area along Clinton Road that is more than 50 years in age and will require recordation and evaluation when and if that parcel is proposed for development. Surveys will need to be conducted of the other lands in the reorganization area for the presence of cultural resources.

RECOMMENDATIONS

Although no prehistoric sites were found during the survey of Tract 6241, there is a slight possibility that a site may exist and be totally obscured by vegetation, fill, or other historic activities, leaving no surface evidence. Should artifacts or unusual amounts of stone, bone, or shell be uncovered during construction activities, an archeologist should be consulted for on-the-spot evaluation of the finding. If the bone appears to be human, state law requires that the Fresno County Coroner be contacted. If the Coroner determines that the bone is human and is most likely Native American in origin, he must contact the Native American Heritage Commission (916-322-7791).

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APPENDIX 1

Resumes

PEAK & ASSOCIATES, INC.
RESUME

MELINDA A. PEAK **January 2019**
Senior Historian/Archeologist
3941 Park Drive, Suite 20 #329
El Dorado Hills, CA 95762
(916) 939-2405

PROFESSIONAL EXPERIENCE

Ms. Peak has served as the principal investigator on a wide range of prehistoric and historic excavations throughout California. She has directed laboratory analyses of archeological materials, including the historic period. She has also conducted a wide variety of cultural resource assessments in California, including documentary research, field survey, Native American consultation and report preparation.

In addition, Ms. Peak has developed a second field of expertise in applied history, specializing in site-specific research for historic period resources. She is a registered professional historian and has completed a number of historical research projects for a wide variety of site types.

Through her education and experience, Ms. Peak meets the Secretary of Interior Standards for historian, architectural historian, prehistoric archeologist and historic archeologist.

EDUCATION

M.A. - History - California State University, Sacramento, 1989
Thesis: *The Bellevue Mine: A Historical Resources Management Site Study in Plumas and Sierra Counties, California*
B.A. - Anthropology - University of California, Berkeley

RECENT PROJECTS

Ms. Peak completed the cultural resource research and contributed to the text prepared for the DeSabla-Centerville PAD for the initial stage of the FERC relicensing. She also served cultural resource project manager for the FERC relicensing of the Beardsley-Donnells Project. For the South Feather Power Project and the Woodleaf-Palermo and Sly Creek Transmission Lines, her team completing the technical work for the project.

In recent months, Ms. Peak has completed several determinations of eligibility and effect documents in coordination with the Corps of Engineers for projects requiring federal permits, assessing the eligibility of a number of sites for the National Register of Historic Places. She has also completed historical research projects on a wide variety of topics for a number of projects including the development of navigation and landings on the Napa River, wineries, farmhouses dating to the 1860s, bridges, an early roadhouse, Folsom Dam and a section of an electric railway line.

In recent years, Ms. Peak has prepared a number of cultural resource overviews and predictive models for blocks of land proposed for future development for general and specific plans. She has been able to direct a number of surveys of these areas, allowing the model to be tested.

She served as principal investigator for the multi-phase Twelve Bridges Golf Club project in Placer County. She served as liaison with the various agencies, helped prepare the historic properties treatment plan, managed the various phases of test and data recovery excavations, and completed the final report on the analysis of the test phase excavations of a number of prehistoric sites. She is currently involved as the principal investigator for the Teichert Quarry project adjacent to Twelve Bridges in the City of Rocklin, coordinating contacts with Native Americans, the Corps of Engineers and the Office of Historic Preservation.

Ms. Peak has served as project manager for a number of major survey and excavation projects in recent years, including the many surveys and site definition excavations for the 172-mile-long Pacific Pipeline proposed for construction in Santa Barbara, Ventura and Los Angeles counties. She also completed an archival study in the City of Los Angeles for the project. She also served as principal investigator for a major coaxial cable removal project for AT&T.

Additionally, she completed a number of small surveys, served as a construction monitor at several urban sites, and conducted emergency recovery excavations for sites found during monitoring. She has directed the excavations of several historic complexes in Sacramento, Placer and El Dorado Counties.

Ms. Peak is the author of a chapter and two sections of a published history (1999) of Sacramento County, *Sacramento: Gold Rush Legacy, Metropolitan Legacy*. She served as the consultant for a children's book on California, published by Capstone Press in 2003 in the Land of Liberty series.

PEAK & ASSOCIATES, INC.
RESUME

MICHAEL LAWSON **January 2019**
Archeological Specialist
3941 Park Drive, Suite 20-329
El Dorado Hills, CA 95672
(916) 939-2405

PROFESSIONAL EXPERIENCE

Mr. Lawson has compiled an excellent record of supervision of excavation and survey projects for both the public and private sectors over the past twenty-two years. He has conducted a number of surveys throughout northern and central California, as well as serving as an archeological technician and crew chief for a number of excavation projects.

EDUCATION

B.A. - Anthropology - California State University, Sacramento

Special Course: Comparative Osteology. University of Tennessee, Knoxville. Forensic Anthropology Center. January 2018.

Intensive lab and outdoor study with human example from outdoor research facility, including typical and non-metric examples, compared with fifty non-human species most commonly confused with human remains. Outdoor research facility "The Body Farm" study included survey, photography, collection and identification of faunal and human bone fragments, with a Power Point presentation discussing finds.

EXPERIENCE

- Extensive monitoring of open space, streets and project development areas for prehistoric period and historic period resources. Areas monitored include Sutter Street in Folsom; Mud Creek Archeological District in Chico; Camp Roberts, San Luis Obispo County; Avila Beach, San Luis Obispo County; Edgewood Golf Course, South Lake Tahoe; Davis Water Project, Davis; Star Bend levee section, Sutter County; Feather River levees, Sutter County; Bodega Bay, Sonoma County; San Jose BART line extension, Santa Clara County; and numerous sites for PG&E in San Francisco.
- Over twenty years of experience working in CRM, volunteer, and academic settings in California historic, proto-historic, and prehistoric archaeology.
- Expertise in pedestrian survey, excavation, feature (including burial) exposure, laboratory techniques, research. Field positions include crew chief and lead technician.

APPENDIX 2

Record Search

California
Historical
Resources
Information
System

Fresno
Kern
Kings
Madera
Tulare

Southern San Joaquin Valley Information Center
California State University, Bakersfield
Mail Stop: 72 DOB
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289
E-mail: ssjvic@csub.edu
Website: www.csub.edu/ssjvic

9/9/2019

Robert Gerry
Peak & Associates, Inc.
3941 Park Drive, Suite 20-329
El Dorado Hills, CA 95762

Re: Metzler Annexation
Records Search File No.: 19-340

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Clovis USGS 7.5' quads. The following reflects the results of the records search for the project area and the 0.125 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☐ custom GIS maps ☐ shapefiles

Resources within project area:	None
Resources within 0.125 mile radius:	None
Reports within project area:	None
Reports within 0.125 mile radius:	None

Resource Database Printout (list): ☐ enclosed ☐ not requested ☒ nothing listed

Resource Database Printout (details): ☐ enclosed ☒ not requested ☐ nothing listed

Resource Digital Database Records: ☐ enclosed ☒ not requested ☐ nothing listed

Report Database Printout (list): ☐ enclosed ☐ not requested ☒ nothing listed

Report Database Printout (details): ☐ enclosed ☒ not requested ☐ nothing listed

Report Digital Database Records: ☐ enclosed ☒ not requested ☐ nothing listed

Resource Record Copies: ☐ enclosed ☐ not requested ☒ nothing listed

Report Copies: ☐ enclosed ☒ not requested ☐ nothing listed

OHP Historic Properties Directory: ☐ enclosed ☐ not requested ☒ nothing listed

Archaeological Determinations of Eligibility: ☐ enclosed ☐ not requested ☒ nothing listed

CA Inventory of Historic Resources (1976): ☐ enclosed ☒ not requested ☐ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see

http://www.dot.ca.gov/hq/structur/strmaint/historic.htm

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see
http://historicalmaps.arcgis.com/usgs/

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC; please see
http://www.glorecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1 and/or
http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items

Shipwreck Inventory: Not available at SSJVIC; please see
http://www.slc.ca.gov/Info/Shipwrecks.html

Soil Survey Maps: Not available at SSJVIC; please see
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Celeste M. Thomson
Coordinator

Revised Traffic Impact Analysis

Tentative Tract 6241
(Single-Family Housing)

Located at the Southwest Quadrant of Armstrong Avenue and Clinton Avenue

In the City of Fresno, California

Prepared for:

Wilson Premier Homes, Inc.
7550 N. Palm Ave., Ste. 102
Fresno, CA 93711

December 12, 2019

Project No. 004-097

JLB TRAFFIC ENGINEERING, INC.

Traffic Engineering, Transportation Planning, & Parking Solutions

516 E. Shaw Ave., Ste. 103
Fresno, CA 93710
Phone: (559) 570-8991
www.JLBtraffic.com

Traffic Engineering, Transportation Planning, & Parking Solutions

Revised Traffic Impact Analysis

For Tentative Tract 6241 located at the Southwest Quadrant of Armstrong Avenue and Clinton Avenue

In the City of Fresno, CA

December 12, 2019

This Revised Traffic Impact Analysis has been prepared under the direction of a licensed Traffic Engineer. The licensed Traffic Engineer attests to the technical information contained therein and has judged the qualifications of any technical specialists providing engineering data from which recommendations, conclusions, and decisions are based.

Prepared by:

____

Jose Luis Benavides, PE, TE
President

REGISTERED PROFESSIONAL ENGINEER
JOSE LUIS BENAVIDES
No.T 2328
Exp:06/30/21
TRAFFIC
STATE OF CALIFORNIA

Traffic Engineering, Transportation Planning, & Parking Solutions
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Fresno, CA 93704
Phone: (559) 570-8991
www.JLBtraffic.com

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Introduction and Summary

Introduction

This report describes a Revised Traffic Impact Analysis (TIA) prepared by JLB Traffic Engineering, Inc. (JLB) for the proposed Tentative Tract 6241 (Project) located at the southwest quadrant of Armstrong Avenue and Clinton Avenue in the City of Fresno. The TIA has been revised to update the Project description, the existing general plan land use and the Project's proposed land use as well as include analysis of a Cumulative Year 2035 No Project Traffic Conditions scenario. The Project proposes to develop an 18.12-net acre site with up to 225 single-family residential units for an overall density of 12.41 units per acre. However, this TIA analyzes a total of 226 single-family residential units from a previous version of the Project Site Plan. Based on information provided to JLB, the Project site includes 9.06 acres of Medium Density Residential (5.0-12.0 dwelling units per acre) and 9.06 acres of Urban Neighborhood Residential (16.0-30.0 dwelling units per acre). As a result, the Project will undergo a General Plan Amendment to modify the land use designations of Medium Density Residential and Urban Neighborhood Residential to Medium-High Density Residential (12.0-16.0 dwelling units per acre) land use. Figure 1 shows the location of the proposed Project site relative to the surrounding roadway network.

The purpose of this TIA is to evaluate the potential on-site and off-site traffic impacts, identify short-term roadway and circulation needs, determine potential mitigation measures, and identify any critical traffic issues that should be addressed in the on-going planning process. The scope of work was prepared via consultation with the City of Fresno, County of Fresno, and Caltrans staff.

Summary

The potential traffic impacts of the proposed Project were evaluated in accordance with the standards set forth by the level of service (LOS) policy of the City of Fresno, County of Fresno and Caltrans.

Existing Traffic Conditions

- JLB conducted a search of the Statewide Integrated Traffic Records System (SWITRS) to obtain collision reports for the most recent five-year period (January 1, 2013 to December 31, 2017). In the five-year period, a total of 37 collisions were reported within the influence zone (assumed to be within 250 feet) of the study intersections.
- JLB was unable to reach a conclusion that would explain any justification for the modification of lane geometrics or traffic controls at this intersection. As a result, the number of correctable collisions experienced at the existing study intersections is considered less than significant.
- At present, the intersections of Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue exceed their LOS threshold during the AM peak period. To improve the LOS at the intersections projected to exceed their LOS threshold, the addition of lanes and modification of traffic control mechanisms is recommended. Additional details as to the recommended improvements for these intersections are presented later in this Report.

Existing plus Project Traffic Conditions

- JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project access points to be constructed indicates that they are located at points that minimize traffic operational impacts to the existing roadway network.
- At build-out, the Project is estimated to generate a maximum of 2,133 daily trips, 167 AM peak hour trips and 224 PM peak hour trips.
- It is recommended that the Project implement a Class II bike lane along its frontage to Armstrong Avenue.
- It is recommended that the Project implement ADA compliant walkways along its frontages to Armstrong Avenue and Kerry Avenue.
- To promote alternative modes of transportation to Temperance-Kutner Elementary School, it is recommended that the Clovis Unified School District work with the City of Fresno and County of Fresno to implement a Safe Routes to School plan and to seek grant funding to help build bikeways and walkways where they are lacking within a one-mile radius of the school site.
- Under this scenario, the intersections of Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to continue to exceed their LOS threshold during the AM peak period. When compared to Existing Traffic Conditions, the Project is projected to increase the average delay by a maximum of 1.0, 3.4, and 3.5 seconds respectively to each of these intersections during the AM peak period – less than the five (5.0) second threshold that the City of Fresno utilizes to determine if a Project causes a significant impact to an existing substandard LOS. Therefore, this impact would be considered adverse, but not significant.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Projects is 115,501 daily trips, 8,135 AM peak hour trips and 11,239 PM peak hour trips.
- Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to exceed their LOS threshold during one or both peak periods. To improve the LOS at the intersections projected to exceed their LOS threshold, the addition of lanes and modification of traffic control mechanisms is recommended. Additional details as to the recommended improvements for these intersections are presented later in this Report.
- The Project accounts for 1.81 percent of the daily trips, 2.01 percent of the AM peak hour trips and 1.95 percent of the PM peak hour trips of growth in traffic, while the rest can be attributable to the Near Term Projects. Therefore, one can deduce that the majority of the mitigation measures presented under this scenario may not be necessary immediately upon completion of the proposed Project.

Cumulative Year 2035 No Project Traffic Conditions

- Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Temperance Avenue and Clinton Avenue, Armstrong Avenue and McKinley Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to exceed their LOS threshold during both peak periods. To improve the LOS at the intersections projected to exceed their LOS threshold, the addition of lanes and modification of traffic control mechanisms is recommended. Additional details as to the recommended improvements for these intersections are presented later in this Report.

Cumulative Year 2035 plus Project Traffic Conditions

- Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Temperance Avenue and Clinton Avenue, Armstrong Avenue and McKinley Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to exceed their LOS threshold during both peak periods. To improve the LOS at the intersections projected to exceed their LOS threshold, the addition of lanes and modification of traffic control mechanisms is recommended. Additional details as to the recommended improvements for these intersections are presented later in this Report.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Project's Equitable Fair Share

- It is recommended that the Project contribute its equitable Fair Share as presented in Table XIV.

Scope of Work

The TIA focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. On May 14, 2019, a Draft Scope of Work for the preparation of a TIA for this Project was provided to the City of Fresno, County of Fresno and Caltrans for their review and comment. Any comments to the proposed Scope of Work were to be provided by June 4, 2019.

On May 16, 2019, the County of Fresno responded to the Draft Scope of Work. The County of Fresno requested that the TIA included the analysis of the intersections of Fowler Avenue and Olive Avenue and Temperance Avenue and Olive Avenue. JLB responded to the County's request and queried if a fair share analysis for the intersection of Fowler Avenue and Olive Avenue would suffice since the County has grant funds to signalize this intersection. On May 20, 2019, the County of Fresno requested that the TIA include the analysis of the intersection of Temperance Avenue and Olive Avenue and a fair share analysis of the intersection of Fowler Avenue and Olive Avenue.

On June 4, 2019, the City of Fresno responded to the Draft Scope of Work. The City of Fresno requested that the TIA include the analysis of the intersections of Fowler Avenue and Floradora Avenue, Temperance Avenue and Clinton Avenue, Temperance Avenue and Olive Avenue, and Temperance Avenue and Belmont Avenue. The City of Fresno also requested that JLB provide the trip distribution and select zone plots for review. On June 13, 2019, JLB provided the Project's trip distribution and select zone plots to the City of Fresno for their review and comment. On June 25, 2019, the City of Fresno responded with no further comments.

On June 14, 2019, Caltrans responded to the Draft Scope of Work with no concerns.

Based on the comments received, this TIA includes the analysis of the intersections of Temperance Avenue and Clinton Avenue, Fowler Avenue and Floradora Avenue, Temperance Avenue and Olive Avenue, and Temperance Avenue and Belmont Avenue as requested by the County of Fresno and City of Fresno. The Draft Scope of Work and the comments received from the lead agency and responsible agencies are included in Appendix A.

Study Facilities

The existing peak hour turning movement and segment volume counts were conducted for the study intersections between August 2018 and June 2019 while schools in the vicinity of the proposed Project were in session. The intersection turning movement counts included pedestrian volumes. The traffic counts for the existing study intersections and segments are contained in Appendix B. The existing intersection turning movement volumes, intersection geometrics and traffic controls are illustrated in Figure 2.

Study Intersections:

1. Armstrong Avenue / Clinton Avenue
2. Temperance Avenue / Clinton Avenue
3. Fowler Avenue / Kerry Avenue
4. Armstrong Avenue / Kerry Avenue
5. Armstrong Avenue / McKinley Avenue
6. Fowler Avenue / Floradora Avenue
7. Armstrong Avenue / Floradora Avenue
8. Armstrong Avenue / Olive Avenue
9. Temperance Avenue / Olive Avenue
10. Armstrong Avenue / Belmont Avenue
11. Temperance Avenue / Belmont Avenue

Project Only Trips to City/County Facilities:

1. Fowler Avenue / Olive Avenue (with Fair Share Calculations)

Project Only Trips to State Facilities:

1. State Route 180 / Fowler Avenue

Study Scenarios

Existing Traffic Conditions

This scenario evaluates the Existing Traffic Conditions based on existing traffic volumes and roadway conditions from traffic counts and field surveys conducted between August 2018 and June 2019.

Existing plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Existing plus Project Traffic Conditions. The Existing plus Project traffic volumes were obtained by adding the 2019 Project Only Trips to the Existing Traffic Conditions scenario. The 2019 Project Only Trips to the study intersections were based on the Fresno COG Project Select Zone, the existing roadway network, engineering judgment, residential and commercial densities, and the City of Fresno 2035 General Plan Circulation Element in the vicinity of the Project. The Fresno COG Models for the Project Select Zone are contained in Appendix C.

Near Term plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Near Term plus Project Traffic Conditions. The Near Term plus Project traffic volumes were obtained by adding the Near Term related trips to the Existing plus Project Traffic Conditions scenario.

Cumulative Year 2035 No Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Cumulative Year 2035 No Project Traffic Conditions. The Cumulative Year 2035 No Project traffic volumes were obtained by subtracting the 2035 Project Only Trips from the Cumulative Year 2035 plus Project Traffic Conditions scenario.

Cumulative Year 2035 plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Cumulative Year 2035 plus Project Traffic Conditions. The Cumulative Year 2035 plus Project traffic volumes were obtained from the Fresno COG traffic model runs (Base Year 2019 and Cumulative Year 2035) and existing traffic counts. Under this scenario, the increment method, as recommended by the Model Steering Committee was utilized to determine the Cumulative Year 2035 plus Project traffic volumes. The Fresno COG Models are contained in Appendix C. It should be noted that this study assumes that McKinley Avenue will be extended from Temperance Avenue west through Fowler Avenue by the year 2035 resulting in changes in travel patterns and volumes. The 2035 Project Only Trips to the study intersections were based on the Fresno COG Project Select Zone, the existing roadway network, engineering judgment, residential and commercial densities, and the City of Fresno 2035 General Plan Circulation Element in the vicinity of the Project.

Level of Service Analysis Methodology

Level of Service (LOS) is a qualitative index of the performance of an element of the transportation system. LOS is a rating scale running from "A" to "F", with "A" indicating no congestion of any kind and "F" indicating unacceptable congestion and delays. LOS in this study describes the operating conditions for signalized and unsignalized intersections.

The *Highway Capacity Manual* (HCM) 6th Edition is the standard reference published by the Transportation Research Board and contains the specific criteria and methods to be used in assessing LOS. Synchro software was used to define LOS in this study. Details regarding these calculations are included in Appendix D.

A traffic impact is considered significant if it renders an unacceptable LOS on an intersection or roadway segment, or if it worsens an already unacceptable LOS condition on an intersection or roadway segment. At unsignalized intersections, a traffic impact would be considered "adverse but not significant" if the LOS standard is exceeded but the projected traffic does not satisfy traffic signal warrants. Under these conditions, the typical means to completely alleviate delays to stop-controlled vehicles would be to install a traffic signal. However, the unmet signal warrants would imply that the reduction in delay for the stop-controlled vehicles may not justify new delays that would be incurred by the major street traffic, which is currently not stopped. Under these circumstances, the installation of a traffic signal would not be recommended and the substandard LOS for stop-controlled vehicles would be considered an "adverse but not significant" impact.

Criteria of Significance

The City of Fresno 2035 General Plan has established various degrees of acceptable level of service (LOS) on its major streets, which are dependent on four (4) Traffic Impact Zones (TIZ) within the City. The standard LOS threshold for TIZ I is LOS F, that for TIZ II is LOS E, that for TIZ III is LOS D, and that for TIZ IV is LOS E. Additionally, the 2035 MEIR made findings of overriding consideration to allow a lower LOS threshold than that established by the underlying TIZ's. For those cases in which a LOS criterion for a roadway segment differs from that of the underlying TIZ, such criteria are identified in the roadway description. As all study facilities fall within TIZ III, LOS D is used to evaluate the potential significance of LOS impacts to intersections within this TIA pursuant to the City of Fresno 2035 General Plan.

The County of Fresno has established LOS C as the acceptable level of traffic congestion on county roads and streets that fall entirely outside the Sphere of Influence (SOI) of a City. For those areas that fall within the SOI of a City, the LOS criteria of the City are the criteria of significance used in this report. LOS C is used to evaluate the potential significance of LOS impacts to Fresno County intersections, which fall outside the City of Fresno SOI. In this case, all study facilities fall within the City of Fresno SOI. Therefore, the City of Fresno LOS thresholds are utilized.

Caltrans endeavors to maintain a target LOS at the transition between LOS C and D on State highway facilities consistent with the *Caltrans Guide for the Preparation of Traffic Impact Studies* dated December 2002. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. In this TIA, however, all study facilities fall within the City of Fresno SOI. Therefore, the City of Fresno LOS thresholds are utilized.

Operational Analysis Assumptions and Defaults

The following operational analysis values, assumptions and defaults were used in this study to ensure a consistent analysis of LOS among the various scenarios.

- Yellow time consistent with the California Manual of Uniform Traffic Control Devices (CA MUTCD) based on approach speeds
- Yellow time of 3.2 seconds for left-turn phases
- All-red clearance intervals of 1.0 second for all phases
- Walk intervals of 7.0 seconds
- Flashing Don't Walk based on 3.5 feet/second walking speed with yellow plus all-red clearance subtracted and 2.0 seconds added
- All new or modified signals utilize protective left-turn phasing
- A 3 percent heavy vehicle factor
- An average of 3 pedestrian calls per hour at signalized intersections
- An average of 10 pedestrian calls per hour at the intersections of Temperance Avenue and Clinton Avenue and Armstrong Avenue and Olive Avenue
- The number of observed pedestrians at existing intersections was utilized under all study scenarios
- At existing intersections, the observed approach Peak Hour Factor (PHF) is utilized in the Existing, Existing plus Project and Near Term plus Project scenarios
- For the Cumulative Year 2035 scenarios, the following PHFs were utilized to reflect school traffic operations and an increase in future traffic volumes. As roadways start to reach their saturated flow rates, PHFs tend to increase to 0.90 or higher. The PHFs were established based on historical traffic counts collected by JLB for intersections in proximity of school sites.
    - For the intersections of Temperance Avenue and Clinton Avenue and Armstrong Avenue and Olive Avenue, the following PHFs were utilized:
        - A PHF of 0.86, or the existing PHF if higher, during the AM peak
        - A PHF of 0.90, or the existing PHG if higher, during the PM peak
    - A PHF of 0.92, or the existing PHF if higher, is utilized for all other intersections

Existing Traffic Conditions

Roadway Network

The Project site and surrounding study area are illustrated in Figure 1. Important roadways serving the Project are discussed below.

Armstrong Avenue is an existing north-south two-lane undivided collector adjacent to the proposed Project. Armstrong Avenue extends south from the City of Clovis SOI to approximately 2,000 feet south of Belmont Avenue. The City of Fresno 2035 General Plan Circulation Element designates Armstrong Avenue as two-lane collector between the City of Clovis SOI and Belmont Avenue.

Temperance Avenue is an existing north-south, predominantly two-lane super arterial in the vicinity of the proposed Project. Temperance Avenue extends south from the City of Clovis SOI beyond the City of Fresno SOI. The City of Fresno 2035 General Plan Circulation Element designates Temperance Avenue as a six-lane super arterial through the City of Fresno SOI. Furthermore, the City of Fresno 2035 General Plan Circulation Element acknowledged that Temperance Avenue would exceed LOS D as a six-lane facility between Shields Avenue and McKinley Avenue. However, City Council made the appropriate findings to designate LOS E as the criteria of significance for Temperance Avenue as a six-lane facility between Shields Avenue and McKinley Avenue.

Clinton Avenue is an existing east-west two-lane, predominantly undivided collector in the vicinity of the proposed Project. In this area, Clinton Avenue extends between Clovis Avenue and Locan Avenue and is divided by a two-way left-turn lane for approximately 1,300 feet east of Fowler Avenue and between Temperance Avenue and Locan Avenue. The City of Fresno 2035 General Plan Circulation Element designates Clinton Avenue as a four-lane collector between Clovis Avenue and Locan Avenue.

Fowler Avenue is an existing north-south two- to four-lane collector in the vicinity of the proposed Project. In this area, Fowler Avenue is a four-lane divided arterial north of Clinton Avenue and south of the State Route 180 Interchange, and a two-lane undivided collector between Clinton Avenue and the State Route 180 Interchange. Fowler Avenue extends south from the City of Clovis SOI and beyond the City of Fresno SOI. The City of Fresno 2035 General Plan Circulation Element designates Fowler Avenue as a four-lane divided arterial through the City of Fresno SOI. Furthermore, the City of Fresno 2035 General Plan Circulation Element acknowledged that Fowler Avenue would exceed LOS D as a four-lane facility between McKinley Avenue and Olive Avenue. However, City Council made the appropriate findings to designate LOS F as the criteria of significance for Fowler Avenue as a four-lane facility between McKinley Avenue and Olive Avenue.

McKinley Avenue is a planned future east-west two-lane collector in the vicinity of the proposed Project. McKinley Avenue exists as a four-lane divided arterial west of Clovis Avenue and a two-lane undivided arterial east of Temperance Avenue. In this area, McKinley Avenue will ultimately exist east of Fowler Avenue and extend northwest to connect to Sunnyside Avenue. The City of Fresno 2035 General Plan Circulation Element designates McKinley Avenue as a two-lane collector east of Clovis Avenue through the City of Fresno SOI.

Floradora Avenue is an existing east-west two-lane undivided local roadway in the vicinity of the proposed Project. In this area, Floradora Avenue extends between Fowler Avenue and Temperance Avenue. The City of Fresno 2035 General Plan Circulation Element designates Floradora Avenue as a local roadway throughout the City of Fresno.

Olive Avenue is an existing east-west two-lane collector in the vicinity of the proposed Project. In this area, Olive Avenue is an undivided collector west of Fowler Avenue and is divided by a two-way left-turn lane between Fowler Avenue and Armstrong Avenue. This segment of Olive Avenue extends between the western limits of the City of Fresno SOI and Fancher Avenue in the City of Fresno. The City of Fresno 2035 General Plan Circulation Element designates Olive Avenue a two-lane undivided collector between Grantland Avenue and Marks Avenue, as a four-lane undivided collector between Marks Avenue and Fruit Avenue, as a two-lane undivided collector between Fruit Avenue and Blackstone Avenue, as a four-lane undivided collector between Blackstone Avenue and Temperance Avenue, and as a two-lane undivided collector between Temperance Avenue and Fancher Avenue. The Fresno General Plan Circulation Element acknowledged that additional lanes would be necessary for Olive Avenue between Fulton Street and San Pablo Avenue by the year 2035. However, City Council made the appropriate findings to designate LOS E as the criteria of significance for this segment of Olive Avenue as a two-lane facility.

Belmont Avenue is an existing east-west two- to three-lane, arterial in the vicinity of the proposed Project. In this area, Belmont Avenue extends through the City of Fresno SOI. The 2035 City of Fresno General Plan Circulation Element designates Belmont Avenue as a two-lane collector between Grantland Avenue and Cornelia Avenue, a four-lane collector between Cornelia Avenue and West Avenue, a two-lane collector between West Avenue and Cedar Avenue, a four-lane collector between Cedar Avenue and Chestnut Avenue, a four-lane arterial between Chestnut Avenue and Temperance Avenue, and a two-lane collector east Temperance Avenue through the City of Fresno SOI. The 2035 City of Fresno General Plan Circulation Element acknowledged that additional lanes would be necessary for Belmont Avenue between Parkview Drive and Motel Drive, Weber Avenue and Broadway Avenue, and Abby Street and Cedar Avenue by the year 2035. However, City Council made the appropriate findings to designate LOS E or F as the criteria of significance for these segments of Belmont Avenue.

State Route 180 is an existing east-west six-lane freeway in the vicinity of the proposed Project. State Route 180 connects southeast and southwest Fresno with Downtown Fresno and has freeway-to-freeway interchanges at State Route 41, State Route 99 and State Route 168. East of Fresno State Route 180 also provides access to Kings Canyon and Sequoia National Parks, while west of Fresno State Route 180 connects to the cities of Kerman and Mendota.

Collision Analysis

JLB conducted a search of the Statewide Integrated Traffic Records System (SWITRS) to obtain collision reports for the most recent five-year period (January 1, 2013 to December 31, 2017). The SWITRS "is a database that serves as a means to collect and process data gathered from a collision scene. The internet SWITRS application is a tool by which CHP staff and members of its Allied Agencies throughout California can request various types of statistical reports in an electronic format." All collision reports between January 1, 2013 and December 31, 2017 were included in the collision analysis. In the five-year period, a total of 37 collisions were reported within the influence zone (assumed to be within 250 feet) of the study intersections. The SWITRS collision data are found in Appendix E.

Table I summarizes the type of collision, severity, violations and if it involved another vehicle, a pedestrian/bicyclist or a fixed object. Based on the five (5) year collision data within SWITRS, all study intersections have experienced a relatively low average number of collisions per year with one exception. The exception is the intersection of Temperance Avenue and Belmont Avenue which experienced 16 total collisions during the five-year period. The type of collisions at the intersection of Temperance Avenue and Belmont Avenue included five (5) broadside, two (2) rear-end, three (3) head-on, five (5) hit object and one (1) sideswipe. Furthermore, the type of violations included three (4) traffic signals and signs, four (4) right-of-way, one (1) unsafe speed, two (2) other, three (3) improper turning and three (3) driving under the influence.

After thorough review of the data contained within the collision reports for the five-year analysis period, JLB found that between November 2013 and November 2014, the intersection of Temperance Avenue and Belmont Avenue observed five (5) collisions correctable by installation of a traffic signal. However, in recent years, the number of observed collisions correctable by installation of a traffic signal have decreased. Therefore, JLB was unable to reach a conclusion that would explain any justification for the modification of lane geometrics or traffic controls at this intersection. As a result, the number of correctable collisions experienced at the existing study intersections is considered less than significant.

Table I: Five-Year Collision Analysis

ID	Intersection	Number of Collisions	Type of Collision						Severity					Violation							Involved With		
			Broadside	Rear End	Head-On	Hit Object	Sideswipe	Other	Fatal	Injury (Severe)	Injury (Other Visible)	Injury (Complaint of Pain)	PDO (Property Damage Only)	Traffic Signals & Signs	Right of Way	Unsafe Speed	Other	Improper Turning	DUI	Pedestrian Violation	Pedestrian / Bicyclist	Other Motor Vehicle	Fixed Object/Other
1	Armstrong Avenue / Clinton Avenue	1	1	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1	-
6	Fowler Avenue / Floradora Avenue	4	2	1	-	1	-	-	-	-	-	4	-	2	-	2	-	-	-	-	-	3	1
7	Armstrong Avenue / Floradora Avenue	4	3	-	-	1	-	-	-	1	-	1	2	-	3	-	1	-	-	-	-	3	1
8	Armstrong Avenue / Olive Avenue	1	1	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1	-
9	Temperance Avenue / Olive Avenue	6	2	-	1	-	3	-	-	-	-	1	4	2	2	-	-	2	-	-	-	6	-
10	Armstrong Avenue / Belmont Avenue	5	5	-	-	-	-	-	-	-	2	2	1	-	5	-	-	-	-	-	-	5	-
11	Temperance Avenue / Belmont Avenue	16	5	2	3	5	1	-	-	1	2	4	9	3	4	1	2	3	3	-	-	10	6

Traffic Signal Warrants

Eight-hour and four-hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Existing Traffic Conditions scenario. These warrants are found in Appendix K. These warrants were prepared pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, the intersections of Temperance Avenue and Olive Avenue and Temperance Avenue and Belmont Avenue satisfy the eight-hour signal warrant. Furthermore, the intersections of Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue satisfy the four-hour signal warrant.

Based on the signal warrants and engineering judgement, signalization of the intersections of Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue is recommended, while signalization of the intersection of Armstrong Avenue and Olive Avenue is not recommended, especially since this intersection is projected to operate at an acceptable LOS during both peak periods. It is worth noting that the CA MUTCD states "satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic signal." Therefore, it is recommended that prior to the installation of a traffic signal at the intersections of Armstrong Avenue and Olive Avenue, investigation of CA MUTCD warrants 4 and 7, as applicable, be conducted for this intersection.

Results of Existing Level of Service Analysis

Figure 2 illustrates the Existing Traffic Conditions turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Existing Traffic Conditions scenario are provided in Appendix F. Table II presents a summary of the Existing peak hour LOS at the study intersections.

At present, the intersections of Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue exceed their LOS threshold during the AM peak period. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.

- Temperance Avenue and Olive Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through-right lane to a through-right lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through-right lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through-right lane;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.
- Armstrong Avenue and Belmont Avenue
  - For two-way stop-controlled intersections, the recorded delay is for the worst approach. In this case, the worst approach was that for the northbound movement. On the day that these counts were collected, this movement observed only four (4) northbound left-turn turn trips – the most difficult movement to make. Furthermore, since the delay for each approach is an average of the delay experienced by all the movements for that approach, the LOS results are far worse than reality. If two (2) trips from the northbound left-turn movement had been spread amongst the northbound through movement and the northbound right-turn movement on the day these counts were collected, the average delay for the northbound approach would be recorded at 30.2 seconds, yielding LOS D. Therefore, the LOS operations at this intersection are considered adverse but not significant.

- Temperance Avenue and Belmont Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through-right lane;
  - Remove the eastbound right-turn lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through lane to a through-right lane;
  - Remove the westbound right-turn lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through-right lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through-right lane;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.

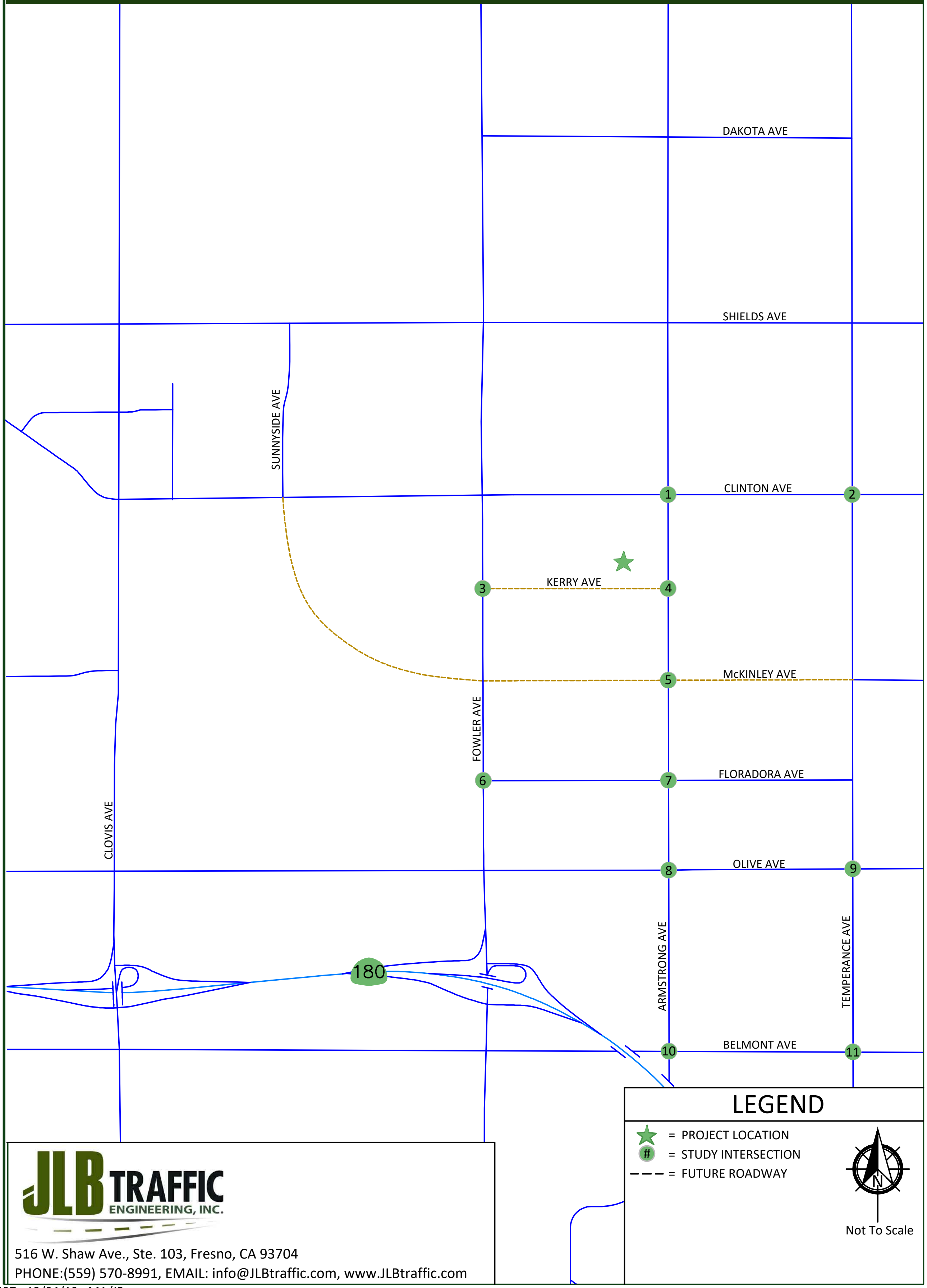
Table II: Existing Intersection LOS Results

ID	*Intersection*	*Intersection Control*	*AM Peak Hour*		*PM Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Armstrong Avenue / Clinton Avenue	All-Way Stop	20.3	C	12.4	B
2	Temperance Avenue / Clinton Avenue	Signalized	25.2	C	15.5	B
3	Fowler Avenue / Kerry Avenue	Does Not Exist	N/A	N/A	N/A	N/A
4	Armstrong Avenue / Kerry Avenue	Does Not Exist	N/A	N/A	N/A	N/A
5	Armstrong Avenue / McKinley Avenue	Does Not Exist	N/A	N/A	N/A	N/A
6	Fowler Avenue / Floradora Avenue	One-Way Stop	10.6	B	12.7	B
7	Armstrong Avenue / Floradora Avenue	Two-Way Stop	19.3	C	13.7	B
8	Armstrong Avenue / Olive Avenue	All-Way Stop	18.5	C	13.5	B
9	Temperance Avenue / Olive Avenue	All-Way Stop	**93.8**	**F**	22.6	C
		Signalized (Improved)	22.2	C	16.0	B
10	Armstrong Avenue / Belmont Avenue	Two-Way Stop	**38.8**	**E**	14.6	B
11	Temperance Avenue / Belmont Avenue	All-Way Stop	**49.6**	**E**	22.0	C
		Signalized (Improved)	21.1	C	17.8	B

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Tentative Tract 6241 - City of Fresno
Vicinity Map

Figure 1



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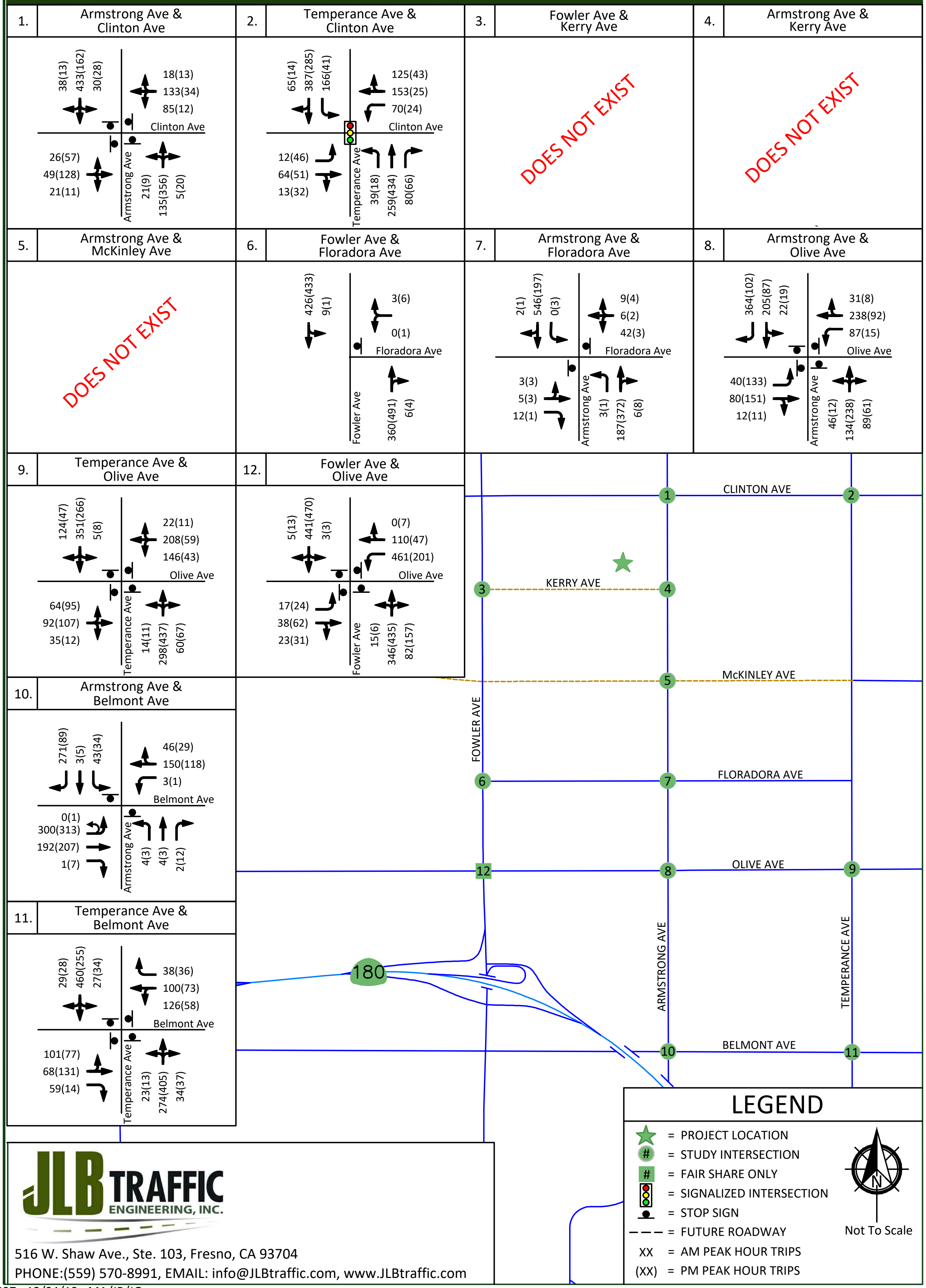
004-097 - 12/04/19 - MA/JB

Tentative Tract 6241 - City of Fresno

Existing - Traffic Volumes, Geometrics and Controls

Figure 2



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Existing plus Project Traffic Conditions

Project Description

The Project proposes to develop an 18.12-net acre site with up to 225 single-family residential units for an overall density of 12.41 units per acre. However, this TIA analyzes a total of 226 single-family residential units from a previous version of the Project Site Plan. Based on information provided to JLB, the Project site includes 9.06 acres of Medium Density Residential (5.0-12.0 dwelling units per acre) and 9.06 acres of Urban Neighborhood Residential (16.0-30.0 dwelling units per acre). As a result, the Project will undergo a General Plan Amendment to modify the land use designations of Medium Density Residential and Urban Neighborhood Residential to Medium-High Density Residential (12.0-16.0 dwelling units per acre) land use. Figure 3 illustrates the latest Project Site Plan.

The annexation associated with the Project will include properties adjacent to the Project site that are not specifically part of the Project. No change to the City of Fresno 2035 General Plan is associated with these properties. Development of these properties is assumed to have occurred by the Cumulative Year 2035 scenario, consistent with the City of Fresno 2035 General Plan.

Project Access

Based on the latest Project Site Plan, access to and from the Project site will be from two (2) points. One access point is located along the west side of Armstrong Avenue approximately 1,000 feet south of Clinton Avenue and is proposed as a full access. The other access point is located along the north side of Kerry Avenue approximately 1,000 feet west of Armstrong Avenue and is limited to exit only access.

JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project access points to be constructed indicates that they are located at points that minimize traffic operational impacts to the existing roadway network.

Trip Generation

Trip generation rates for the proposed Project were obtained from the 10th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table III presents the trip generation for the proposed Project with trip generation rates for Single-Family Detached Housing. At build-out, the Project is estimated to generate a maximum of 2,124 daily trips, 167 AM peak hour trips and 223 PM peak hour trips.

Table III: Project Trip Generation

Land Use (ITE Code)	Size	Unit	Daily		AM (7-9) Peak Hour						PM (4-6) Peak Hour					
			Rate	Total	Trip Rate	In %	Out %	In	Out	Total	Trip Rate	In %	Out %	In	Out	Total
Single-Family Detached Housing (210)	225	d.u.	9.44	2,124	0.74	25	75	42	125	167	0.99	63	37	140	83	223
Total Project Trips				**2,124**				**42**	**125**	**167**				**140**	**83**	**223**

Note: d.u. = Dwelling Units

JLB also analyzed the estimated maximum trip generation of a prior version of the Project Site Plan. Table IV presents the trip generation for a prior Project Site Plan with trip generation rates for Single-Family Detached Housing. At buildout, the prior Project Site Plan is anticipated to generate a maximum of 2,133 daily trips, 167 AM peak hour trips and 224 PM peak hour trips.

Compared to the prior Project Site Plan, the latest Project Site Plan is estimated to yield less traffic by 9 daily trips, 0 AM peak hour trips and 1 PM peak hour trips. Therefore, in order to provide a conservative analysis of the Project's traffic impacts, this TIA assumed the trip generation of the prior Project Site Plan. The difference in trip generation is summarized in Table V.

Table IV: Project Trip Generation

Land Use (ITE Code)	Size	Unit	Daily		AM (7-9) Peak Hour						PM (4-6) Peak Hour					
			Rate	Total	Trip Rate	In %	Out %	In	Out	Total	Trip Rate	In %	Out %	In	Out	Total
Single-Family Detached Housing (210)	226	d.u.	9.44	2,133	0.74	25	75	42	125	167	0.99	63	37	141	83	224
Total Project Trips				**2,133**				**42**	**125**	**167**				**141**	**83**	**224**

Note: d.u. = Dwelling Units

Table V: Difference in Trip Generation

	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Proposed Land Use (General Plan Amendment)	2,124	42	125	167	140	83	223
Existing Land Uses (2035 General Plan)	2,133	42	125	167	141	83	224
Difference in Trip Generation	**-9**	**0**	**0**	**0**	**-1**	**0**	**-1**

Assuming that the proposed Project does not undergo a General Plan Amendment, the anticipated trip generation for the Project site would be lower. The Medium Density Residential land use can be developed with 5 to 12 single-family dwelling units per acre, although for purposes of this TIA it has been assumed that this land use would be developed at the mid-range of these densities and thereby yield 8.5 units per acre for a total of 77 single-family units. The Urban Neighborhood Residential land use can be developed with 16 to 30 multifamily dwelling units per acre, although for purposes of this TIA it has been assumed that this land use would be developed at the mid-range of these densities and thereby yield 23 units per acre for a total of 208 multifamily units. Therefore, the existing land uses could yield approximately 77 or more single-family dwelling units and 208 or more multifamily dwelling units. Table VI presents the trip generation for that which could be developed under the existing land uses pursuant to the 10th Edition of the Trip Generation Manual utilizing trip generation rates for Single-Family Detached Housing and Multifamily Housing. Therefore, it is estimated that the existing land uses could generate an average of 2,249 daily trips, 153 AM peak hour trips and 192 PM peak hour trips.

Table VI: Existing Land Use Trip Generation

Land Use (ITE Code)	*Size*	*Unit*	*Daily*		*AM Peak Hour*						*PM Peak Hour*					
			Rate	*Total*	*Trip Rate*	*In %*	*Out %*	*In*	*Out*	*Total*	*Trip Rate*	*In %*	*Out %*	*In*	*Out*	*Total*
Single-Family Detached Housing (210)	77	d.u.	9.44	726	0.74	25	75	14	43	57	0.99	63	37	48	28	76
Multifamily Housing (220)	208	d.u.	7.32	1,523	0.46	23	77	22	74	96	0.56	63	37	73	43	116
Total Driveway Trips				**2,249**				**36**	**117**	**153**				**121**	**71**	**192**

Note: d.u. = Dwelling Units

When compared to the existing land uses, the proposed Project is estimated to generate less traffic by 125 daily trips and more traffic by 14 AM peak hour trips and 31 PM peak hour trips. The difference in trip generation between the proposed land use and the existing land uses is summarized in Table VII.

Table VII: Difference in Trip Generation

	Daily	*AM Peak Hour*			*PM Peak Hour*		
		In	*Out*	*Total*	*In*	*Out*	*Total*
Proposed Land Use (General Plan Amendment)	2,124	42	125	167	140	83	223
Existing Land Uses (2035 General Plan)	2,249	36	117	153	121	71	192
Difference in Trip Generation	**-125**	**6**	**8**	**14**	**19**	**12**	**31**

Trip Distribution

The trip distribution assumptions were developed based on existing travel patterns, the Fresno COG traffic model runs, data provided by the developer, knowledge of the study area, engineering judgment, existing residential and commercial densities, and the City of Fresno 2035 General Plan Circulation Element. Figure 4 illustrates the 2019 Project Only Trips to the study intersections.

Bikeways

Currently, bike lanes exist in the vicinity of the proposed Project site along Clinton Avenue, Fowler Avenue, Armstrong Avenue, Olive Avenue, Belmont Avenue and Temperance Avenue. The City of Fresno Active Transportation Plan recommends that Class II Bike Lanes be implemented on: 1) Clinton Avenue between Clovis Avenue and Locan Avenue, 2) Fowler Avenue south of Clinton Avenue, 3) Armstrong Avenue south of the City of Clovis SOI, 4) Temperance Avenue through the City of Fresno SOI, 5) Olive Avenue between the western limits of the City of Fresno SOI and Fancher Avenue, and 6) Belmont Avenue through the City of Fresno SOI. Additionally, the City of Fresno Active Transportation Plan recommends that a Class I Bike Path be implemented along the west side of Temperance Avenue and the south side of future McKinley Avenue. Therefore, it is recommended that the Project implement a Class II bike lane along its frontage to Armstrong Avenue.

Walkways

Currently, walkways exist in the vicinity of the proposed Project site along Clinton Avenue, Fowler Avenue, Armstrong Avenue, Olive Avenue, Belmont Avenue and Temperance Avenue. The City of Fresno Active Transportation Plan recommends that walkways be implemented on: 1) Clinton Avenue between Clovis Avenue and Locan Avenue, 2) Fowler Avenue south of Clinton Avenue, 3) Armstrong Avenue south of the City of Clovis SOI, 4) Temperance Avenue through the City of Fresno SOI, 5) Olive Avenue between the western limits of the City of Fresno SOI and Fancher Avenue, and 6) Belmont Avenue through the City of Fresno SOI. Therefore, it is recommended that the Project implement ADA compliant walkways along its frontages to Armstrong Avenue and Kerry Avenue.

Transit

Fresno Area Express (FAX) is the transit operator in the City of Fresno. At present, there are no FAX transit routes that operate in the vicinity of the proposed Project. The closest is FAX Route 45, which runs on Princeton Avenue and Fowler Avenue, approximately 0.6 miles to the northwest of the proposed Project. Route 45 operates at 60-minute intervals on weekdays and weekends and its nearest stop to the Project site is located on the south side of Princeton Avenue approximately 150 feet west of Fowler Avenue. This route provides a direct connection to Palm Lakes Golf Course, Bullard High School, Gillis Library, Fresno High School, Fresno City College, Manchester Transit Center, Army Navy Reserve and the Shields/Fowler Industrial Park. Retention of the existing and expansion of future transit routes is dependent on transit ridership demand and available funding.

Safe Routes to School

Kindergarten through 12th grade students from the Project will be served by the Clovis Unified School District. The Clovis Unified School District provides transportation for students who live in excess of an established radius zone. The zone is a radius of 1 mile for grades Kindergarten through 6th and 2.5 miles for grades 7th through 12th.

Based on the attendance area boundaries at the time of the preparation of this TIA, elementary school students would attend Temperance-Kutner Elementary School located on the southeast corner of Olive Avenue and Armstrong Avenue. Temperance-Kutner Elementary School is located 0.82 and 0.97 miles from the nearest and farthest future home on the Project. Therefore, it is anticipated that the majority of elementary school students will need to walk, bike or be driven to school.

The most direct path from the Project to the Temperance-Kutner Elementary School campus would begin from the east most end of the Project site along the west side of Armstrong Avenue. Students along the west side of Armstrong Avenue would proceed south toward the intersection of Armstrong Avenue and Floradora Avenue. The intersection of Armstrong Avenue and Floradora Avenue is controlled by a two-way stop on Floradora Avenue and contains unmarked crosswalks on all approaches. Students would proceed to cross Floradora Avenue along the west side of Armstrong Avenue and continue south toward the intersection of Armstrong Avenue and Olive Avenue. The intersection of Armstrong Avenue and Olive Avenue is controlled by an all-way stop and contains high visibility crosswalks on the northbound, westbound and southbound approaches. Students would then proceed to cross Armstrong Avenue along the north side of Olive Avenue, cross Olive Avenue along the east side of Armstrong Avenue, and proceed south along the east side of Armstrong Avenue until reaching a campus entrance.

Since the walking distance between the Project and the Temperance-Kutner Elementary School campus is approximately one mile and there is a lack of walkways in between, it is anticipated that a large percentage of elementary school students will likely be driven to school. To promote alternative modes of transportation to Temperance-Kutner Elementary School, it is recommended that the Clovis Unified School District work with the City of Fresno and County of Fresno to implement a Safe Routes to School plan and to seek grant funding to help build bikeways and walkways where they are lacking within a one-mile radius of the school site.

Based on the attendance area boundaries at the time of the preparation of this TIA, middle school students would attend Reyburn Intermediate School located on the southeast quadrant of Gettysburg Avenue and DeWolf Avenue. Reyburn Intermediate School is located 2.56 and 2.80 miles from the nearest and farthest future home on the Project. Therefore, it is anticipated that middle school students will be bused from the Project to school.

Based on the attendance area boundaries at the time of the preparation of this TIA, high school students would attend Clovis East High School located on the southeast quadrant of Gettysburg Avenue and DeWolf Avenue. Clovis East High School is located 2.70 and 2.94 miles from the nearest and farthest future home on the Project. Therefore, it is anticipated that high school students will be bused from the Project to school.

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Existing plus Project Traffic Conditions scenario. These warrants are found in Appendix K. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, and Temperance Avenue and Belmont Avenue are projected to satisfy the peak hour signal warrant during both peak periods, while the intersection of Armstrong Avenue and Belmont Avenue is projected to satisfy the peak hour signal warrant during the AM peak period only.

Based on the signal warrants and engineering judgement, signalization of the intersections of Temperance Avenue and Olive Avenue and Temperance Avenue and Belmont Avenue is recommended. However, signalization of the intersections of Armstrong Avenue and Clinton Avenue, Armstrong Avenue and Olive Avenue, and Armstrong Avenue and Belmont Avenue is not recommended. It is worth noting that the CA MUTCD states that “satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic signal.” Therefore, it is recommended that prior to the installation of a traffic signal at the intersections of Armstrong Avenue and Clinton Avenue, Armstrong Avenue and Olive Avenue, and Armstrong Avenue and Belmont Avenue, investigation of CA MUTCD warrants 4 and 7, as applicable, be conducted for these intersections.

Results of Existing plus Project Level of Service Analysis

The Existing plus Project Traffic Conditions scenario assumes that the existing roadway geometrics and traffic controls will remain in place. Figure 5 illustrates the Existing plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Existing plus Project Traffic Conditions scenario are provided in Appendix G. Table VIII presents a summary of the Existing plus Project peak hour LOS at the study intersections.

Under this scenario, the intersections of Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to continue to exceed their LOS threshold during the AM peak period. When compared to Existing Traffic Conditions, the Project is projected to increase the average delay by a maximum of 1.0, 3.4, and 3.5 seconds respectively to each of these intersections during the AM peak period – less than the five (5.0) second threshold that the City of Fresno utilizes to determine if a Project causes a significant impact to an existing substandard LOS. Therefore, this impact would be considered adverse, but not significant.

Table VIII: Existing plus Project Intersection LOS Results

ID	Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	Armstrong Avenue / Clinton Avenue	All-Way Stop	26.2	D	15.0	B
2	Temperance Avenue / Clinton Avenue	Signalized	24.7	C	15.6	B
3	Fowler Avenue / Kerry Avenue	Does Not Exist	N/A	N/A	N/A	N/A
4	Armstrong Avenue / Kerry Avenue	One-Way Stop	16.8	C	12.8	B
5	Armstrong Avenue / McKinley Avenue	Does Not Exist	N/A	N/A	N/A	N/A
6	Fowler Avenue / Floradora Avenue	One-Way Stop	10.6	B	12.7	B
7	Armstrong Avenue / Floradora Avenue	Two-Way Stop	21.6	C	15.3	C
8	Armstrong Avenue / Olive Avenue	All-Way Stop	20.4	C	15.3	C
9	Temperance Avenue / Olive Avenue	All-Way Stop	**94.8**	**F**	24.3	C
10	Armstrong Avenue / Belmont Avenue	Two-Way Stop	**42.2**	**E**	15.1	C
11	Temperance Avenue / Belmont Avenue	All-Way Stop	**52.1**	**F**	23.9	C

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Tentative Tract 6241 - City of Fresno
Project Site Plan

Figure 3

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Not To Scale

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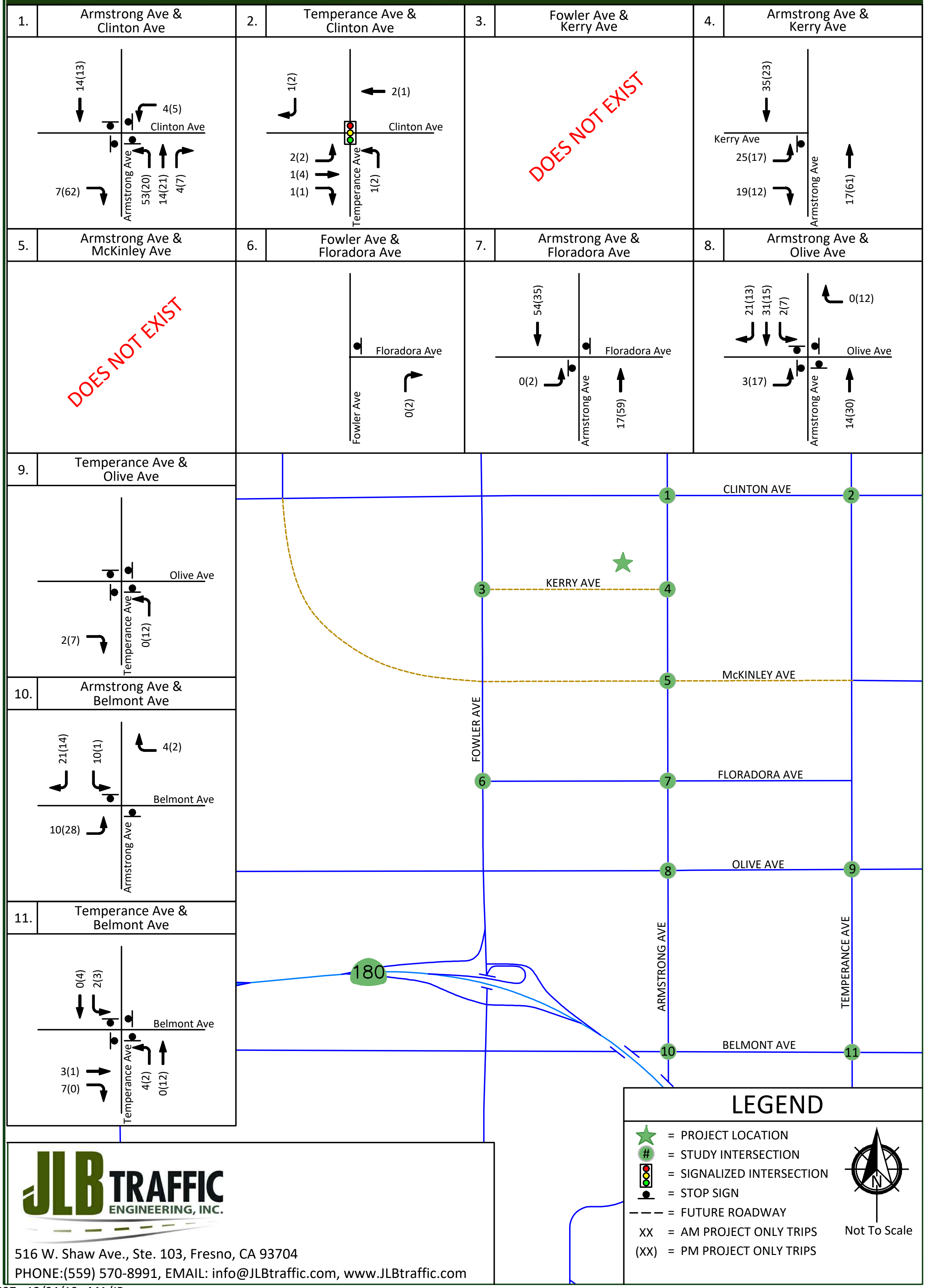
Tentative Tract 6241 - City of Fresno
2019 Project Only Trips

Figure 4



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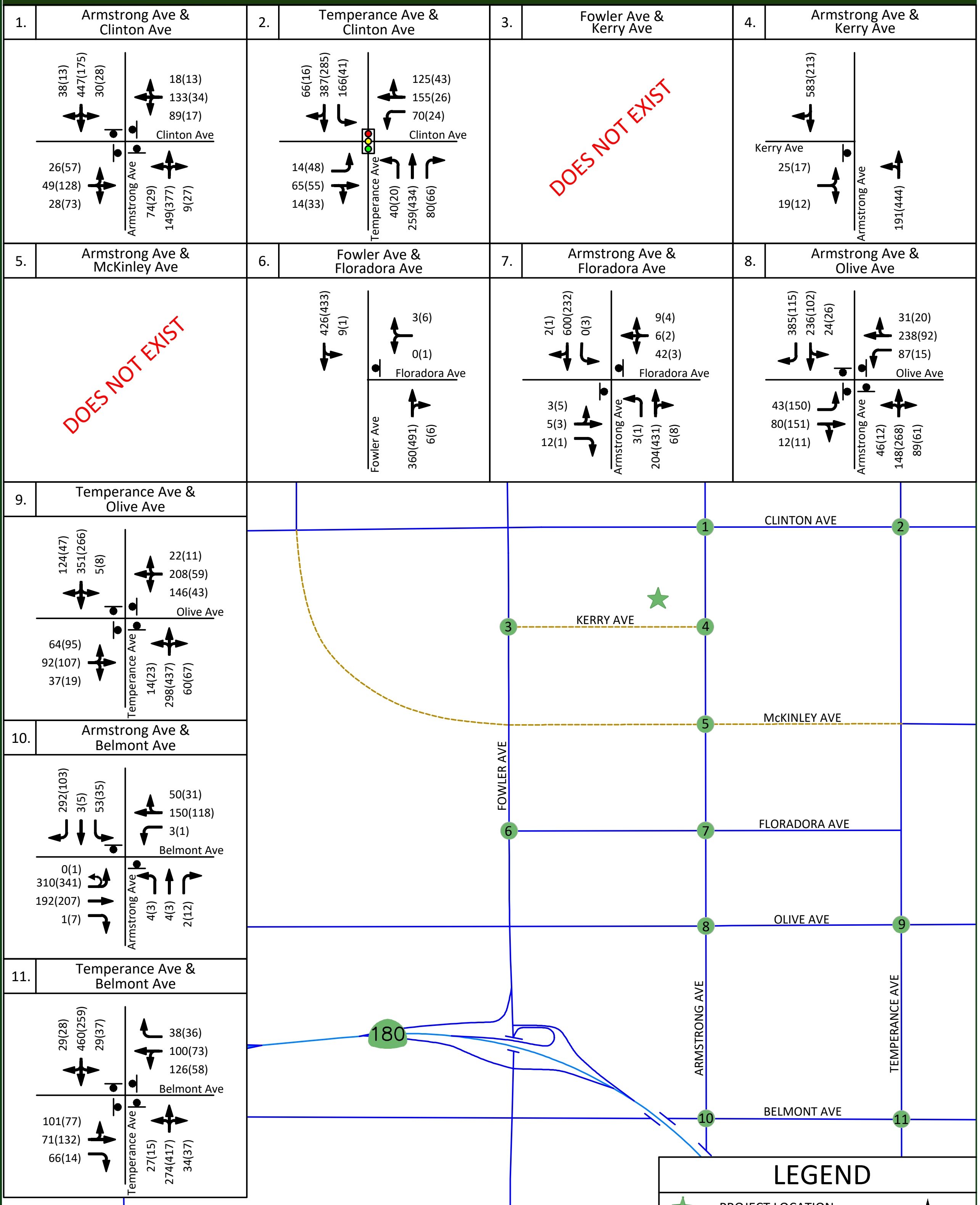
Tentative Tract 6241 - City of Fresno
Existing plus Project - Traffic Volumes, Geometrics and Controls

Figure 5



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Near Term plus Project Traffic Conditions

Description of Approved and Pipeline Projects

Approved and Pipeline Projects consist of developments that are either under construction, built but not fully occupied, are not built but have final site development review (SDR) approval, or for which the lead agency or responsible agencies have knowledge of. The City of Fresno, County of Fresno and Caltrans staff were consulted throughout the preparation of this TIA regarding approved and/or known projects that could potentially impact the study intersections. JLB staff conducted a reconnaissance of the surrounding area to confirm the Near Term Projects. Therefore, the projects listed in Table IX were approved, near approval, or in the pipeline within the proximity of the proposed Project.

The trip generation listed in Table IX is that which is anticipated to be added to the streets and highways by these projects between the time of the preparation of this report and five years after buildout of the proposed Project. As shown in Table V, the total trip generation for the Near Term Projects is 115,501 daily trips, 8,135 AM peak hour trips and 11,239 PM peak hour trips. Figure 6 illustrates the location of the approved, near approval, or pipeline projects and their combined trip assignment to the study intersections under the Near Term plus Project Traffic Conditions scenario.

Table IX: Near Term Projects' Trip Generation

Approved Project Location	*Approved or Pipeline Project Name*	*Daily Trips*	*AM Peak Hour*	*PM Peak Hour*
A	TT 5171 (portion of)[1]	727	57	76
B	TT 5341 (portion of)[2]	887	70	93
C	TT 5424[2]	1,369	107	144
D	TT 5464[2]	1,680	132	176
E	TT 5498[1]	755	59	79
F	TT 5501[1]	746	58	78
G	TT 5531 (portion of)[2]	1,246	98	131
H	TT 5571 (portion of) [1]	1,548	121	162
I	TT 5592[1]	2,436	191	255
J	TT 5605 (portion of)[2]	434	34	46
K	TT 5626 (portion of)[1]	264	21	28
L	TT 5638[2]	3,351	263	351
M	TT 5717 (portion of)[3]	7,051	440	698
N	TT 5913[3]	1,029	81	108
O	TT 5953[1]	887	70	93
P	TT 6023[1]	3,578	280	375
Q	TT 6080[1]	727	57	76
R	TT 6101[1]	425	33	45
S	TT 6107 (portion of)[1]	670	53	70

Note: 1 = Trip Generation prepared by JLB Traffic Engineering, Inc. based on readily available information
2 = Trip Generation based on Peters Engineering Traffic Impact Analysis Report
3 = Trip Generation based on TJKM Traffic Impact Analysis Report
4 = Trip Generation based on JLB Traffic Engineering, Inc. Traffic Impact Analysis Report

Table IX: Near Term Projects' Trip Generation (cont.)

Approved Project Location	*Approved or Pipeline Project Name*	*Daily Trips*	*AM Peak Hour*	*PM Peak Hour*
T	TT 6114[1]	94	7	10
U	TT 6130[1]	1,650	275	156
V	TT 6131[1]	3,795	297	398
W	TT 6143	66	5	7
X	TT 6164[1]	425	33	45
Y	TT 6174[1]	689	54	72
Z	TT 6191[4]	1,038	81	109
AA	TT 6193[1]	1,510	118	158
AB	TT 6201[4]	2,426	190	254
AC	TT 6214[4]	1,982	155	208
AD	TT 6225[4]	887	70	94
AE	TT 6235[4]	1,152	90	121
AF	Creekside Village Apartments[1]	1,457	92	111
AG	Fancher Creek Town Center (portion of)[1]	62,596	3,251	5,942
AH	Neighborhood Shopping Center (portion of)[3]	2,065	148	159
AI	Sunnyside Market[3]	1,023	38	54
AJ	CUSD Elementary School Locan Shields[4]	1,418	503	128
AK	CUSD Elementary School Fowler McKinley[4]	1,418	503	128
Total Approved and Pipeline Project Trips		**115,501**	**8,135**	**11,238**

Note: 1 = Trip Generation prepared by JLB Traffic Engineering, Inc. based on readily available information
2 = Trip Generation based on Peters Engineering Traffic Impact Analysis Report
3 = Trip Generation based on TJKM Traffic Impact Analysis Report
4 = Trip Generation based on JLB Traffic Engineering, Inc. Traffic Impact Analysis Report

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Near Term plus Project Traffic Conditions scenario. These warrants are found in Appendix K. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to satisfy the peak hour signal warrant during both peak periods.

Based on the signal warrants and engineering judgement, signalization of the intersections of Armstrong Avenue and Clinton Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue is recommended. It should be noted that as of the preparation of this TIA local developers were in the process of developing construction documents for the signalization of the intersections of Armstrong Avenue and Clinton Avenue and Armstrong Avenue and Belmont Avenue.

Results of Near Term plus Project Level of Service Analysis

The Near Term plus Project Traffic Conditions scenario assumes that the existing roadway geometrics and traffic controls will remain in place with one exception. The exception is that Kerry Avenue is anticipated to exist between Fowler Avenue and Armstrong Avenue with the construction of a near term project in the area. Figure 7 illustrates the Near Term plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Near Term plus Project Traffic Conditions scenario are provided in Appendix H. Table X presents a summary of the Near Term plus Project peak hour LOS at the study intersections.

Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to exceed their LOS threshold during one or both peak periods. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.

- Armstrong Avenue and Clinton Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through-right lane to a through-right lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through-right lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through-right lane;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.
- Armstrong Avenue and Floradora Avenue
  - Add a second southbound through lane; and
  - Modify the intersection to accommodate the added lane.
- Armstrong Avenue and Olive Avenue
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through-right lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through lane to a through lane;
  - Remove the southbound right-turn lane;
  - Signalize the intersection with protective left-turn phasing; and
  - Modify the intersection to accommodate the added lanes.

- Temperance Avenue and Olive Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through-right lane to a through-right lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through-right lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through-right lane;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.
- Armstrong Avenue and Belmont Avenue
  - Signalize the intersection with protective left-turn phasing in all directions.
- Temperance Avenue and Belmont Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through-right lane;
  - Remove the eastbound right-turn lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through lane to a through-right lane;
  - Remove the westbound right-turn lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through-right lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through-right lane;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.

Between the Existing Traffic Conditions and the Near Term plus Project Traffic Conditions scenarios, the Project accounts for 1.81 percent of the daily trips, 2.01 percent of the AM peak hour trips and 1.95 percent of the PM peak hour trips of growth in traffic, while the rest can be attributable to the Near Term Projects. Therefore, one can deduce that the majority of the mitigation measures presented under this scenario may not be necessary immediately upon completion of the proposed Project. However, if all of the Near Term Projects are completed close to the completion date of the proposed Project, the detailed recommended improvements presented under this scenario may be necessary in order to improve the LOS to the City's target LOS threshold.

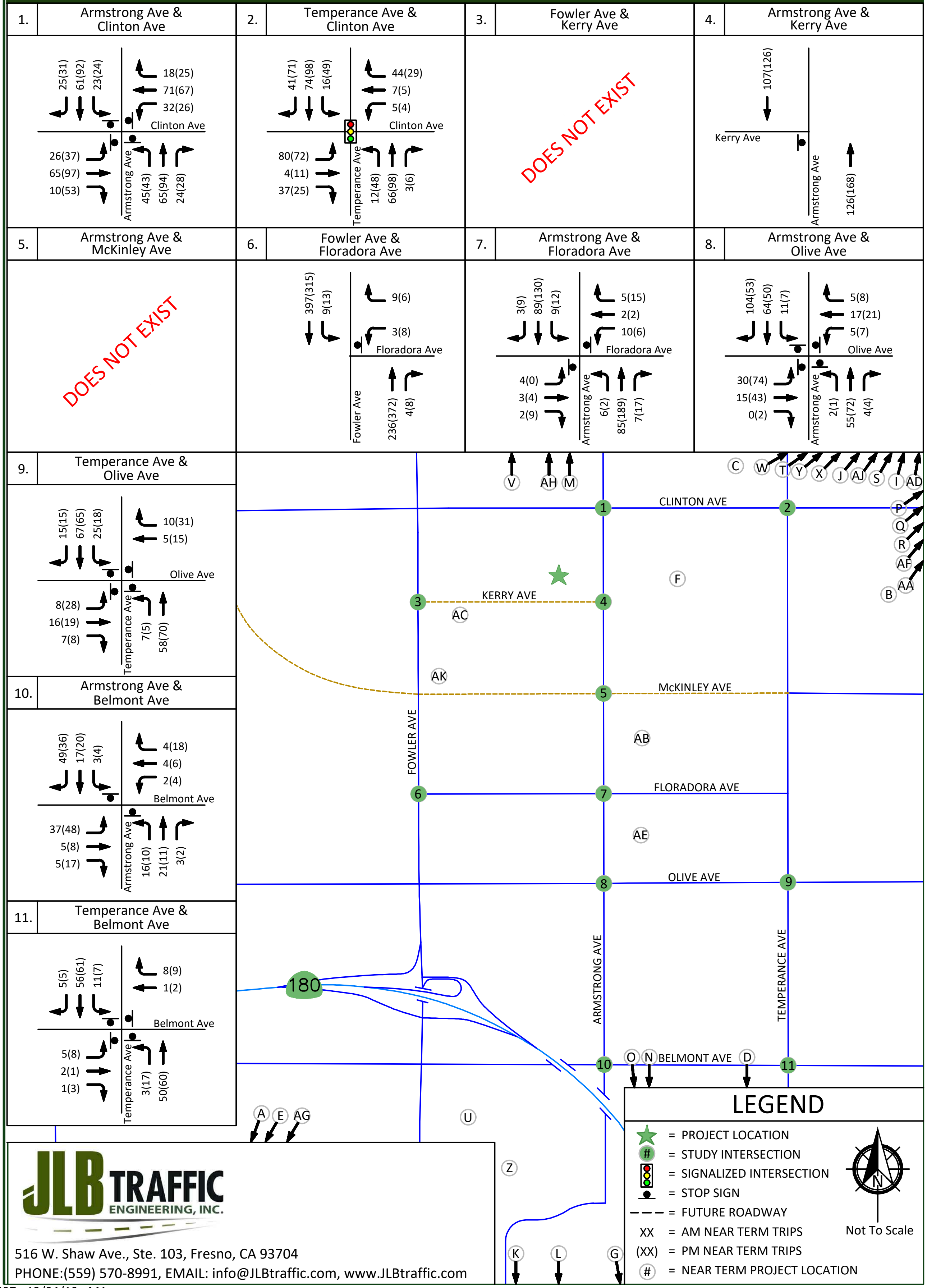
Table X: Near Term plus Project Intersection LOS Results

ID	Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	Armstrong Avenue / Clinton Avenue	All-Way Stop	**>120.0**	**F**	**115.2**	**F**
		Signalized (Mitigated)	29.3	C	28.5	C
2	Temperance Avenue / Clinton Avenue	Signalized	41.9	D	22.2	C
3	Fowler Avenue / Kerry Avenue	One-Way Stop	16.4	C	17.8	C
4	Armstrong Avenue / Kerry Avenue	One-Way Stop	22.0	C	16.9	C
5	Armstrong Avenue / McKinley Avenue	Does Not Exist	N/A	N/A	N/A	N/A
6	Fowler Avenue / Floradora Avenue	One-Way Stop	19.2	C	33.2	D
7	Armstrong Avenue / Floradora Avenue	Two-Way Stop	**36.1**	**E**	19.7	C
		Two-Way Stop (Mitigated)	20.8	C	18.9	C
8	Armstrong Avenue / Olive Avenue	All-Way Stop	**42.8**	**E**	30.8	D
		Signalized (Mitigated)	26.5	C	49.6	D
9	Temperance Avenue / Olive Avenue	All-Way Stop	**>120.0**	**F**	**67.0**	**F**
		Signalized (Mitigated)	26.6	C	21.1	C
10	Armstrong Avenue / Belmont Avenue	Two-Way Stop	**114.1**	**F**	28.3	D
		Signalized (Mitigated)	34.6	C	20.5	C
11	Temperance Avenue / Belmont Avenue	All-Way Stop	**90.5**	**F**	**48.3**	**E**
		Signalized (Mitigated)	23.0	C	22.0	C

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Tentative Tract 6241 - City of Fresno
Near Term Projects' Trip Assignment

Figure 6



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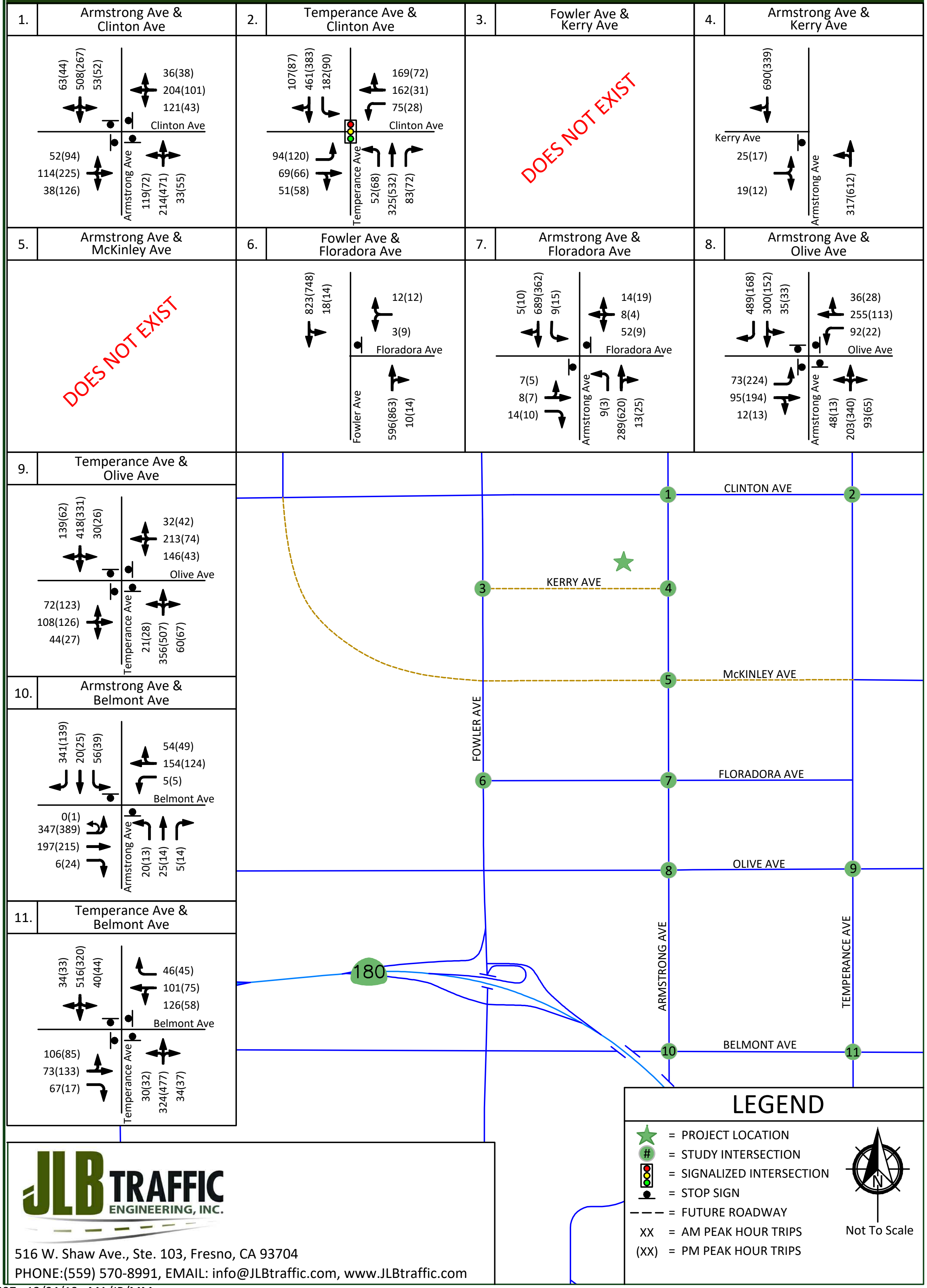
Tentative Tract 6241 - City of Fresno

Near Term plus Project - Traffic Volumes, Geometrics and Controls

Figure 7



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Cumulative Year 2035 No Project Traffic Conditions

The Cumulative Year 2035 No Project Traffic Conditions scenario assumes that the Near Term plus Project roadway geometrics and traffic controls will remain in place with a few exceptions. For purposes of this TIA, it is assumed that McKinley Avenue would be extended west of Temperance Avenue through Fowler Avenue by the year 2035. It was assumed that McKinley Avenue would be built as a two-lane collector divided by a two-way left-turn lane.

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Cumulative Year 2035 No Project Traffic Conditions scenario. These warrants are found in Appendix K. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Armstrong Avenue and McKinley Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to satisfy the peak hour signal warrant during both peak periods.

Based on the signal warrants and engineering judgement, signalization of the intersections of Armstrong Avenue and Clinton Avenue, Armstrong Avenue and McKinley Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue is recommended.

Results of Cumulative Year 2035 No Project Level of Service Analysis

Figure 8 illustrates the Cumulative Year 2035 No Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2035 No Project Traffic Conditions scenario are provided in Appendix I. Table XI presents a summary of the Cumulative Year 2035 No Project peak hour LOS at the study intersections.

Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Temperance Avenue and Clinton Avenue, Armstrong Avenue and McKinley Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to exceed their LOS threshold during both peak periods. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.

- Armstrong Avenue and Clinton Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through-right lane to a through-right lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add a northbound through-right lane with a receiving lane north of Clinton Avenue;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through lane;
  - Add a southbound through-right lane with a receiving lane south of Clinton Avenue;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.
- Temperance Avenue and Clinton Avenue
  - Modify the westbound through-right lane to a through lane;
  - Add a westbound right-turn lane;
  - Stripe two additional northbound through lanes and add receiving lanes north of Clinton Avenue;
  - Add two southbound through lanes with receiving lanes south of Clinton Avenue; and
  - Modify the traffic signal to accommodate the added lanes.
- Armstrong Avenue and McKinley Avenue
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add a northbound right-turn lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through lane;
  - Add a southbound through-right lane with a receiving lane south of McKinley Avenue;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.
- Armstrong Avenue and Floradora Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane;
  - Add a second southbound through lane;
  - Signalize the intersection with protective left-turn phasing; and
  - Modify the intersection to accommodate the added lanes.

- Armstrong Avenue and Olive Avenue
  - Add a second eastbound through lane with a receiving lane east of Armstrong Avenue;
  - Modify the westbound through-right lane to a through lane;
  - Add a second westbound through lane;
  - Add a westbound right-turn lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add a northbound right-turn lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through lane to a through lane;
  - Signalize the intersection with protective left-turn phasing; and
  - Modify the intersection to accommodate the added lanes.
- Temperance Avenue and Olive Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through-right lane to a through lane;
  - Add an eastbound right-turn lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through lane;
  - Add a westbound right-turn lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add two northbound through lanes with receiving lanes north of Olive Avenue;
  - Add a northbound right-turn lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through lane;
  - Add two southbound through lanes with receiving lanes south of Olive Avenue;
  - Add a southbound right-turn lane;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.
- Armstrong Avenue and Belmont Avenue
  - Modify the westbound through-right lane to a through lane;
  - Add a second westbound through lane with a receiving lane west of Armstrong Avenue;
  - Add a westbound right-turn lane;
  - Signalize the intersection with protective left-turn phasing in all directions and implement overlap phasing of the southbound right-turn with the eastbound left-turn phase; and
  - Modify the intersection to accommodate the added lanes.

- Temperance Avenue and Belmont Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through lane to a through lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add two northbound through lanes with receiving lanes north of Belmont Avenue;
  - Add a northbound right-turn lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through lane;
  - Add two southbound through lanes with receiving lanes south of Belmont Avenue;
  - Add a southbound right-turn lane;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.

In addition, the intersection of Fowler Avenue and Floradora Avenue is projected to operate at LOS F during both peak periods. While the City of Fresno has made the appropriate findings to designate LOS F as the criteria of significance for Fowler Avenue between McKinley Avenue and Olive Avenue, it did so under the assumption that up to four (4) through lanes would be built on Fowler Avenue. Therefore, to improve the LOS at this intersection, it is recommended that the following improvements be implemented.

- Fowler Avenue and Floradora Avenue
  - Add a northbound through lane with a receiving lane north of Floradora Avenue;
  - Add a southbound through lane with a receiving lane south of Floradora Avenue;
  - Install a two-lane roundabout; and
  - Modify the intersection to accommodate the added lanes.

Further, while the intersection of Armstrong Avenue and Kerry Avenue is projected to operate at an acceptable LOS during both peak periods, it was necessary to modify the southbound movement due to its proximity to both Clinton Avenue and McKinley Avenue. Therefore, it is recommended that the following improvements be implemented.

- Armstrong Avenue and Kerry Avenue
  - Add a southbound through lane with a receiving lane south of Kerry Avenue; and
  - Modify the intersection to accommodate the added lanes.

Table XI: Cumulative Year 2035 No Project Intersection LOS Results

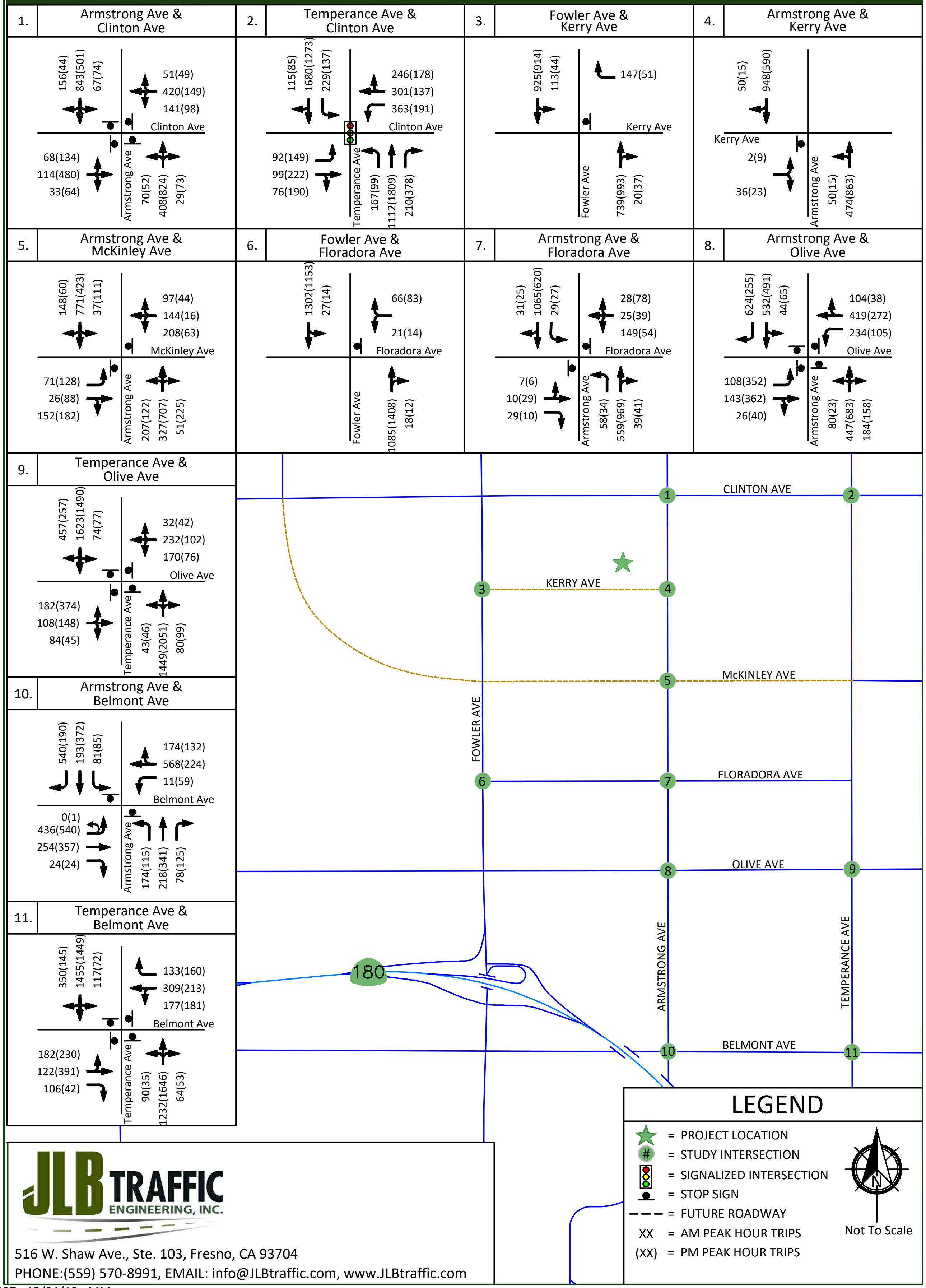
ID	Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	Armstrong Avenue / Clinton Avenue	All-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Improved)	44.0	D	47.7	D
2	Temperance Avenue / Clinton Avenue	Signalized	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Improved)	71.1	E	53.3	D
3	Fowler Avenue / Kerry Avenue	One-Way Stop	21.5	C	22.8	C
4	Armstrong Avenue / Kerry Avenue	One-Way Stop	22.5	C	22.3	C
		One-Way Stop (Improved)	15.5	C	21.3	C
5	Armstrong Avenue / McKinley Avenue	Two-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Improved)	46.8	D	47.6	D
6	Fowler Avenue / Floradora Avenue	One-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Roundabout (Improved)	8.2	A	8.7	A
7	Armstrong Avenue / Floradora Avenue	Two-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Improved)	23.1	C	23.4	C
8	Armstrong Avenue / Olive Avenue	All-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Improved)	37.0	D	45.1	D
9	Temperance Avenue / Olive Avenue	All-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Improved)	34.1	C	33.9	C
10	Armstrong Avenue / Belmont Avenue	Two-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Improved)	36.6	D	47.0	D
11	Temperance Avenue / Belmont Avenue	All-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Improved)	37.5	D	43.3	D

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls.
LOS for two-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Tentative Tract 6241 - City of Fresno

Figure 8

Cumulative Year 2035 No Project - Traffic Volumes, Geometrics and Controls



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Cumulative Year 2035 plus Project Traffic Conditions

The Cumulative Year 2035 plus Project Traffic Conditions scenario assumes that the Cumulative Year 2035 No Project roadway geometrics and traffic controls will remain in place. Considering the potential changes in the existing roadway network, it is projected that travel patterns and volumes may differ from what is anticipated for the immediate Project buildout. Figure 9 illustrates the 2035 Project Only Trips to the study intersections.

Traffic Signal Warrants

Peak hour traffic signal warrants, as appropriate, were prepared for the unsignalized intersections in the Cumulative Year 2035 plus Project Traffic Conditions scenario. These warrants are found in Appendix K. The effects of right-turning traffic from the minor approach onto the major approach were taken into account using engineering judgement pursuant to the CA MUTCD guidelines for the preparation of traffic signal warrants. Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Armstrong Avenue and McKinley Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to satisfy the peak hour signal warrant during both peak periods, while the intersection of Fowler Avenue and Kerry Avenue is projected to satisfy the peak hour signal warrant during the AM peak period only.

Based on the signal warrants and engineering judgement, signalization of the intersections of Armstrong Avenue and Clinton Avenue, Armstrong Avenue and McKinley Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue is recommended. However, signalization of the intersection of Fowler Avenue and Kerry Avenue is not recommended, especially since this intersection is projected to operate at an acceptable LOS during both peak periods. It is worth noting that the CA MUTCD states that “satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic signal.” Therefore, it is recommended that prior to the installation of a traffic signal at the intersection of Fowler Avenue and Kerry Avenue, investigation of CA MUTCD warrants 4 and 7, as applicable, be conducted for this intersection.

Results of Cumulative Year 2035 plus Project Level of Service Analysis

The Cumulative Year 2035 plus Project Traffic Conditions scenario assumes that the Cumulative Year 2035 No Project roadway geometrics and traffic controls will remain in place. Figure 10 illustrates the Cumulative Year 2035 plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2035 plus Project Traffic Conditions scenario are provided in Appendix J. Table XII presents a summary of the Cumulative Year 2035 plus Project peak hour LOS at the study intersections.

Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Temperance Avenue and Clinton Avenue, Armstrong Avenue and McKinley Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to exceed their LOS threshold during both peak periods. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.

- Armstrong Avenue and Clinton Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through-right lane to a through-right lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add a northbound through-right lane with a receiving lane north of Clinton Avenue;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through lane;
  - Add a southbound through-right lane with a receiving lane south of Clinton Avenue;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.
- Temperance Avenue and Clinton Avenue
  - Modify the westbound through-right lane to a through lane;
  - Add a westbound right-turn lane;
  - Stripe two additional northbound through lanes and add receiving lanes north of Clinton Avenue;
  - Add two southbound through lanes with receiving lanes south of Clinton Avenue; and
  - Modify the traffic signal to accommodate the added lanes.
- Armstrong Avenue and McKinley Avenue
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add a northbound right-turn lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through lane;
  - Add a southbound through-right lane with a receiving lane south of McKinley Avenue;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.

- Armstrong Avenue and Floradora Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane;
  - Add a second southbound through lane;
  - Signalize the intersection with protective left-turn phasing; and
  - Modify the intersection to accommodate the added lanes.
- Armstrong Avenue and Olive Avenue
  - Add a second eastbound through lane with a receiving lane east of Armstrong Avenue;
  - Modify the westbound through-right lane to a through lane;
  - Add a second westbound through lane;
  - Add a westbound right-turn lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add a northbound right-turn lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through lane to a through lane;
  - Signalize the intersection with protective left-turn phasing; and
  - Modify the intersection to accommodate the added lanes.
- Temperance Avenue and Olive Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through-right lane to a through lane;
  - Add an eastbound right-turn lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through lane;
  - Add a westbound right-turn lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add two northbound through lanes with receiving lanes north of Olive Avenue;
  - Add a northbound right-turn lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through lane;
  - Add two southbound through lanes with receiving lanes south of Olive Avenue;
  - Add a southbound right-turn lane;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.

- Armstrong Avenue and Belmont Avenue
    - Modify the westbound through-right lane to a through lane;
    - Add a second westbound through lane with a receiving lane west of Armstrong Avenue;
    - Add a westbound right-turn lane;
    - Signalize the intersection with protective left-turn phasing in all directions and implement overlap phasing of the southbound right-turn with the eastbound left-turn phase; and
    - Modify the intersection to accommodate the added lanes.
- Temperance Avenue and Belmont Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through lane to a through lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through lane to a through lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through lane;
    - Add two northbound through lanes with receiving lanes north of Belmont Avenue;
    - Add a northbound right-turn lane;
    - Add a southbound left-turn lane;
    - Modify the southbound left-through-right lane to a through lane;
    - Add two southbound through lanes with receiving lanes south of Belmont Avenue;
    - Add a southbound right-turn lane;
    - Signalize the intersection with protective left-turn phasing in all directions; and
    - Modify the intersection to accommodate the added lanes.

In addition, the intersection of Fowler Avenue and Floradora Avenue is projected to operate at LOS F during both peak periods. While the City of Fresno has made the appropriate findings to designate LOS F as the criteria of significance for Fowler Avenue between McKinley Avenue and Olive Avenue, it did so under the assumption that up to four (4) through lanes would be built on Fowler Avenue. Therefore, to improve the LOS at this intersection, it is recommended that the following improvements be implemented.

- Fowler Avenue and Floradora Avenue
    - Add a northbound through lane with a receiving lane north of Floradora Avenue;
    - Add a southbound through lane with a receiving lane south of Floradora Avenue;
    - Install a two-lane roundabout; and
    - Modify the intersection to accommodate the added lanes.

Further, while the intersection of Armstrong Avenue and Kerry Avenue is projected to operate at an acceptable LOS during both peak periods, it was necessary to modify the southbound movement due to its proximity to both Clinton Avenue and McKinley Avenue. Therefore, it is recommended that the following improvements be implemented.

- Armstrong Avenue and Kerry Avenue
    - Add a southbound through lane with a receiving lane south of Kerry Avenue; and
    - Modify the intersection to accommodate the added lanes.

Table XII: Cumulative Year 2035 plus Project Intersection LOS Results

ID	Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	Armstrong Avenue / Clinton Avenue	All-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Mitigated)	45.6	D	48.7	D
2	Temperance Avenue / Clinton Avenue	Signalized	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Mitigated)	71.5	E	57.5	E
3	Fowler Avenue / Kerry Avenue	One-Way Stop	24.1	C	24.8	C
4	Armstrong Avenue / Kerry Avenue	One-Way Stop	28.3	D	28.1	D
		One-Way Stop (Mitigated)	17.5	C	27.2	D
5	Armstrong Avenue / McKinley Avenue	Two-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Mitigated)	51.1	D	45.9	D
6	Fowler Avenue / Floradora Avenue	One-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Roundabout (Mitigated)	8.2	A	8.8	A
7	Armstrong Avenue / Floradora Avenue	Two-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Mitigated)	24.0	C	25.8	C
8	Armstrong Avenue / Olive Avenue	All-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Mitigated)	37.8	D	47.6	D
9	Temperance Avenue / Olive Avenue	All-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Mitigated)	40.1	D	36.4	D
10	Armstrong Avenue / Belmont Avenue	Two-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Mitigated)	37.8	D	49.0	D
11	Temperance Avenue / Belmont Avenue	All-Way Stop	**>120.0**	**F**	**>120.0**	**F**
		Signalized (Mitigated)	32.3	C	43.4	D

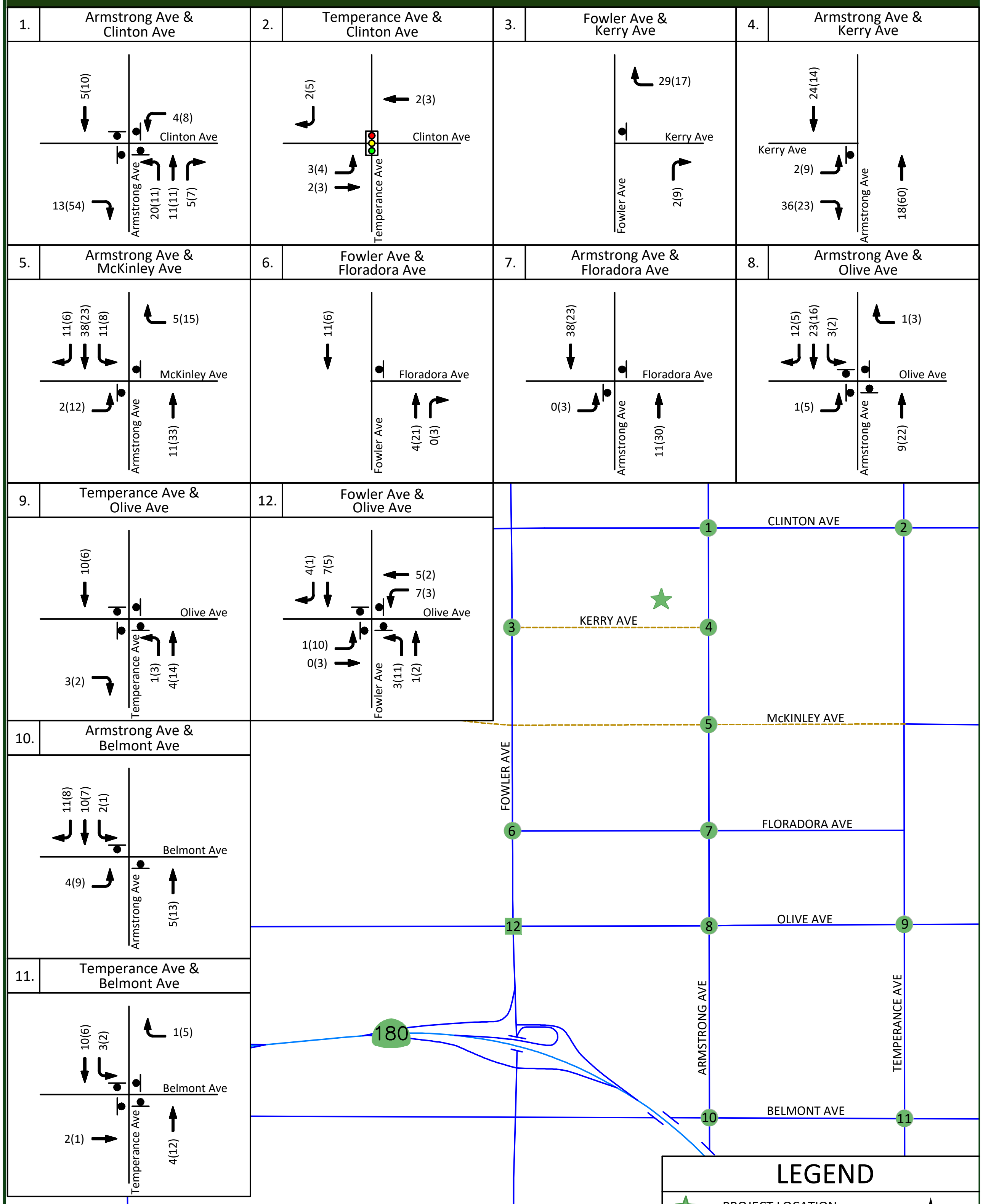
Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls.
LOS for two-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Project's Trip Assignment to Caltrans Facilities

The 2035 Project Only Trip assignment to the interchange of State Route 180 at Fowler Avenue is illustrated in Figure 11.

Tentative Tract 6241 - City of Fresno
2035 Project Only Trips

Figure 9



LEGEND

= PROJECT LOCATION
= STUDY INTERSECTION
= FAIR SHARE ONLY
= SIGNALIZED INTERSECTION
= STOP SIGN
= FUTURE ROADWAY
XX = AM PROJECT ONLY TRIPS
(XX) = PM PROJECT ONLY TRIPS

N
Not To Scale

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Figure 10
Cumulative Year 2035 plus Project - Traffic Volumes, Geometrics and Controls

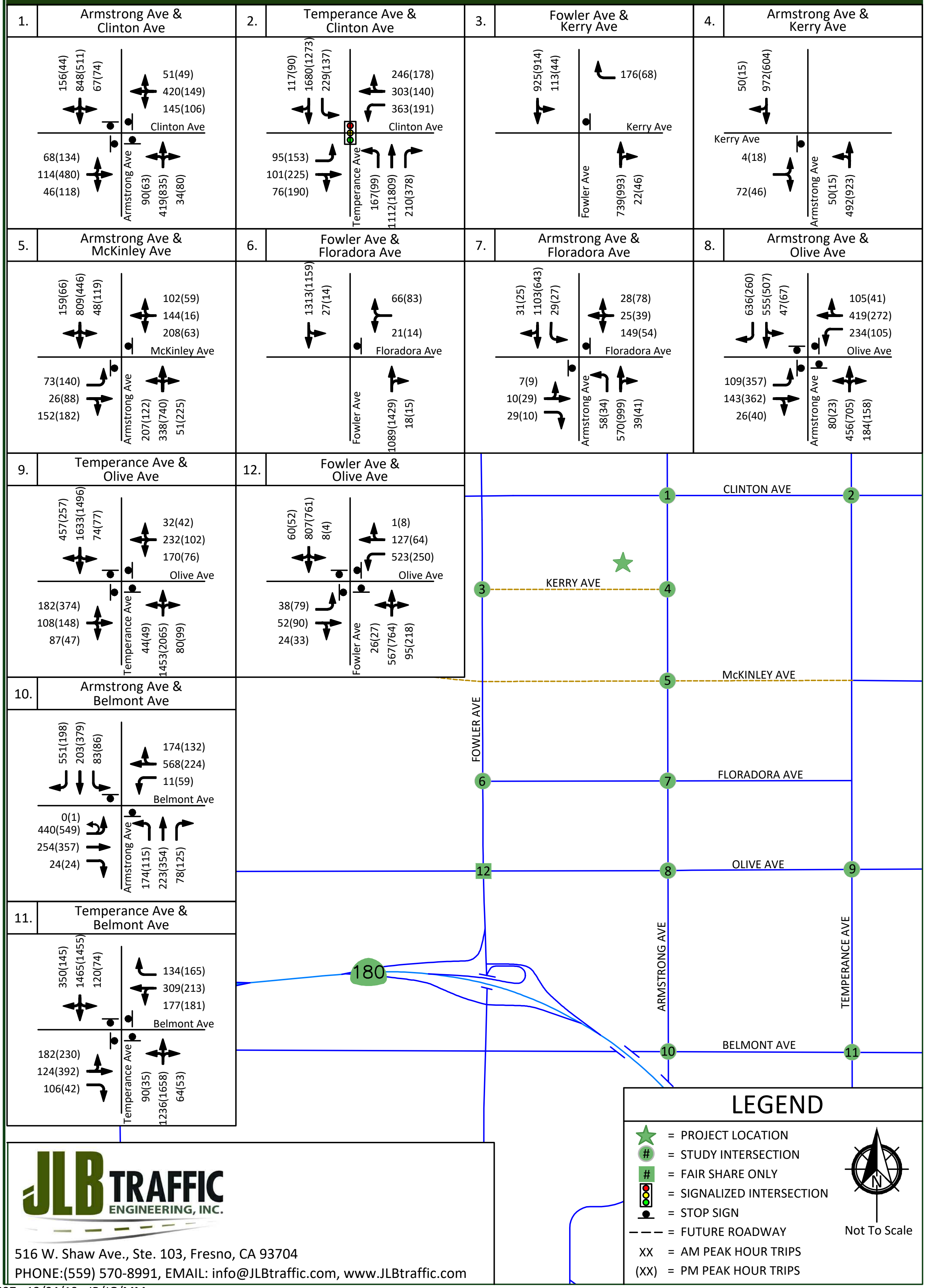

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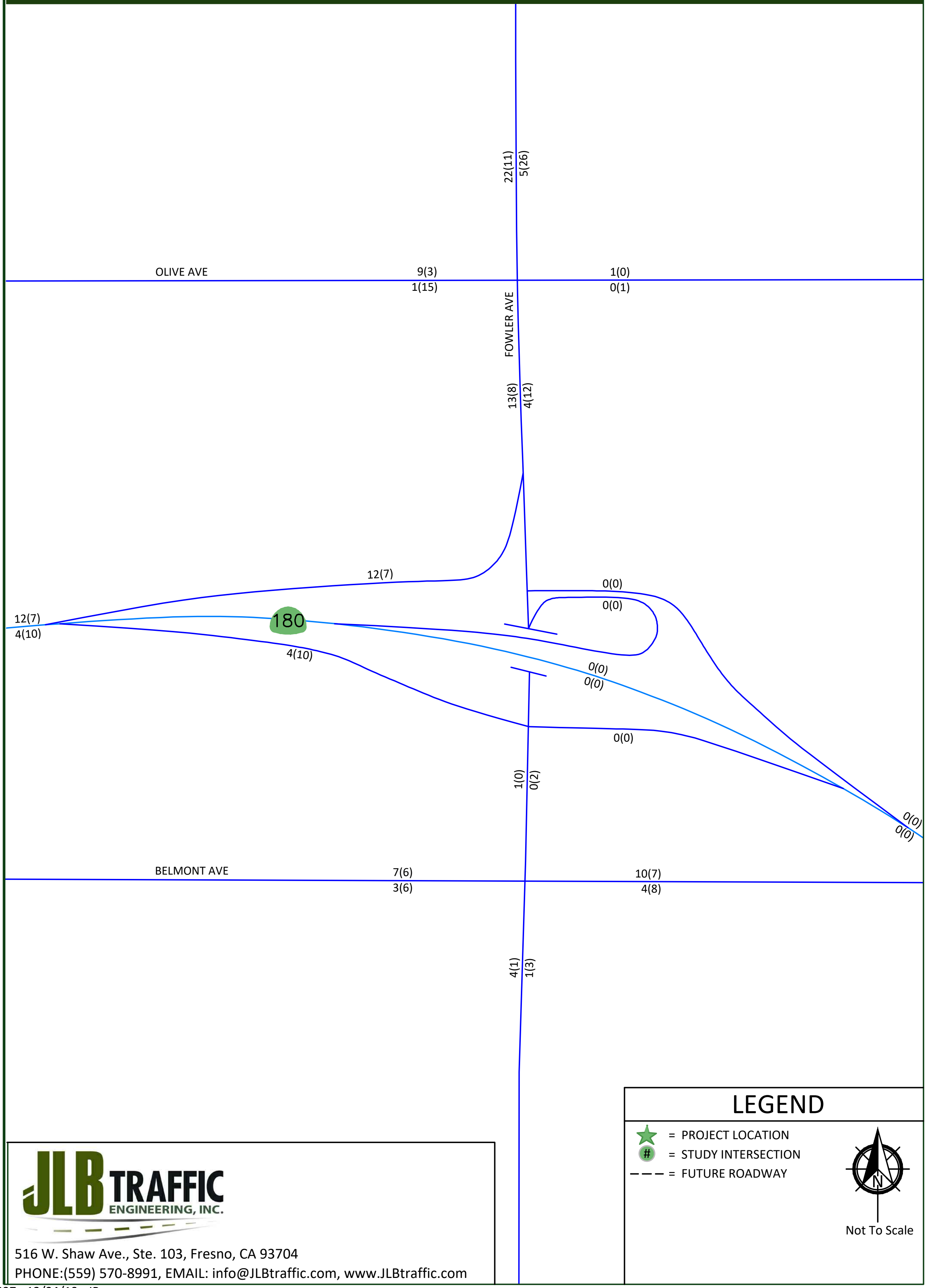
Figure 11

State Route 180 at Fowler Avenue Interchange - Project Only Trips



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Queuing Analysis

Table XIII provides a queue length summary for left-turn and right-turn lanes at the study intersections under all study scenarios. The queuing analyses for the study intersections are contained in the LOS worksheets for the respective scenarios. Appendix D contains the methodologies used to evaluate these intersections. Queuing analyses were completed using Sim Traffic output information. Synchro provides both 50th and 95th percentile maximum queue lengths (in feet). According to the Synchro manual, “the 50th percentile maximum queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percentile volumes.” The queues shown on Table XIII are the 95th percentile queue lengths for the respective lane movements.

The Highway Design Manual (HDM) provides guidance for determining deceleration lengths for the left-turn and right-turn lanes based on design speeds. Per the HDM criteria, “tapers for right-turn lanes are usually un-necessary since the main line traffic need not be shifted laterally to provide space for the right-turn lane. If, in some rare instances, a lateral shift was needed, the approach taper would use the same formula as for a left-turn lane.” Therefore, a bay taper length pursuant to the Caltrans HDM would need to be added, as necessary, to the recommended storage lengths presented in Table XIII.

The storage capacity for the Cumulative Year 2035 scenarios shall be based on the SimTraffic output files and engineering judgement. The values in bold presented in Table XIII are the projected queue lengths that will likely need to be accommodated by the Cumulative Year 2035 scenarios. While the City of Fresno does not have minimum storage length requirements for left-turn and right-turn lanes on major streets, it does prefer that these be set at 200 feet for left-turns and 75 feet for right-turns. At the remaining approaches, the greater of the existing storage capacity or the 200 feet left-turn lanes and 75 feet right-turn lanes will be sufficient to accommodate the maximum queue.

Table XIII: Queuing Analysis

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2035 No Project		Cumulative Year 2035 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Armstrong Avenue / Clinton Avenue	EB LTR	>500	59	69	54	82	*	*	*	*	*	*
		EB L	*	*	*	*	*	76	101	86	391	90	**431**
		EB TR	*	*	*	*	*	123	223	122	526	169	697
		WB LTR	>500	83	54	97	52	*	*	*	*	*	*
		WB L	*	*	*	*	*	128	64	153	142	**230**	191
		WB TR	*	*	*	*	*	162	111	410	218	414	163
		NB LTR	>500	59	99	78	90	*	*	*	*	*	*
		NB L	*	*	*	*	*	144	87	106	91	122	79
		NB T	*	*	*	*	*	*	*	118	268	118	325
		NB TR	*	*	*	*	*	116	297	146	301	146	339
		SB LTR	>500	227	63	150	70	*	*	*	*	*	*
		SB L	*	*	*	*	*	162	68	72	113	99	130
		SB T	*	*	*	*	*	*	*	240	174	222	225
		SB TR	*	*	*	*	*	374	144	253	155	228	233
2	Temperance Avenue / Clinton Avenue	EB L	60	25	64	29	63	118	119	136	144	**147**	127
		EB TR	>500	72	59	74	65	138	147	235	596	282	2365
		WB L	200	79	33	86	34	76	50	**353**	348	316	246
		WB TR	>500	145	80	156	56	204	73	*	*	*	*
		WB T	*	*	*	*	*	*	*	1545	725	1497	220
		WB R	*	*	*	*	*	*	*	473	372	**503**	124
		NB L	250	63	43	69	53	92	171	277	**386**	222	305
		NB T	>500	178	344	177	216	278	381	341	1372	296	567
		NB T	*	*	*	*	*	*	*	376	1417	352	617
		NB T	*	*	*	*	*	*	*	417	1476	380	645
		NB R	*	57	53	62	43	60	50	258	264	258	**265**
		SB L	150	145	67	185	71	283	215	369	276	**369**	245
		SB T	*	*	*	*	*	*	*	820	328	666	338
		SB T	*	*	*	*	*	*	*	810	334	645	342
		SB TR	>500	299	171	261	211	501	454	814	318	640	328
3	Fowler Avenue / Kerry Avenue	WB R	>500	*	*	0	0	68	54	83	73	**159**	60
		NB TR	>500	*	*	0	0	0	0	0	0	0	0
		SB LT	>500	*	*	0	0	105	71	417	233	426	174
4	Armstrong Avenue / Kerry Avenue	EB LR	>500	*	*	50	43	44	43	60	50	59	53
		NB LT	>500	*	*	0	0	0	0	107	23	160	179
		SB T	*	*	*	*	*	*	*	0	0	0	0
		SB TR	>500	*	*	0	0	0	0	0	0	18	0

Note: * = Does not exist or is not projected to exist

Table XIII: Queuing Analysis (cont.)

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2035 No Project		Cumulative Year 2035 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
5	Armstrong Avenue / McKinley Avenue	EB L	*	*	*	*	*	*	*	83	142	101	192
		EB TR	*	*	*	*	*	*	*	136	301	135	270
		WB L	*	*	*	*	*	*	*	191	88	**214**	101
		WB TR	*	*	*	*	*	*	*	190	52	251	106
		NB L	*	*	*	*	*	*	*	186	116	**240**	226
		NB T	*	*	*	*	*	*	*	225	456	261	387
		NB R	*	*	*	*	*	*	*	36	**272**	44	214
		SB L	*	*	*	*	*	*	*	67	126	82	**262**
		SB T	*	*	*	*	*	*	*	213	210	199	238
		SB TR	*	*	*	*	*	*	*	242	192	215	220
6	Fowler Avenue / Floradora Avenue	WB LR	>500	14	21	12	14	25	34	54	79	70	65
		NB T	*	*	*	*	*	*	*	174	300	229	354
		NB TR	>500	0	0	0	0	0	0	145	320	237	343
		SB LT	>500	8	9	0	0	37	95	132	72	119	92
		SB T	*	*	*	*	*	*	*	118	0	85	43
7	Armstrong Avenue / Floradora Avenue	EB LT	>500	24	18	17	13	36	31	*	*	*	*
		EB L	*	*	*	*	*	*	*	32	19	24	33
		EB T	*	*	*	*	*	*	*	29	52	29	65
		EB R	100	26	10	29	10	27	21	39	27	34	18
		WB LTR	>500	42	23	46	16	46	39	*	*	*	*
		WB L	*	*	*	*	*	*	*	118	83	113	101
		WB TR	*	*	*	*	*	*	*	54	116	54	121
		NB L	170	6	0	8	0	12	0	61	146	64	144
		NB TR	>500	0	0	0	0	0	0	217	365	205	545
		SB L	100	0	8	0	0	0	23	57	84	61	45
		SB T	*	*	*	*	*	0	0	197	160	230	212
		SB TR	>500	0	0	0	0	0	0	222	131	196	181

Note: * = Does not exist or is not projected to exist

Table XIII: Queuing Analysis (cont.)

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2035 No Project		Cumulative Year 2035 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
8	Armstrong Avenue / Olive Avenue	EB L	150	33	50	39	55	69	272	161	250	158	**265**
		EB T	*	*	*	*	*	*	*	92	481	108	433
		EB TR	>500	36	49	46	51	97	542	68	435	91	339
		WB L	130	64	37	66	36	101	55	197	131	**247**	115
		WB TR	>500	104	69	90	56	189	97	*	*	*	*
		WB T	*	*	*	*	*	*	*	166	112	252	128
		WB T	*	*	*	*	*	*	*	184	123	157	138
		WB R	*	*	*	*	*	*	*	54	34	54	37
		NB LTR	>500	92	118	77	99	*	*	*	*	*	*
		NB L	*	*	*	*	*	64	34	108	144	137	47
		NB T	*	*	*	*	*	*	*	306	548	338	528
		NB TR	*	*	*	*	*	181	278	*	*	*	*
		NB R	*	*	*	*	*	*	*	72	**349**	64	302
		SB LT	>500	65	48	72	46	*	*	*	*	*	*
		SB L	*	*	*	*	*	59	54	158	96	61	122
		SB T	*	*	*	*	*	171	82	367	270	361	299
		SB R	>500	67	44	82	48	131	57	307	84	292	91
9	Temperance Avenue / Olive Avenue	EB LTR	>500	*	*	76	79	*	*	*	*	*	*
		EB L	*	64	97	*	*	106	108	205	317	178	**435**
		EB T	*	*	*	*	*	*	*	154	164	121	1774
		EB TR	*	95	83	*	*	176	125	*	*	*	*
		EB R	*	*	*	*	*	*	*	66	59	62	44
		WB LTR	>500	*	*	225	58	*	*	*	*	*	*
		WB L	*	104	52	*	*	161	56	195	103	186	94
		WB T	*	*	*	*	*	*	*	347	88	220	123
		WB TR	*	139	73	*	*	170	87	*	*	*	*
		WB R	*	*	*	*	*	*	*	**136**	39	28	37
		NB LTR	>500	*	*	129	142	*	*	*	*	*	*
		NB L	*	39	32	*	*	46	47	74	91	89	**212**
		NB T	*	*	*	*	*	*	*	349	474	94	417
		NB T	*	*	*	*	*	*	*	368	492	102	426
		NB T	*	*	*	*	*	*	*	396	492	129	446
		NB TR	*	204	216	*	*	292	284	*	*	*	*
		NB R	*	*	*	*	*	*	*	137	**299**	30	228
		SB LTR	>500	*	*	351	153	*	*	*	*	*	*
		SB L	*	22	29	*	*	59	54	104	99	100	200
		SB T	*	*	*	*	*	*	*	341	283	312	300
		SB T	*	*	*	*	*	*	*	366	320	326	316
		SB T	*	*	*	*	*	*	*	372	332	356	341
		SB TR	*	279	156	*	*	344	234	*	*	*	*
		SB R	*	*	*	*	*	*	*	**302**	168	272	205

Note: * = Does not exist or is not projected to exist

Table XIII: Queuing Analysis (cont.)

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2035 No Project		Cumulative Year 2035 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
10	Armstrong Avenue / Belmont Avenue	EB L	250	83	67	59	65	235	256	358	393	**404**	400
		EB T	>500	0	0	0	0	82	83	323	1652	462	2063
		EB R	>500	0	0	0	0	6	22	21	470	18	852
		WB L	250	0	0	0	0	20	15	33	107	35	94
		WB TR	>500	17	3	3	0	106	95	*	*	*	*
		WB T	*	*	*	*	*	*	*	209	99	225	105
		WB T	*	*	*	*	*	*	*	220	109	209	100
		WB R	*	*	*	*	*	*	*	**123**	98	100	92
		NB L	300	0	9	9	11	40	23	187	131	167	125
		NB T	>500	15	14	0	0	30	20	184	243	229	268
		NB R	130	7	11	6	17	11	12	125	116	102	**156**
		SB L	250	43	32	50	45	68	64	115	100	101	116
		SB T	>500	0	24	18	22	39	45	184	327	222	314
		SB R	>500	67	42	74	46	137	51	192	56	224	67
11	Temperance Avenue / Belmont Avenue	EB LT	>500	*	*	73	83	*	*	*	*	*	*
		EB L	*	110	91	*	*	89	93	196	248	154	**465**
		EB T	*	*	*	*	*	*	*	103	401	117	929
		EB TR	*	89	92	*	*	96	97	*	*	*	*
		EB R	35	*	*	58	39	*	*	71	51	70	**232**
		WB LT	>500	*	*	108	65	*	*	*	*	*	*
		WB L	*	105	74	*	*	134	78	214	193	198	**231**
		WB T	*	*	*	*	*	*	*	218	210	237	236
		WB TR	*	109	86	*	*	117	107	*	*	*	*
		WB R	30	*	*	64	51	*	*	62	**121**	63	97
		NB LTR	>500	*	*	112	190	*	*	*	*	*	*
		NB L	*	47	33	*	*	48	60	149	67	**151**	48
		NB T	*	*	*	*	*	*	*	249	332	227	302
		NB T	*	*	*	*	*	*	*	234	330	225	292
		NB T	*	*	*	*	*	*	*	227	299	209	275
		NB TR	*	162	219	*	*	205	211	*	*	*	*
		NB R	*	*	*	*	*	*	*	29	43	44	32
		SB LTR	>500	*	*	490	92	*	*	*	*	*	*
		SB L	*	49	53	*	*	62	67	141	122	141	**303**
		SB T	*	*	*	*	*	*	*	321	379	207	364
		SB T	*	*	*	*	*	*	*	346	424	232	357
		SB T	*	*	*	*	*	*	*	361	441	233	367
		SB TR	*	282	164	*	*	231	212	*	*	*	*
		SB R	*	*	*	*	*	*	*	210	**348**	184	194

Note: * = Does not exist or is not projected to exist

Project's Pro-Rata Fair Share of Future Transportation Improvements

The Project's fair share percentage impact to study intersections projected to fall below their LOS threshold and which are not covered by an existing impact fee program is provided in Table XIV. The Project's fair share percentage impacts were calculated pursuant to the Caltrans Guide for the Preparation of Traffic Impact Studies. The Project's pro-rata fair shares were calculated utilizing the Existing volumes, 2035 Project Only Trips and Cumulative Year 2035 plus Project volumes. Figure 2 illustrates the Existing traffic volumes, Figure 9 illustrates the 2035 Project Only Trips, and Figure 10 illustrates the Cumulative Year 2035 plus Project traffic volumes. Since the critical peak period for the study facilities was determined to be during the AM peak, the AM peak volumes are utilized to determine the Project's pro-rata fair share.

It is recommended that the Project contribute its equitable fair share as listed in Table XIV for the future improvements necessary to maintain an acceptable LOS. However, fair share contributions should only be made for those facilities or portion thereof currently not funded by the responsible agencies roadway impact fee program(s) or grant funding, as appropriate. For those improvements not presently covered by local and regional roadway impact fee programs or grant funding, it is recommended that the Project contribute its equitable fair share. Payment of the Project's equitable fair share in addition to the local and regional impact fee programs would satisfy the Project's traffic mitigation measures.

This study does not provide construction costs for the recommended mitigation measures; therefore, if the recommended mitigation measures are implemented, it is recommended that the developer work with the City of Fresno to develop the estimated construction cost.

Table XIV: Project's Fair Share of Future Roadway Improvements

ID	*Intersection*	*Existing Traffic Volumes (AM Peak)*	*Cumulative Year 2035 plus Project Traffic Volumes (AM Peak)*	*2035 Project Only Trips (AM Peak)*	*Project's Fair Share (%)*
1	Armstrong Avenue / Clinton Avenue	994	2,458	58	3.96
2	Temperance Avenue / Clinton Avenue	1,433	4,699	9	0.28
5	Armstrong Avenue / McKinley Avenue	744	2,317	78	4.96
6	Fowler Avenue / Floradora Avenue	804	2,534	15	0.87
7	Armstrong Avenue / Floradora Avenue	821	2,078	49	3.90
8	Armstrong Avenue / Olive Avenue	1,348	2,994	49	2.98
9	Temperance Avenue / Olive Avenue	1,419	4,552	18	0.57
10	Armstrong Avenue / Belmont Avenue	1,019	2,783	32	1.81
11	Temperance Avenue / Belmont Avenue	1,339	4,357	20	0.66
12	Fowler Avenue / Olive Avenue	1,541	2,328	28	3.56

Note: Project Fair Share = ((2035 Project Only Trips) / (Cumulative Year 2035 + Project Traffic Volumes - Existing Traffic Volumes)) x 100

Conclusions and Recommendations

Conclusions and recommendations regarding the proposed Project are presented below.

Existing Traffic Conditions

- JLB conducted a search of the Statewide Integrated Traffic Records System (SWITRS) to obtain collision reports for the most recent five-year period (January 1, 2013 to December 31, 2017). In the five-year period, a total of 37 collisions were reported within the influence zone (assumed to be within 250 feet) of the study intersections.
- JLB was unable to reach a conclusion that would explain any justification for the modification of lane geometrics or traffic controls at this intersection. As a result, the number of correctable collisions experienced at the existing study intersections is considered less than significant.
- At present, the intersections of Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue exceed their LOS threshold during the AM peak period. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.
    - Temperance Avenue and Olive Avenue
        - Add an eastbound left-turn lane;
        - Modify the eastbound left-through-right lane to a through-right lane;
        - Add a westbound left-turn lane;
        - Modify the westbound left-through-right lane to a through-right lane;
        - Add a northbound left-turn lane;
        - Modify the northbound left-through-right lane to a through-right lane;
        - Add a southbound left-turn lane;
        - Modify the southbound left-through-right lane to a through-right lane;
        - Signalize the intersection with protective left-turn phasing in all directions; and
        - Modify the intersection to accommodate the added lanes.
    - Armstrong Avenue and Belmont Avenue
        - For two-way stop-controlled intersections, the recorded delay is for the worst approach. In this case, the worst approach was that for the northbound movement. On the day that these counts were collected, this movement observed only four (4) northbound left-turn turn trips – the most difficult movement to make. Furthermore, since the delay for each approach is an average of the delay experienced by all the movements for that approach, the LOS results are far worse than reality. If two (2) trips from the northbound left-turn movement had been spread amongst the northbound through movement and the northbound right-turn movement on the day these counts were collected, the average delay for the northbound approach would be recorded at 30.2 seconds, yielding LOS D. Therefore, the LOS operations at this intersection are considered adverse but not significant.

- Temperance Avenue and Belmont Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through lane to a through-right lane;
    - Remove the eastbound right-turn lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through lane to a through-right lane;
    - Remove the westbound right-turn lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through-right lane;
    - Add a southbound left-turn lane;
    - Modify the southbound left-through-right lane to a through-right lane;
    - Signalize the intersection with protective left-turn phasing in all directions; and
    - Modify the intersection to accommodate the added lanes.

Existing plus Project Traffic Conditions

- JLB analyzed the location of the proposed access points relative to the existing local roads and driveways in the Project's vicinity. A review of the Project access points to be constructed indicates that they are located at points that minimize traffic operational impacts to the existing roadway network.
- At build-out, the Project is estimated to generate a maximum of 2,133 daily trips, 167 AM peak hour trips and 224 PM peak hour trips.
- It is recommended that the Project implement a Class II bike lane along its frontage to Armstrong Avenue.
- It is recommended that the Project implement ADA compliant walkways along its frontages to Armstrong Avenue and Kerry Avenue.
- To promote alternative modes of transportation to Temperance-Kutner Elementary School, it is recommended that the Clovis Unified School District work with the City of Fresno and County of Fresno to implement a Safe Routes to School plan and to seek grant funding to help build bikeways and walkways where they are lacking within a one-mile radius of the school site.
- Under this scenario, the intersections of Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to continue to exceed their LOS threshold during the AM peak period. When compared to Existing Traffic Conditions, the Project is projected to increase the average delay by a maximum of 1.0, 3.4, and 3.5 seconds respectively to each of these intersections during the AM peak period – less than the five (5.0) second threshold that the City of Fresno utilizes to determine if a Project causes a significant impact to an existing substandard LOS. Therefore, this impact would be considered adverse, but not significant.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Projects is 115,501 daily trips, 8,135 AM peak hour trips and 11,239 PM peak hour trips.

- Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to exceed their LOS threshold during one or both peak periods. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.
  - Armstrong Avenue and Clinton Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through-right lane to a through-right lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through-right lane;
    - Add a southbound left-turn lane;
    - Modify the southbound left-through-right lane to a through-right lane;
    - Signalize the intersection with protective left-turn phasing in all directions; and
    - Modify the intersection to accommodate the added lanes.
  - Armstrong Avenue and Floradora Avenue
    - Add a second southbound through lane; and
    - Modify the intersection to accommodate the added lane.
  - Armstrong Avenue and Olive Avenue
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through-right lane;
    - Add a southbound left-turn lane;
    - Modify the southbound left-through lane to a through lane;
    - Remove the southbound right-turn lane;
    - Signalize the intersection with protective left-turn phasing; and
    - Modify the intersection to accommodate the added lanes.
  - Temperance Avenue and Olive Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through-right lane to a through-right lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through-right lane;
    - Add a southbound left-turn lane;
    - Modify the southbound left-through-right lane to a through-right lane;
    - Signalize the intersection with protective left-turn phasing in all directions; and
    - Modify the intersection to accommodate the added lanes.
  - Armstrong Avenue and Belmont Avenue
    - Signalize the intersection with protective left-turn phasing in all directions.

- Temperance Avenue and Belmont Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through-right lane;
  - Remove the eastbound right-turn lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through lane to a through-right lane;
  - Remove the westbound right-turn lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through-right lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through-right lane;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.

- Between the Existing Traffic Conditions and the Near Term plus Project Traffic Conditions scenarios, the Project accounts for 1.81 percent of the daily trips, 2.01 percent of the AM peak hour trips and 1.95 percent of the PM peak hour trips of growth in traffic, while the rest can be attributable to the Near Term Projects. Therefore, one can deduce that the majority of the mitigation measures presented under this scenario may not be necessary immediately upon completion of the proposed Project. However, if all of the Near Term Projects are completed close to the completion date of the proposed Project, the detailed recommended improvements presented under this scenario may be necessary in order to improve the LOS to the City's target LOS threshold.

Cumulative Year 2035 No Project Traffic Conditions

- Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Temperance Avenue and Clinton Avenue, Armstrong Avenue and McKinley Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to exceed their LOS threshold during both peak periods. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.
  - Armstrong Avenue and Clinton Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through-right lane to a through-right lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through lane;
    - Add a northbound through-right lane with a receiving lane north of Clinton Avenue;
    - Add a southbound left-turn lane;
    - Modify the southbound left-through-right lane to a through lane;
    - Add a southbound through-right lane with a receiving lane south of Clinton Avenue;
    - Signalize the intersection with protective left-turn phasing in all directions; and
    - Modify the intersection to accommodate the added lanes.

- Temperance Avenue and Clinton Avenue
  - Modify the westbound through-right lane to a through lane;
  - Add a westbound right-turn lane;
  - Stripe two additional northbound through lanes and add receiving lanes north of Clinton Avenue;
  - Add two southbound through lanes with receiving lanes south of Clinton Avenue; and
  - Modify the traffic signal to accommodate the added lanes.
- Armstrong Avenue and McKinley Avenue
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add a northbound right-turn lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through lane;
  - Add a southbound through-right lane with a receiving lane south of McKinley Avenue;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.
- Armstrong Avenue and Floradora Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane;
  - Add a second southbound through lane;
  - Signalize the intersection with protective left-turn phasing; and
  - Modify the intersection to accommodate the added lanes.
- Armstrong Avenue and Olive Avenue
  - Add a second eastbound through lane with a receiving lane east of Armstrong Avenue;
  - Modify the westbound through-right lane to a through lane;
  - Add a second westbound through lane;
  - Add a westbound right-turn lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add a northbound right-turn lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through lane to a through lane;
  - Signalize the intersection with protective left-turn phasing; and
  - Modify the intersection to accommodate the added lanes.

- Temperance Avenue and Olive Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through-right lane to a through lane;
    - Add an eastbound right-turn lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through lane;
    - Add a westbound right-turn lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through lane;
    - Add two northbound through lanes with receiving lanes north of Olive Avenue;
    - Add a northbound right-turn lane;
    - Add a southbound left-turn lane;
    - Modify the southbound left-through-right lane to a through lane;
    - Add two southbound through lanes with receiving lanes south of Olive Avenue;
    - Add a southbound right-turn lane;
    - Signalize the intersection with protective left-turn phasing in all directions; and
    - Modify the intersection to accommodate the added lanes.
- Armstrong Avenue and Belmont Avenue
    - Modify the westbound through-right lane to a through lane;
    - Add a second westbound through lane with a receiving lane west of Armstrong Avenue;
    - Add a westbound right-turn lane;
    - Signalize the intersection with protective left-turn phasing in all directions and implement overlap phasing of the southbound right-turn with the eastbound left-turn phase; and
    - Modify the intersection to accommodate the added lanes.
- Temperance Avenue and Belmont Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through lane to a through lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through lane to a through lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through lane;
    - Add two northbound through lanes with receiving lanes north of Belmont Avenue;
    - Add a northbound right-turn lane;
    - Add a southbound left-turn lane;
    - Modify the southbound left-through-right lane to a through lane;
    - Add two southbound through lanes with receiving lanes south of Belmont Avenue;
    - Add a southbound right-turn lane;
    - Signalize the intersection with protective left-turn phasing in all directions; and
    - Modify the intersection to accommodate the added lanes.

- In addition, the intersection of Fowler Avenue and Floradora Avenue is projected to operate at LOS F during both peak periods. While the City of Fresno has made the appropriate findings to designate LOS F as the criteria of significance for Fowler Avenue between McKinley Avenue and Olive Avenue, it did so under the assumption that up to four (4) through lanes would be built on Fowler Avenue. Therefore, to improve the LOS at this intersection, it is recommended that the following improvements be implemented.
  - Fowler Avenue and Floradora Avenue
    - Add a northbound through lane with a receiving lane north of Floradora Avenue;
    - Add a southbound through lane with a receiving lane south of Floradora Avenue;
    - Install a two-lane roundabout; and
    - Modify the intersection to accommodate the added lanes.
- Further, while the intersection of Armstrong Avenue and Kerry Avenue is projected to operate at an acceptable LOS during both peak periods, it was necessary to modify the southbound movement due to its proximity to both Clinton Avenue and McKinley Avenue. Therefore, it is recommended that the following improvements be implemented.
  - Armstrong Avenue and Kerry Avenue
    - Add a southbound through lane with a receiving lane south of Kerry Avenue; and
    - Modify the intersection to accommodate the added lanes.

Cumulative Year 2035 plus Project Traffic Conditions

- Under this scenario, the intersections of Armstrong Avenue and Clinton Avenue, Temperance Avenue and Clinton Avenue, Armstrong Avenue and McKinley Avenue, Armstrong Avenue and Floradora Avenue, Armstrong Avenue and Olive Avenue, Temperance Avenue and Olive Avenue, Armstrong Avenue and Belmont Avenue, and Temperance Avenue and Belmont Avenue are projected to exceed their LOS threshold during both peak periods. To improve the LOS at these intersections, it is recommended that the following improvements be implemented.
  - Armstrong Avenue and Clinton Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through-right lane to a through-right lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through lane;
    - Add a northbound through-right lane with a receiving lane north of Clinton Avenue;
    - Add a southbound left-turn lane;
    - Modify the southbound left-through-right lane to a through lane;
    - Add a southbound through-right lane with a receiving lane south of Clinton Avenue;
    - Signalize the intersection with protective left-turn phasing in all directions; and
    - Modify the intersection to accommodate the added lanes.

- Temperance Avenue and Clinton Avenue
  - Modify the westbound through-right lane to a through lane;
  - Add a westbound right-turn lane;
  - Stripe two additional northbound through lanes and add receiving lanes north of Clinton Avenue;
  - Add two southbound through lanes with receiving lanes south of Clinton Avenue; and
  - Modify the traffic signal to accommodate the added lanes.
- Armstrong Avenue and McKinley Avenue
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add a northbound right-turn lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through-right lane to a through lane;
  - Add a southbound through-right lane with a receiving lane south of McKinley Avenue;
  - Signalize the intersection with protective left-turn phasing in all directions; and
  - Modify the intersection to accommodate the added lanes.
- Armstrong Avenue and Floradora Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane;
  - Add a second southbound through lane;
  - Signalize the intersection with protective left-turn phasing; and
  - Modify the intersection to accommodate the added lanes.
- Armstrong Avenue and Olive Avenue
  - Add a second eastbound through lane with a receiving lane east of Armstrong Avenue;
  - Modify the westbound through-right lane to a through lane;
  - Add a second westbound through lane;
  - Add a westbound right-turn lane;
  - Add a northbound left-turn lane;
  - Modify the northbound left-through-right lane to a through lane;
  - Add a northbound right-turn lane;
  - Add a southbound left-turn lane;
  - Modify the southbound left-through lane to a through lane;
  - Signalize the intersection with protective left-turn phasing; and
  - Modify the intersection to accommodate the added lanes.

- Temperance Avenue and Olive Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through-right lane to a through lane;
    - Add an eastbound right-turn lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through lane;
    - Add a westbound right-turn lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through lane;
    - Add two northbound through lanes with receiving lanes north of Olive Avenue;
    - Add a northbound right-turn lane;
    - Add a southbound left-turn lane;
    - Modify the southbound left-through-right lane to a through lane;
    - Add two southbound through lanes with receiving lanes south of Olive Avenue;
    - Add a southbound right-turn lane;
    - Signalize the intersection with protective left-turn phasing in all directions; and
    - Modify the intersection to accommodate the added lanes.
- Armstrong Avenue and Belmont Avenue
    - Modify the westbound through-right lane to a through lane;
    - Add a second westbound through lane with a receiving lane west of Armstrong Avenue;
    - Add a westbound right-turn lane;
    - Signalize the intersection with protective left-turn phasing in all directions and implement overlap phasing of the southbound right-turn with the eastbound left-turn phase; and
    - Modify the intersection to accommodate the added lanes.
- Temperance Avenue and Belmont Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through lane to a through lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through lane to a through lane;
    - Add a northbound left-turn lane;
    - Modify the northbound left-through-right lane to a through lane;
    - Add two northbound through lanes with receiving lanes north of Belmont Avenue;
    - Add a northbound right-turn lane;
    - Add a southbound left-turn lane;
    - Modify the southbound left-through-right lane to a through lane;
    - Add two southbound through lanes with receiving lanes south of Belmont Avenue;
    - Add a southbound right-turn lane;
    - Signalize the intersection with protective left-turn phasing in all directions; and
    - Modify the intersection to accommodate the added lanes.

- In addition, the intersection of Fowler Avenue and Floradora Avenue is projected to operate at LOS F during both peak periods. While the City of Fresno has made the appropriate findings to designate LOS F as the criteria of significance for Fowler Avenue between McKinley Avenue and Olive Avenue, it did so under the assumption that up to four (4) through lanes would be built on Fowler Avenue. Therefore, to improve the LOS at this intersection, it is recommended that the following improvements be implemented.
    - Fowler Avenue and Floradora Avenue
        - Add a northbound through lane with a receiving lane north of Floradora Avenue;
        - Add a southbound through lane with a receiving lane south of Floradora Avenue;
        - Install a two-lane roundabout; and
        - Modify the intersection to accommodate the added lanes.
- Further, while the intersection of Armstrong Avenue and Kerry Avenue is projected to operate at an acceptable LOS during both peak periods, it was necessary to modify the southbound movement due to its proximity to both Clinton Avenue and McKinley Avenue. Therefore, it is recommended that the following improvements be implemented.
    - Armstrong Avenue and Kerry Avenue
        - Add a southbound through lane with a receiving lane south of Kerry Avenue; and
        - Modify the intersection to accommodate the added lanes.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Project's Equitable Fair Share

- It is recommended that the Project contribute its equitable Fair Share as presented in Table XIV.

Study Participants

JLB Traffic Engineering, Inc. Personnel:

Jose Luis Benavides, PE, TE	Project Manager
Susana Maciel, EIT	Project Engineer
Matthew Arndt, EIT	Engineer I/II
Javier Rios	Engineer I/II
Jove Alcazar, EIT	Engineer I/II
Dennis Wynn	Sr. Engineering Technician
Justin Barnett	Engineering Aide
Jesus Garcia	Engineering Aide
Adrian Benavides	Engineering Aide

Persons Consulted:

Jeff Harris	Wilson Premier Homes, Inc.
Jill Gormley, PE	City of Fresno
Harmanjit Dhaliwal	City of Fresno
Brian Spaunhurst	County of Fresno
David Padilla	Caltrans
Kai Han, TE	Fresno COG
Lang Yu	Fresno COG

References

1. City of Fresno, *2035 General Plan*.
2. County of Fresno, *2000 General Plan*.
3. *Guide for the Preparation of Traffic Impact Studies*, Caltrans, dated December 2002.
4. *Trip Generation,* 10th Edition, Washington D.C., Institute of Transportation Engineers, 2017.
5. *2014 California Manual on Uniform Traffic Control Devices*, Caltrans, November 7, 2014.
6. City of Fresno, *Active Transportation Plan*, December 2016, adopted March 2, 2107.

Appendix A: Scope of Work

May 14, 2019

Mr. Harmanjit Dhaliwal, P.E.
City of Fresno
2600 Fresno Street
Fresno, CA 93721-3616

Via Email Only: Harmanjit.Dhaliwal@fresno.gov

Subject: Proposed Scope of Work for the Preparation of a Traffic Impact Analysis for Tentative Tract 6241 located at the Southwest Quadrant of Armstrong Avenue and Clinton Avenue in the City of Fresno (JLB Project 004-097)

Dear Mr. Dhaliwal,

JLB Traffic Engineering, Inc. (JLB) hereby submits this Draft Scope of Work for the preparation of a Traffic Impact Analysis (TIA) for the Tentative Tract 6241 (Project) located at the southwest quadrant of Armstrong Avenue and Clinton Avenue in the City of Fresno. The Project proposes to develop the site with up to 226 single family residential units on 19.83 acres for an overall density of 11.54 units per acre. Based on information provided to JLB, the Project will be blending the density between the two planned land uses (Urban Neighborhood and Medium Density Residential) and as a result the Project will be consistent with the City of Fresno 2035 General Plan land use designation. An aerial of the Project vicinity and Project Site Plan are shown in Exhibits A and Exhibit B, respectively.

The purpose of the TIA is to evaluate the potential on-site and off-site traffic impacts, identify short-term roadway and circulation needs, determine potential mitigation measures and identify any critical traffic issues that should be addressed in the on-going planning process. To evaluate the on-site and off-site traffic impacts of the proposed Project, JLB proposes the following Scope of Work.

Scope of Work

- Request a Fresno Council of Governments (Fresno COG) traffic forecast model run for the Project (Select Zone Analysis) which will include the Project and the streets to be analyzed. The Fresno COG traffic forecasting model will be used to forecast traffic volumes for the Base Year 2019 and Cumulative Year 2035 scenarios.
- JLB will obtain recent (less than 12 months) or schedule and conduct new traffic counts at the study facility(ies) as necessary. These counts will include pedestrians and vehicles.
- JLB will perform a site visit to observe existing traffic conditions, especially during the AM and PM peak hours. Existing roadway conditions including intersection geometrics and traffic controls will be verified.
- JLB will evaluate on-site circulation and provide recommendations as necessary to improve circulation to and within the Project site.

- JLB will prepare California Manual on Uniform Traffic Control Devices (CA MUTCD) Warrant 1 "8-hour" and Warrant 2 "4-hour" for existing unsignalized study intersections under the Existing scenario.
- JLB will prepare CA MUTCD Warrant 3 "Peak Hour" for unsignalized study intersections under the Existing plus Project, Near Term plus Project and Cumulative Year 2035 plus Project scenarios.
- JLB will conduct a qualitative safe routes to school evaluation from the Project site to the K-12 school(s) which would most likely serve the Project on opening day.
- JLB will qualitatively analyze existing and planned transit routes in the vicinity of the Project.
- JLB will qualitatively analyze existing and planned walkways in the vicinity of the Project.
- JLB will qualitatively analyze existing and planned bikeways in the vicinity of the Project.
- JLB will forecast trip distribution based on turn count information and knowledge of the existing and planned circulation network in the vicinity of the Project.
- JLB will evaluate existing and forecasted levels of service (LOS) at the study intersection(s). JLB will use HCM 6th or HCM 2000 methodologies (as appropriate) within Synchro to perform this analysis for the AM and PM peak hours. JLB will identify the causes of poor LOS.
- JLB will prepare a five-year collision analysis based on the Statewide Integrated Traffic Reporting System (SWITRS) database for all existing study facilities.

Study Scenarios

1. Existing Traffic Conditions with needed improvements (if any);
2. Existing plus Project Traffic Conditions with proposed mitigation measures (if any);
3. Near Term plus Project Traffic Conditions with proposed mitigation measures (if any); and
4. Cumulative Year 2035 plus Project Traffic Conditions with proposed mitigation measures (if any).

Weekday peak hours to be analyzed (Tuesday through Thursday only)

1. 7 - 9 AM peak hour
2. 4 - 6 PM peak hour

Study Intersections

1. Armstrong Avenue / Clinton Avenue
2. Fowler Avenue / Kerry Avenue
3. Armstrong Avenue / Kerry Avenue
4. Armstrong Avenue / McKinley Avenue
5. Armstrong Avenue / Floradora Avenue
6. Armstrong Avenue / Olive Avenue
7. Armstrong Avenue / Belmont Avenue

Queuing analysis is included in the proposed Scope of Work for the study intersection(s) listed above under all study scenarios. This analysis will be utilized to recommend minimum storage lengths for left-turn and right-turn lanes at all study intersections.

Study Segments

1. none

Project Only Trip Assignment to State Facilities

1. Fowler Avenue / State Route 180
2. Fowler Avenue / Olive Avenue (with Fair Share Calculations)

Project Trip Generation

The trip generation rates for the proposed Project were obtained from the 10th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table I presents the trip generation for the proposed Project with trip generation rates for Single-Family Detached Housing. At buildout, the proposed Project is estimated to generate a maximum of 2,133 daily trips, 167 AM peak hour trips and 224 PM peak hour trips.

Table I: Project Trip Generation

Land Use (ITE Code)	Size	Unit	Daily		AM Peak Hour						PM Peak Hour					
			Rate	Total	Trip Rate	In %	Out %	In	Out	Total	Trip Rate	In %	Out %	In	Out	Total
Single-Family Detached Housing (210)	226	d.u.	9.44	2,133	0.74	25	75	42	125	167	0.99	63	37	141	83	224
Total Project Trips				**2,133**				**42**	**125**	**167**				**141**	**83**	**224**

Note: d.u. = Dwelling Units

Access to the Project

Access to and from the Project site will be from two access points. One access point will be located along the west side of Armstrong Avenue approximately 1,000 feet south of Clinton Avenue and is proposed to be a full access. The other access point will be located along the north side of Kerry Avenue approximately 1,000 feet west of Armstrong Avenue. Access to Kerry Avenue will be limited to exit only. Additional Project details can be found on Exhibit B.

Near Term Projects to be Included

Based on our local knowledge of the study area and consultation with City of Fresno Planning & Development staff, JLB proposes to include near term projects in the vicinity of the proposed Project under the Near Term plus Project scenario. The near term projects proposed to be included in the Near Term scenario are:

	Project Name	General Location
1.	TT 5171 (portion of)	SWQ Church Avenue and Clovis Avenue
2.	TT 5341 (portion of)	SWC Clinton Avenue and Locan Avenue
3.	TT 5424	NWQ Clinton Avenue and Temperance Avenue
4.	TT 5464	SWC Hamilton Avenue and Temperance Avenue
5.	TT 5498	NEC Church Avenue and Peach Avenue
6.	TT 5501	SEC of Clinton Avenue and Temperance Avenue
7.	TT 5531 (portion of)	SEC California Avenue and Armstrong Avenue
8.	TT 5571	SWC of Dakota Avenue and Temperance Avenue
9.	TT 5592	SWC Shields Avenue and Locan Avenue
10.	TT 5605 (portion of)	SWQ Ashlan Avenue and DeWolf Avenue
11.	TT 5626 (portion of)	SEC Hamilton Avenue and Fowler Avenue
12.	TT 5638	NWC Church Avenue and Armstrong Avenue
13.	TT 5717 (portion of)	NEC Clinton Avenue and Fowler Avenue

14. TT 5913	NEC California Avenue and Armstrong Avenue
15. TT 5953	NEC Butler Avenue and Armstrong Avenue
16. TT 6101	SEC Dakota Avenue alignment and Leonard Avenue
17. TT 6023	SEC of Ashlan Avenue and Highland Avenue
18. TT 6080	SEQ of Ashlan Avenue and DeWolf Avenue
19. TT 6107 (portion of)	SWQ Shaw Avenue and Highland Avenue
20. TT 6112 (portion of)	NWQ Dakota Avenue alignment and Temperance Avenue
21. TT 6114 (portion of)	NWQ Dakota Avenue alignment and Leonard Avenue
22. TT 6130	SEQ of Belmont Avenue and Fowler Avenue
23. TT 6143 (portion of)	NEQ Dakota Avenue alignment and Leonard Avenue
24. TT 6164	SEQ of Ashlan Avenue and DeWolf Avenue
25. TT 6174	SEQ of Ashlan Avenue and DeWolf Avenue
26. TT 6193	SWC of Ashlan Avenue and Highland Avenue
27. TT 6191	NWQ Armstrong Avenue and Fancher Creek Drive
28. TT 6201	NEC Armstrong Avenue and Floradora Avenue
29. TT 6214	SEQ Clinton Avenue and Fowler Avenue
30. TT 6225	NEC Ashlan Avenue and Locan Avenue
31. TT 6235	NEC of Armstrong Avenue and Olive Avenue
32. Fancher Creek Town Center (portion of)	SEQ SR 180 and Clovis Avenue
33. Neighborhood Shopping Center (portion of)	SWC Shields Avenue and Armstrong Avenue
34. Sunnyside Market	NEQ Belmont Avenue and Temperance Avenue
35. Locan-Shields Elementary School	NEQ Shields Avenue and Locan Avenue
36. Fowler-McKinley Elementary School	NEC Fowler Avenue and McKinley Avenue

Other Near Term Projects the City, County or Caltrans has knowledge and for which it is anticipated that said project(s) is/are projected to be whole or partially built by the Near Term Project Year 2021. City, County and Caltrans as appropriate would provide JLB with project details such as a project description, location, proposed land uses with breakdowns and type of residential units and amount of square footages for non-residential uses.

The Scope of Work is based on our understanding of this Project and our experience with similar TIAs. In the absence of comments by June 4, 2019 it will be assumed that the Scope of Work is acceptable to the agency(ies) that have not submitted any comments. If you have any questions or require additional information, please contact me by phone at (559) 317-6245 or by e-mail at jrios@JLBtraffic.com.

Sincerely,

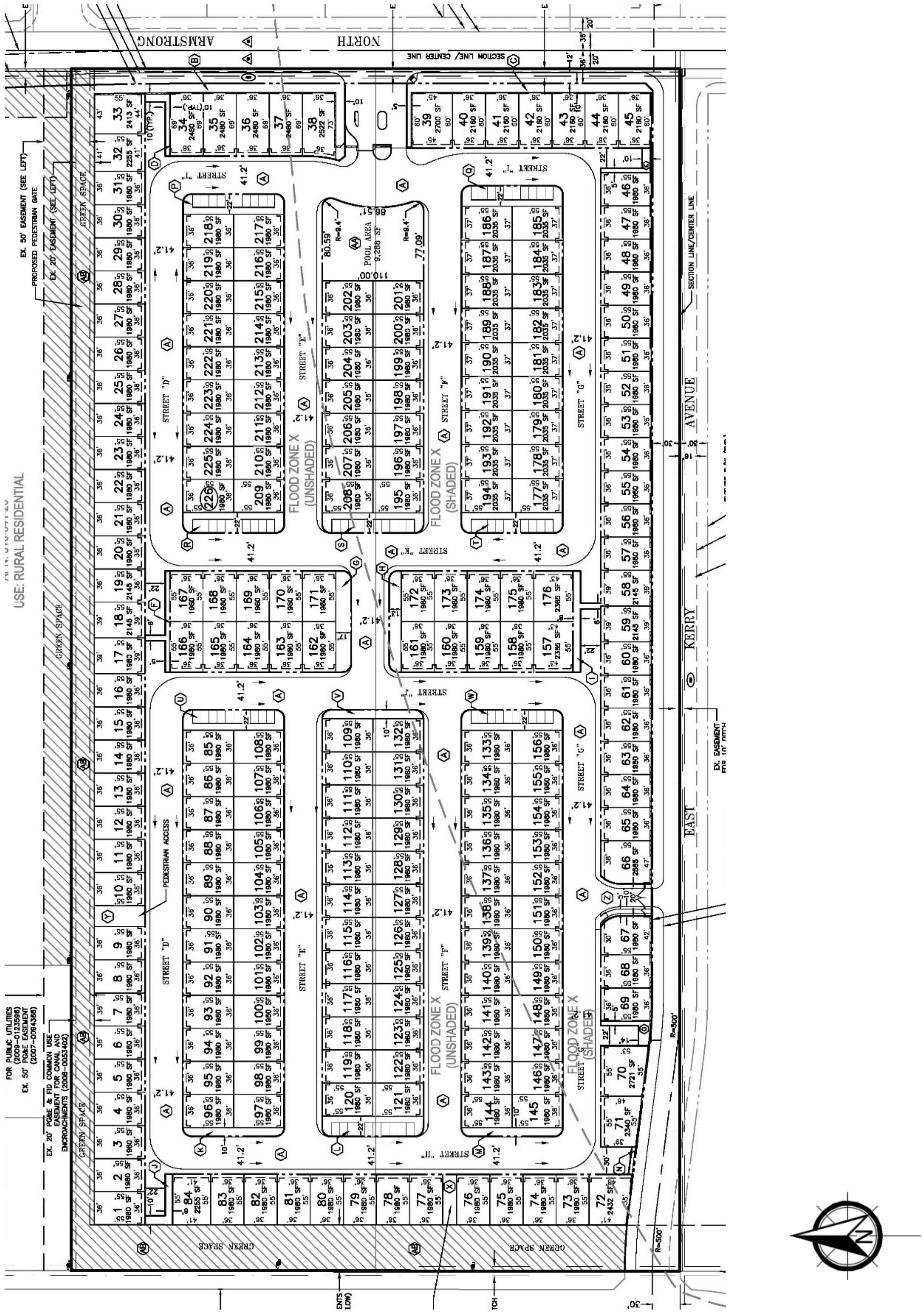
Javier Rios
Engineer I/II

cc: Jill Gormley, City of Fresno
Brian Spaunhurst, County of Fresno
David Padilla, Caltrans
Jose Benavides, JLB Traffic Engineering, Inc.

Z:\01 Projects\004 Fresno\004-097 Tract 6241 TIA\Draft Scope of Work\L05142019 Draft Scope of Work.docx

Exhibit A – Aerial

Exhibit B – Project Site Plan



Jose Benavides

From: Spaunhurst, Brian <bspaunhurst@fresnocountyca.gov>
Sent: Monday, May 20, 2019 11:43 AM
To: Jose Benavides; Javier Rios
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Thank you,

Unless there is other reasoning against it, I would like to add Temperance and Olive.

Respectfully,

Brian Spaunhurst | **Senior Planner**
Department of Public Works and Planning | Design Division
2220 Tulare St. 6th Floor Fresno, CA 93721
Main Office: (559) 600-4532 | Direct: (559) 600-4532
Email: bspaunhurst@FresnoCountyCa.gov
Your input matters! Customer Service Survey

From: Jose Benavides <jbenavides@jlbtraffic.com>
Sent: Monday, May 20, 2019 11:36 AM
To: Spaunhurst, Brian <bspaunhurst@fresnocountyca.gov>; Javier Rios <jrios@jlbtraffic.com>
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Not that we are aware of.

Sincerely,

Jose Luis Benavides, P.E., T.E.
President

Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

1300 E. Shaw Ave., Ste. 103
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Direct: (559) 317-6249
Main: (559) 570-8991
Cell: (559) 694-6000
Fax: (559) 317-6854
www.JLBtraffic.com

From: Spaunhurst, Brian <bspaunhurst@fresnocountyca.gov>
Sent: Monday, May 20, 2019 11:24 AM
To: Javier Rios <jrios@jlbtraffic.com>
Cc: Jose Benavides <jbenavides@jlbtraffic.com>
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Good Morning Jose,

That sounds fair to me. Is there a similar situation with Temperance and Olive?

Respectfully

Brian Spaunhurst | **Senior Planner**
Department of Public Works and Planning | Design Division
2220 Tulare St. 6th Floor Fresno, CA 93721
Main Office: (559) 600-4532 | Direct: (559) 600-4532
Email: bspaunhurst@FresnoCountyCa.gov
Your input matters! Customer Service Survey

From: Javier Rios <jrios@jlbtraffic.com>
Sent: Thursday, May 16, 2019 5:09 PM
To: Spaunhurst, Brian <bspaunhurst@fresnocountyca.gov>
Cc: Jose Benavides <jbenavides@jlbtraffic.com>
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Good afternoon Brian,

In the recent past, the County of Fresno was only requesting a fair share determination for the intersection of Olive Avenue and Fowler Avenue. This was due to the County having grant funds to signalize this intersection. With this in mind, would it suffice for the study to include a fair share analysis of the Project's trips to this intersection so that the County could collect a fair share for a funding gap if one exists?

Sincerely,

Javier Rios,
Engineer I/II

JLB TRAFFIC ENGINEERING, INC.

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1300 E. Shaw Ave., Ste. 103
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Direct: (559) 317-6245
Office: (559) 570-8991
www.JLBtraffic.com

From: Spaunhurst, Brian [mailto:bspaunhurst@fresnocountyca.gov]
Sent: Thursday, May 16, 2019 1:52 PM
To: Javier Rios <jrios@jlbtraffic.com>
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Good Afternoon Javier,

Your scope looks acceptable to me with one request. Unless it was agreed upon by my predecessor, or if you have reasoning not to, I would like to add the intersections of Olive and Fowler as well as Olive and Temperance.

Respectfully,

Brian Spaunhurst | **Senior Planner**
Department of Public Works and Planning | Design Division
2220 Tulare St. 6th Floor Fresno, CA 93721
Main Office: (559) 600-4532 | Direct: (559) 600-4532
Email: bspaunhurst@FresnoCountyCa.gov
Your input matters! Customer Service Survey

From: Javier Rios <jrios@jlbtraffic.com>
Sent: Tuesday, May 14, 2019 4:49 PM
To: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>
Cc: Jill.Gormley@fresno.gov; Spaunhurst, Brian <bspaunhurst@fresnocountyca.gov>; dave_padilla@dot.ca.gov; Jose Benavides <jbenavides@jlbtraffic.com>
Subject: TIA Draft Scope of Work - JLB Project 004-097

Good afternoon,

Attached you will find a Draft Scope of Work that has been prepared for Tentative Tract 6241 to be located at the southwest quadrant of Armstrong Avenue and Clinton Avenue in the City of Fresno for your review and comment.

We kindly ask that you take a moment to review and comment on the proposed Scope of Work. In the absence of comments by June 4, 2019 it will be assumed that the proposed Scope of Work is acceptable to the agency(ies) that have not submitted any comments.

If you have any questions or require additional information, please contact us at (559) 570-8991 or by e-mail. We sincerely appreciate your time and attention to this matter and look forward to hearing from all of you soon. Thanks.

Sincerely,

Javier Rios,

Engineer I/II

Traffic Engineering, Transportation Planning and Parking Solutions

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Fresno, CA 93710

Direct: (559) 317-6245
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www.JLBtraffic.com

Jose Benavides

From: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>
Sent: Tuesday, June 25, 2019 5:55 PM
To: Jose Benavides
Cc: Jill Gormley; Lorren Smith
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Good Evening Jose,

The City does not have any further comments.

Thanks,

Harman

Public Works Department
Traffic Operations & Planning Division
2600 Fresno Street, Room 4064
Fresno, CA 93721
Ph: (559) 621-8694
Harmanjit.Dhaliwal@fresno.gov

From: Jose Benavides [mailto:jbenavides@jlbtraffic.com]
Sent: Tuesday, June 25, 2019 2:46 PM
To: Harmanjit Dhaliwal
Cc: Jill Gormley; Lorren Smith
Subject: FW: TIA Draft Scope of Work - JLB Project 004-097

Good afternoon Harman,

We are following up with you to inquire when the City's has any further comments to the draft scope of work for Tract 6241 as a result of your review of the Project only trip figures and select zone plots that we provided you on June 13th?

Sincerely,

Jose Luis Benavides, P.E., T.E.
President

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Direct: (559) 317-6249
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Fax: (559) 317-6854
www.JLBtraffic.com

From: Jose Benavides
Sent: Thursday, June 13, 2019 1:46 PM
To: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>; Javier Rios <jrios@jlbtraffic.com>
Cc: Jill Gormley <Jill.Gormley@fresno.gov>; Lorren Smith <lorrens@harbour-engineering.com>
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Good afternoon Harman,

Attached you will find the project only trip assignments along with the select zones as requested. Please review and let us know if you have any comments on these.

Sincerely,

Jose Luis Benavides, P.E., T.E.
President

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1300 E. Shaw Ave., Ste. 103
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Cell: (559) 694-6000
Fax: (559) 317-6854
www.JLBtraffic.com

From: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>
Sent: Tuesday, June 4, 2019 5:17 PM
To: Jose Benavides <jbenavides@jlbtraffic.com>; Javier Rios <jrios@jlbtraffic.com>
Cc: Jill Gormley <Jill.Gormley@fresno.gov>; dave_padilla@dot.ca.gov; Lorren Smith <lorrens@harbour-engineering.com>
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Good Evening Jose,

We responded within the given timeline from the May 14th email. If counts cannot be taken prior to the last week of school, we would allow historical traffic counts (Less than 12 months old) to be used and/or we can provide count data from any studies in the area. The intersection of Clinton and Temperance is already signalized, but not constructed to ultimate geometrics. Intersections along Temperance are already operating deficiently. Similar to the west side, this side of the City lacks infrastructure to support the development being proposed. The citizens in the area have been very vocal about the traffic issues. Please provide the trip distribution and select zone run for review before beginning the study.

Thanks,

Harman

City of FRESNO
Public Works Department
Traffic Operations & Planning Division
2600 Fresno Street, Room 4064
Fresno, CA 93721
Ph: (559) 621-8694
Harmanjit.Dhaliwal@fresno.gov

From: Jose Benavides [mailto:jbenavides@jlbtraffic.com]
Sent: Tuesday, June 04, 2019 8:59 AM
To: Harmanjit Dhaliwal; Javier Rios
Cc: Jill Gormley; dave_padilla@dot.ca.gov; Lorren Smith
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Hi Harman,

Why did the City take so long to provide comments to add a considerable amount of intersections? Further you did not provide these till the last week of school which pretty much precludes us from collecting the needed counts.

Further the City was or is working on a Study for Temperance Avenue that covers every intersection along that stretch. Also Clinton at Temperance is already signalized and this project will likely have less then 10 peak hour trips to it. Are your really that worried about its LOS and operations?

Sincerely,

Jose Luis Benavides, P.E., T.E.
President
JLB TRAFFIC ENGINEERING, INC.

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Cell: (559) 694-6000

Fax: (559) 317-6854
www.JLBtraffic.com

From: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>
Sent: Tuesday, June 4, 2019 8:29 AM
To: Javier Rios <jrios@jlbtraffic.com>
Cc: Jill Gormley <Jill.Gormley@fresno.gov>; dave_padilla@dot.ca.gov; Jose Benavides <jbenavides@jlbtraffic.com>
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Good Morning Javier,

Please add the following intersections to the scope of work:

- Floradora/Fowler
- Clinton/Temperance
- Olive/Temperance
- Belmont/Temperance

Also, please show the proposed trip gen from the proposed project on all future SOW's.

Thanks,

Harmanjit Dhaliwal, PE

Public Works Department
Traffic Operations & Planning Division
2600 Fresno Street, Room 4064
Fresno, CA 93721
Ph: (559) 621-8694
Harmanjit.Dhaliwal@fresno.gov

From: Javier Rios [mailto:jrios@jlbtraffic.com]
Sent: Friday, May 31, 2019 11:03 AM
To: Harmanjit Dhaliwal
Cc: Jill Gormley; dave_padilla@dot.ca.gov; Jose Benavides
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Good morning,

Just wanted to follow up with you all regarding the Draft Scope of Work for Tentative Tract 6241. We have yet to receive any comments from the City or Caltrans. In the absence of comments by June 4, 2019 it will be assumed that the proposed Scope of Work is acceptable to the agency(ies) that have not submitted any comments.

If you have any questions or require additional information, please contact us at (559) 570-8991 or by e-mail. We sincerely appreciate your time and attention to this matter and look forward to hearing from all of you soon. Thanks.

Sincerely,

Javier Rios,
Engineer I/II

Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

1300 E. Shaw Ave., Ste. 103
Fresno, CA 93710
Direct: (559) 317-6245
Office: (559) 570-8991
www.JLBtraffic.com

From: Javier Rios
Sent: Tuesday, May 14, 2019 4:49 PM
To: 'Harmanjit Dhaliwal' <Harmanjit.Dhaliwal@fresno.gov>
Cc: 'Jill.Gormley@fresno.gov' <Jill.Gormley@fresno.gov>; 'Spaunhurst, Brian' <bspaunhurst@fresnocountyca.gov>; 'dave_padilla@dot.ca.gov' <dave_padilla@dot.ca.gov>; Jose Benavides <jbenavides@jlbtraffic.com>
Subject: TIA Draft Scope of Work - JLB Project 004-097

Good afternoon,

Attached you will find a Draft Scope of Work that has been prepared for Tentative Tract 6241 to be located at the southwest quadrant of Armstrong Avenue and Clinton Avenue in the City of Fresno for your review and comment.

We kindly ask that you take a moment to review and comment on the proposed Scope of Work. In the absence of comments by June 4, 2019 it will be assumed that the proposed Scope of Work is acceptable to the agency(ies) that have not submitted any comments.

If you have any questions or require additional information, please contact us at (559) 570-8991 or by e-mail. We sincerely appreciate your time and attention to this matter and look forward to hearing from all of you soon. Thanks.

Sincerely,

Javier Rios,
Engineer I/II

Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

1300 E. Shaw Ave., Ste. 103
Fresno, CA 93710

Javier Rios

From: Padilla, Dave@DOT <dave.padilla@dot.ca.gov>
Sent: Friday, June 14, 2019 1:22 PM
To: Jose Benavides
Cc: Javier Rios
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Hello Jose,

We have no concerns with the proposed SOW.

Thank you

DAVID PADILLA
Associate Transportation Planner
Caltrans
Office of Planning & Local Assistance
1352 W. Olive Avenue
Fresno, CA 93778-2616
Office: (559) 444-2493, Fax: (559) 445-5875

From: Jose Benavides <jbenavides@jlbtraffic.com>
Sent: Wednesday, June 12, 2019 3:02 PM
To: Padilla, Dave@DOT <dave.padilla@dot.ca.gov>
Cc: Javier Rios <jrios@jlbtraffic.com>
Subject: FW: TIA Draft Scope of Work - JLB Project 004-097

Good afternoon David,

We don't seem to have a record of a response from you for this project. With this in mind we will assume that Caltrans has no comment, but if this is not the case please let us know no later than tomorrow June 13th.

Sincerely,

Jose Luis Benavides, P.E., T.E.
President

Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

1300 E. Shaw Ave., Ste. 103
Fresno, CA 93710

Direct: (559) 317-6249
Main: (559) 570-8991
Cell: (559) 694-6000
Fax: (559) 317-6854
www.JLBtraffic.com

From: Javier Rios <jrios@jlbtraffic.com>
Sent: Friday, May 31, 2019 11:03 AM
To: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>
Cc: Jill.Gormley@fresno.gov; dave_padilla@dot.ca.gov; Jose Benavides <jbenavides@jlbtraffic.com>
Subject: RE: TIA Draft Scope of Work - JLB Project 004-097

Good morning,

Just wanted to follow up with you all regarding the Draft Scope of Work for Tentative Tract 6241. We have yet to receive any comments from the City or Caltrans. In the absence of comments by June 4, 2019 it will be assumed that the proposed Scope of Work is acceptable to the agency(ies) that have not submitted any comments.

If you have any questions or require additional information, please contact us at (559) 570-8991 or by e-mail. We sincerely appreciate your time and attention to this matter and look forward to hearing from all of you soon. Thanks.

Sincerely,

Javier Rios,
Engineer I/II

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Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

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Direct: (559) 317-6245
Office: (559) 570-8991
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From: Javier Rios
Sent: Tuesday, May 14, 2019 4:49 PM
To: 'Harmanjit Dhaliwal' <Harmanjit.Dhaliwal@fresno.gov>
Cc: 'Jill.Gormley@fresno.gov' <Jill.Gormley@fresno.gov>; 'Spaunhurst, Brian' <bspaunhurst@fresnocountyca.gov>; 'dave_padilla@dot.ca.gov' <dave_padilla@dot.ca.gov>; Jose Benavides <jbenavides@jlbtraffic.com>
Subject: TIA Draft Scope of Work - JLB Project 004-097

Good afternoon,

Attached you will find a Draft Scope of Work that has been prepared for Tentative Tract 6241 to be located at the southwest quadrant of Armstrong Avenue and Clinton Avenue in the City of Fresno for your review and comment.

We kindly ask that you take a moment to review and comment on the proposed Scope of Work. In the absence of comments by June 4, 2019 it will be assumed that the proposed Scope of Work is acceptable to the agency(ies) that have not submitted any comments.

If you have any questions or require additional information, please contact us at (559) 570-8991 or by e-mail. We sincerely appreciate your time and attention to this matter and look forward to hearing from all of you soon. Thanks.

Sincerely,

Javier Rios,
Engineer I/II

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Appendix B: Traffic Counts

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File Name : Armstrong at Clinton
Site Code : 00000000
Start Date : 5/21/2019

Groups Printed- Unshifted

	ARMSTRONG Southbound				CLINTON Westbound				ARMSTRONG Northbound				CLINTON Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	5	101	7	0	20	21	1	0	1	27	0	0	7	12	4	0	206
07:15 AM	1	128	7	0	23	23	0	0	2	26	1	0	2	8	5	0	226
07:30 AM	8	118	10	0	29	38	5	0	6	34	0	0	7	11	4	0	270
07:45 AM	12	86	12	0	18	47	9	0	8	36	4	0	8	15	8	0	263
Total	26	433	36	0	90	129	15	0	17	123	5	0	24	46	21	0	965
08:00 AM	9	101	9	0	15	25	4	0	5	39	0	0	9	15	4	0	235
08:15 AM	4	75	9	0	16	26	9	0	3	31	1	0	3	9	1	0	187
08:30 AM	3	55	3	0	4	12	1	0	2	18	1	0	5	5	3	0	112
08:45 AM	1	44	5	0	3	9	1	0	2	10	1	0	1	6	0	0	83
Total	17	275	26	0	38	72	15	0	12	98	3	0	18	35	8	0	617
******																	
04:00 PM	7	40	4	0	4	9	4	0	0	65	2	0	14	15	3	0	167
04:15 PM	3	50	4	0	5	12	3	0	3	85	3	0	10	22	4	0	204
04:30 PM	4	36	2	0	1	15	3	0	2	68	2	0	19	27	2	0	181
04:45 PM	10	49	3	0	3	10	2	0	2	80	5	0	11	20	3	0	198
Total	24	175	13	0	13	46	12	0	7	298	12	0	54	84	12	0	750
05:00 PM	6	33	2	0	1	6	4	0	3	89	4	0	26	42	3	0	219
05:15 PM	6	33	3	0	1	13	3	0	2	99	9	0	11	27	4	0	211
05:30 PM	6	47	5	0	7	5	4	0	2	88	2	0	9	39	1	0	215
05:45 PM	6	38	1	0	0	9	2	0	0	73	1	0	8	27	1	0	166
Total	24	151	11	0	9	33	13	0	7	349	16	0	54	135	9	0	811
Grand Total	91	1034	86	0	150	280	55	0	43	868	36	0	150	300	50	0	3143
Apprch %	7.5	85.4	7.1	0	30.9	57.7	11.3	0	4.5	91.7	3.8	0	30	60	10	0	
Total %	2.9	32.9	2.7	0	4.8	8.9	1.7	0	1.4	27.6	1.1	0	4.8	9.5	1.6	0	

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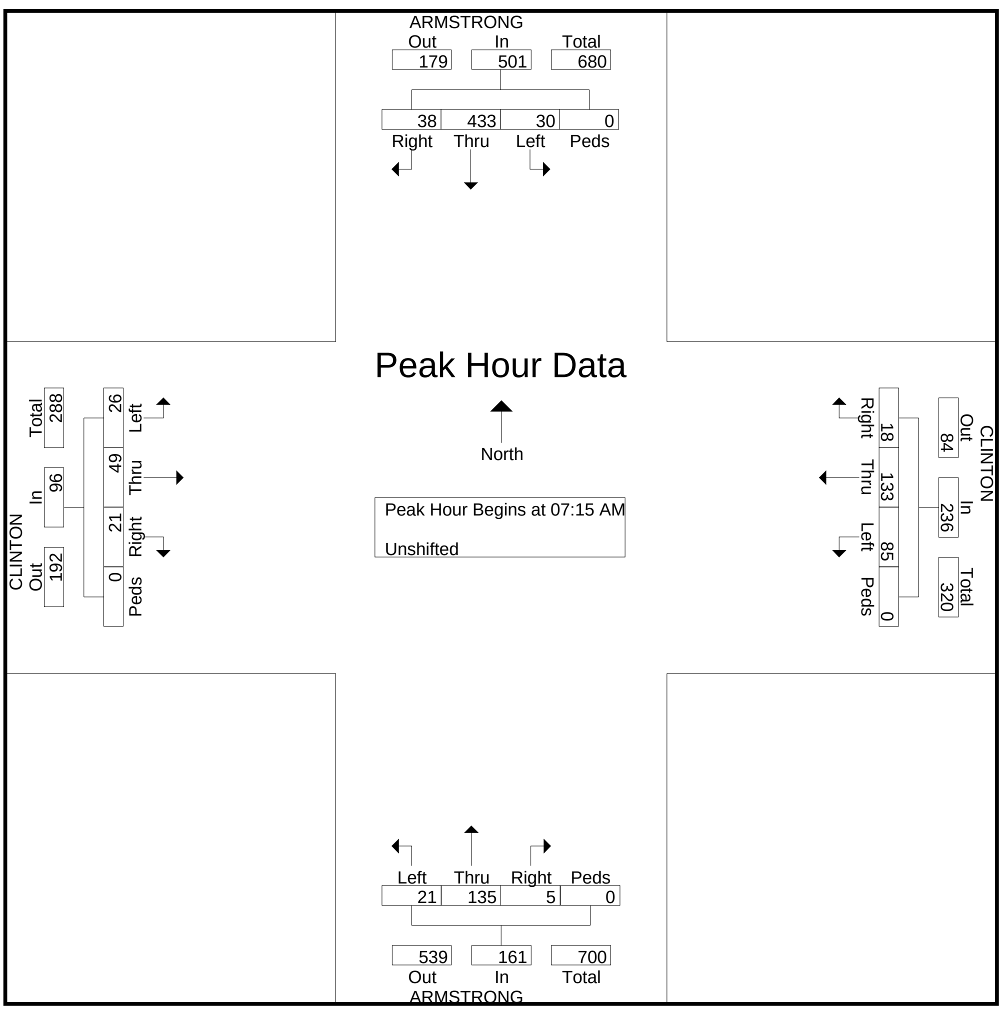
File Name : Armstrong at Clinton
Site Code : 00000000
Start Date : 5/21/2019
Page No : 2

	ARMSTRONG Southbound					CLINTON Westbound					ARMSTRONG Northbound					CLINTON Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	**128**	7	0	**136**	23	23	0	0	46	2	26	1	0	29	2	8	5	0	15	226
07:30 AM	8	118	10	0	136	**29**	38	5	0	72	6	34	0	0	40	7	11	4	0	22	**270**
07:45 AM	**12**	86	**12**	0	110	18	**47**	**9**	0	**74**	**8**	36	**4**	0	**48**	8	**15**	**8**	0	**31**	263
08:00 AM	9	101	9	0	119	15	25	4	0	44	5	**39**	0	0	44	**9**	15	4	0	28	235
Total Volume	30	433	38	0	501	85	133	18	0	236	21	135	5	0	161	26	49	21	0	96	994
% App. Total	6	86.4	7.6	0		36	56.4	7.6	0		13	83.9	3.1	0		27.1	51	21.9	0		
PHF	.625	.846	.792	.000	.921	.733	.707	.500	.000	.797	.656	.865	.313	.000	.839	.722	.817	.656	.000	.774	.920



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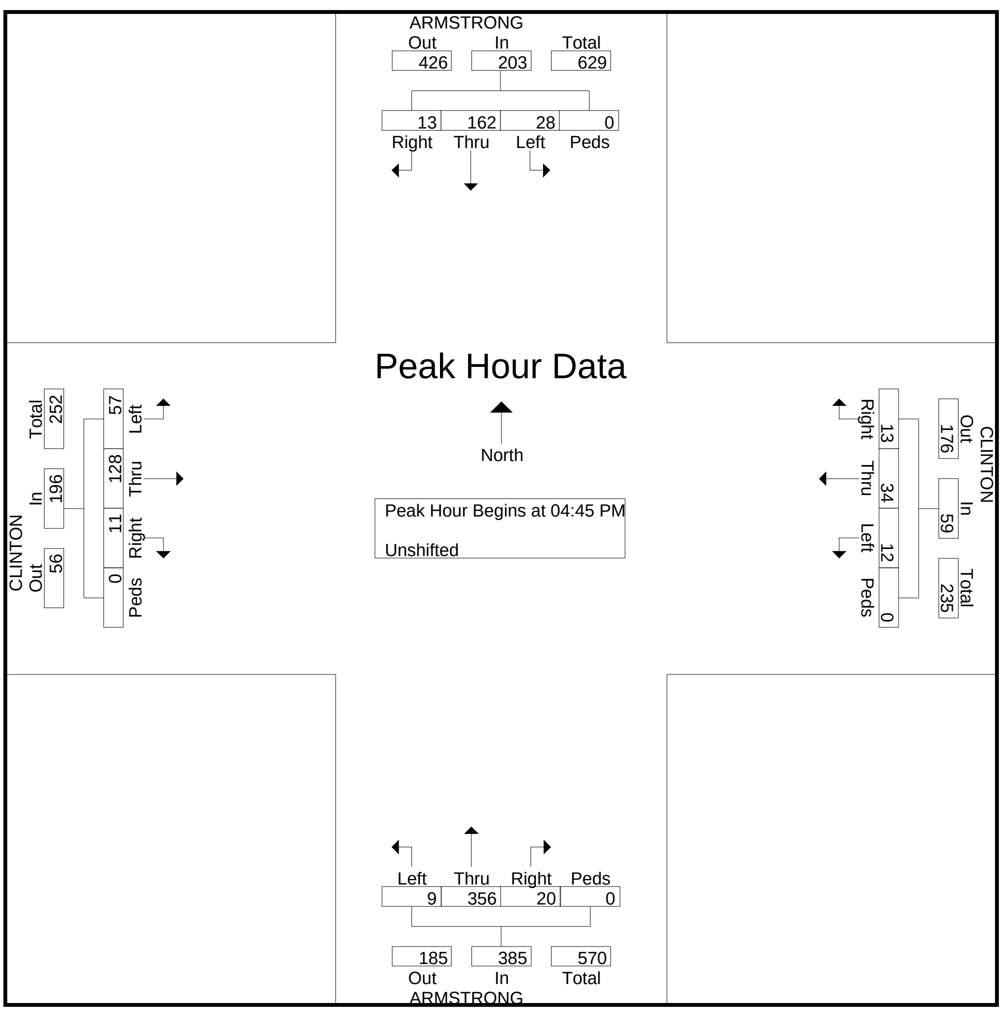
File Name : Armstrong at Clinton
Site Code : 00000000
Start Date : 5/21/2019
Page No : 3

	ARMSTRONG Southbound					CLINTON Westbound					ARMSTRONG Northbound					CLINTON Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	**10**	**49**	3	0	**62**	3	10	2	0	15	2	80	5	0	87	11	20	3	0	34	198
05:00 PM	6	33	2	0	41	1	6	**4**	0	11	**3**	89	4	0	96	**26**	**42**	3	0	**71**	**219**
05:15 PM	6	33	3	0	42	1	**13**	3	0	**17**	2	**99**	**9**	0	**110**	11	27	**4**	0	42	211
05:30 PM	6	47	**5**	0	58	**7**	5	4	0	16	2	88	2	0	92	9	39	1	0	49	215
Total Volume	28	162	13	0	203	12	34	13	0	59	9	356	20	0	385	57	128	11	0	196	843
% App. Total	13.8	79.8	6.4	0		20.3	57.6	22	0		2.3	92.5	5.2	0		29.1	65.3	5.6	0		
PHF	.700	.827	.650	.000	.819	.429	.654	.813	.000	.868	.750	.899	.556	.000	.875	.548	.762	.688	.000	.690	.962



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File Name : Not Named 17
Site Code : 00000000
Start Date : 6/6/2019
Page No : 1

Groups Printed- Unshifted

	TEMPERANCE Southbound				CLINTON Westbound				TEMPERANCE Northbound				CLINTON Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	7	87	16	0	16	12	7	0	5	44	4	0	2	3	3	0	206
07:15 AM	10	101	27	0	11	22	9	0	10	67	5	0	3	6	5	1	277
07:30 AM	32	117	23	0	19	28	13	0	7	72	16	1	4	11	5	0	348
07:45 AM	56	99	23	0	19	50	38	0	15	75	24	0	2	20	1	0	422
Total	105	404	89	0	65	112	67	0	37	258	49	1	11	40	14	1	1253
08:00 AM	50	102	13	4	18	40	35	2	6	56	30	5	3	25	1	4	394
08:15 AM	28	69	6	2	14	35	39	0	11	56	10	0	3	8	6	2	289
08:30 AM	9	61	4	0	8	8	11	2	5	49	6	2	1	5	0	2	173
08:45 AM	7	58	6	0	9	3	10	0	4	44	7	0	1	6	3	0	158
Total	94	290	29	6	49	86	95	4	26	205	53	7	8	44	10	8	1014
******																	
04:00 PM	13	48	3	0	8	3	12	0	4	83	10	0	8	11	16	0	219
04:15 PM	17	70	7	0	11	9	3	0	3	81	18	0	7	7	15	0	248
04:30 PM	11	67	1	0	21	20	22	4	2	74	13	4	5	10	11	0	265
04:45 PM	12	68	6	0	5	5	15	0	7	108	23	0	7	19	3	0	278
Total	53	253	17	0	45	37	52	4	16	346	64	4	27	47	45	0	1010
05:00 PM	5	73	2	0	8	6	5	0	4	94	13	0	19	11	8	0	248
05:15 PM	7	75	4	0	6	7	14	0	6	116	15	0	15	9	12	0	286
05:30 PM	17	69	2	0	5	7	9	0	1	116	15	0	5	12	9	0	267
05:45 PM	7	66	5	0	4	2	7	0	6	103	10	0	7	15	5	0	237
Total	36	283	13	0	23	22	35	0	17	429	53	0	46	47	34	0	1038
06:00 PM	0	3	0	0	0	0	0	0	0	8	1	0	0	0	0	0	12
Grand Total	288	1233	148	6	182	257	249	8	96	1246	220	12	92	178	103	9	4327
Apprch %	17.2	73.6	8.8	0.4	26.1	36.9	35.8	1.1	6.1	79.2	14	0.8	24.1	46.6	27	2.4	
Total %	6.7	28.5	3.4	0.1	4.2	5.9	5.8	0.2	2.2	28.8	5.1	0.3	2.1	4.1	2.4	0.2	

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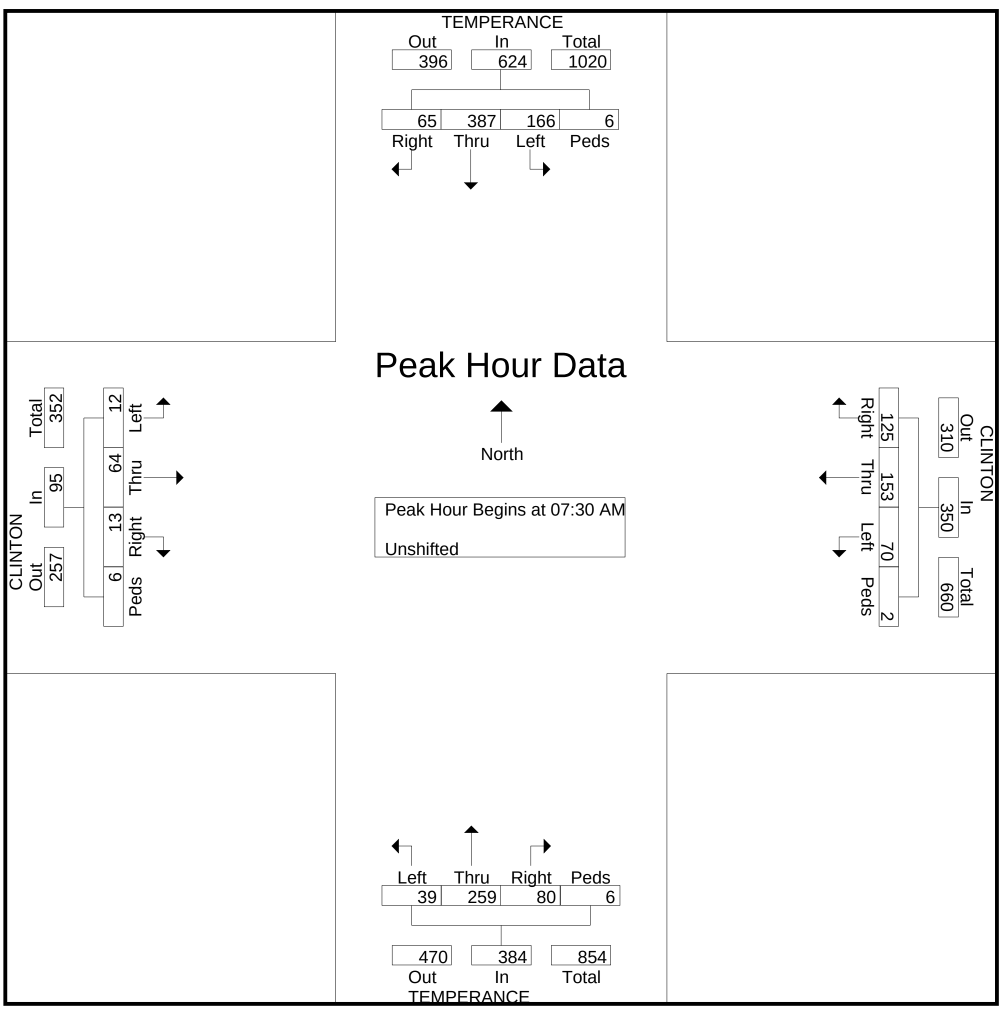
File Name : Not Named 17
Site Code : 00000000
Start Date : 6/6/2019

	TEMPERANCE Southbound					CLINTON Westbound					TEMPERANCE Northbound					CLINTON Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	32	**117**	**23**	0	172	**19**	28	13	0	60	7	72	16	1	96	**4**	11	5	0	20	348
07:45 AM	**56**	99	23	0	**178**	19	**50**	38	0	**107**	**15**	**75**	24	0	**114**	2	20	1	0	23	**422**
08:00 AM	50	102	13	**4**	169	18	40	35	**2**	95	6	56	**30**	**5**	97	3	**25**	1	**4**	**33**	394
08:15 AM	28	69	6	2	105	14	35	**39**	0	88	11	56	10	0	77	3	8	**6**	2	19	289
Total Volume	166	387	65	6	624	70	153	125	2	350	39	259	80	6	384	12	64	13	6	95	1453
% App. Total	26.6	62	10.4	1		20	43.7	35.7	0.6		10.2	67.4	20.8	1.6		12.6	67.4	13.7	6.3		
PHF	.741	.827	.707	.375	.876	.921	.765	.801	.250	.818	.650	.863	.667	.300	.842	.750	.640	.542	.375	.720	.861



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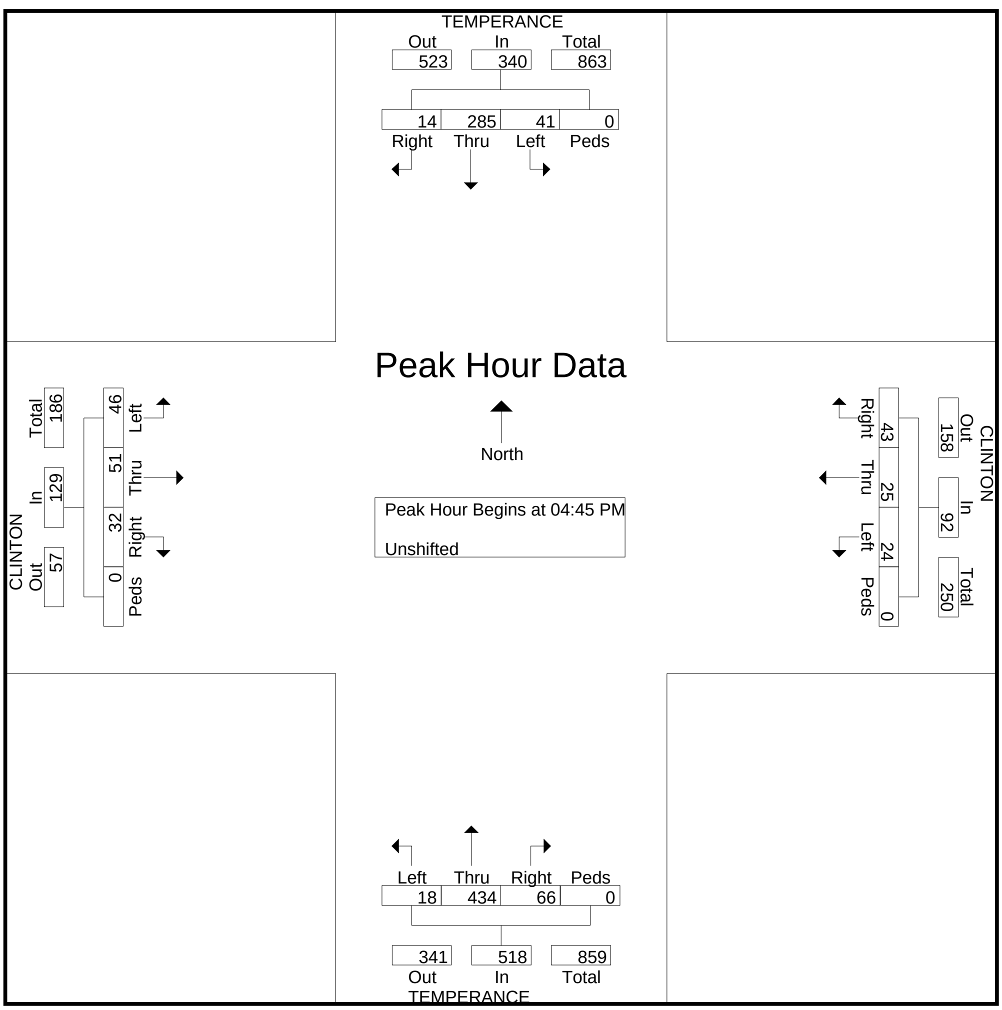
File Name : Not Named 17
Site Code : 00000000
Start Date : 6/6/2019
Page No : 3

	TEMPERANCE Southbound					CLINTON Westbound					TEMPERANCE Northbound					CLINTON Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 06:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	12	68	**6**	0	86	5	5	**15**	0	25	**7**	108	**23**	0	**138**	7	**19**	3	0	29	278
05:00 PM	5	73	2	0	80	**8**	6	5	0	19	4	94	13	0	111	**19**	11	8	0	**38**	248
05:15 PM	7	**75**	4	0	86	6	**7**	14	0	**27**	6	**116**	15	0	137	15	9	**12**	0	36	**286**
05:30 PM	**17**	69	2	0	**88**	5	7	9	0	21	1	116	15	0	132	5	12	9	0	26	267
Total Volume	41	285	14	0	340	24	25	43	0	92	18	434	66	0	518	46	51	32	0	129	1079
% App. Total	12.1	83.8	4.1	0		26.1	27.2	46.7	0		3.5	83.8	12.7	0		35.7	39.5	24.8	0		
PHF	.603	.950	.583	.000	.966	.750	.893	.717	.000	.852	.643	.935	.717	.000	.938	.605	.671	.667	.000	.849	.943



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File Name : Fowler Floradora 05152019
Site Code : 00000000
Start Date : 5/15/2019
Page No : 1

Groups Printed- Unshifted

	FOWLER Southbound			FLORADORA Westbound			FOWLER Northbound			
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Int. Total
07:00 AM	2	135	0	0	1	0	87	2	0	227
07:15 AM	0	101	0	0	0	0	90	1	0	192
07:30 AM	3	108	0	0	0	0	90	1	0	202
07:45 AM	4	82	0	0	2	0	93	2	0	183
Total	9	426	0	0	3	0	360	6	0	804
08:00 AM	1	96	0	1	0	0	89	1	0	188
08:15 AM	1	99	0	2	1	0	88	4	0	195
08:30 AM	0	85	0	1	1	0	82	4	0	173
08:45 AM	1	103	0	2	0	0	94	2	0	202
Total	3	383	0	6	2	0	353	11	0	758
******										
04:00 PM	0	126	0	0	1	0	124	0	0	251
04:15 PM	0	94	0	1	1	0	128	3	0	227
04:30 PM	0	113	0	0	2	0	116	0	0	231
04:45 PM	1	100	0	0	2	0	123	1	0	227
Total	1	433	0	1	6	0	491	4	0	936
05:00 PM	2	113	0	2	1	0	121	0	0	239
05:15 PM	1	114	0	0	1	0	114	1	0	231
05:30 PM	2	114	0	0	0	0	113	1	0	230
05:45 PM	0	104	0	1	0	0	114	1	0	220
Total	5	445	0	3	2	0	462	3	0	920
******										
Grand Total	18	1687	0	10	13	0	1666	24	0	3418
Apprch %	1.1	98.9	0	43.5	56.5	0	98.6	1.4	0	
Total %	0.5	49.4	0	0.3	0.4	0	48.7	0.7	0	

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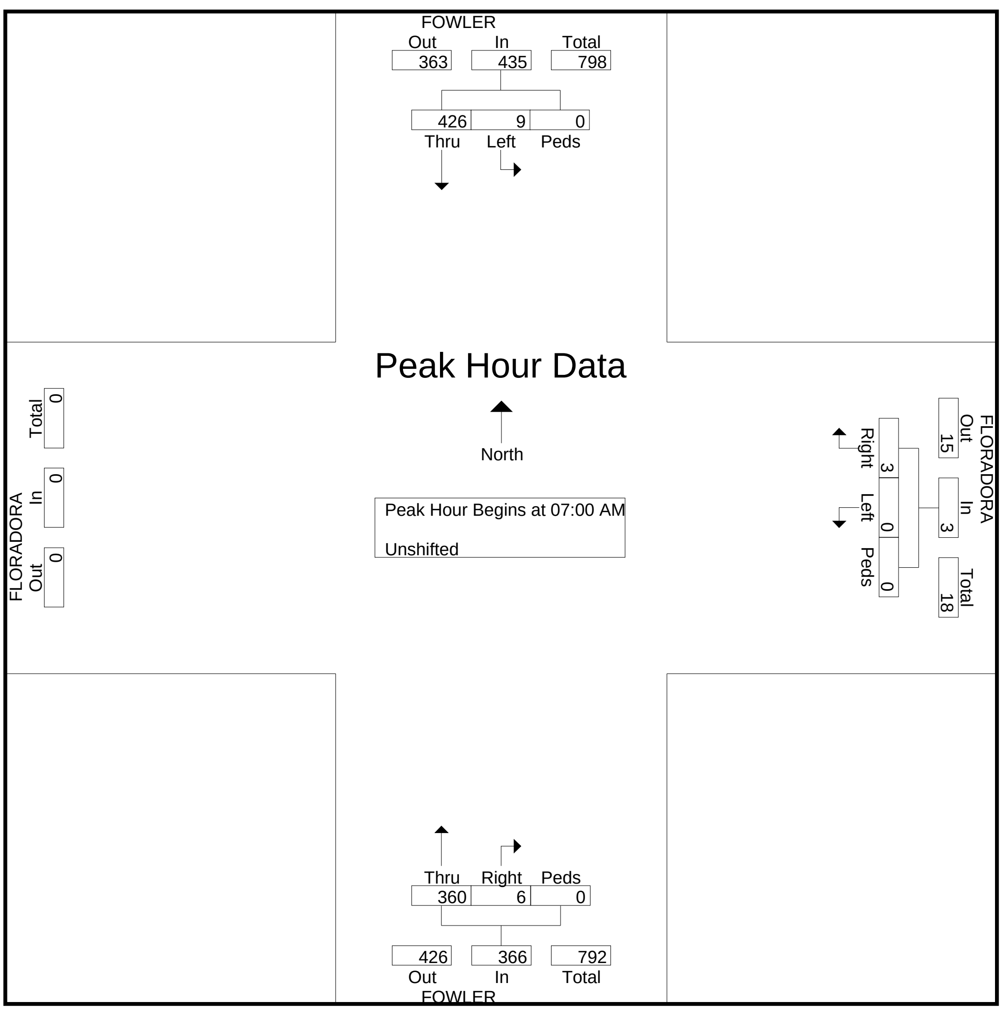
File Name : Fowler Floradora 05152019
Site Code : 00000000
Start Date : 5/15/2019
Page No : 2

	FOWLER Southbound				FLORADORA Westbound				FOWLER Northbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	2	**135**	0	**137**	0	1	0	1	87	**2**	0	89	**227**
07:15 AM	0	101	0	101	0	0	0	0	90	1	0	91	192
07:30 AM	3	108	0	111	0	0	0	0	90	1	0	91	202
07:45 AM	**4**	82	0	86	0	**2**	0	**2**	**93**	2	0	**95**	183
Total Volume	9	426	0	435	0	3	0	3	360	6	0	366	804
% App. Total	2.1	97.9	0		0	100	0		98.4	1.6	0		
PHF	.563	.789	.000	.794	.000	.375	.000	.375	.968	.750	.000	.963	.885



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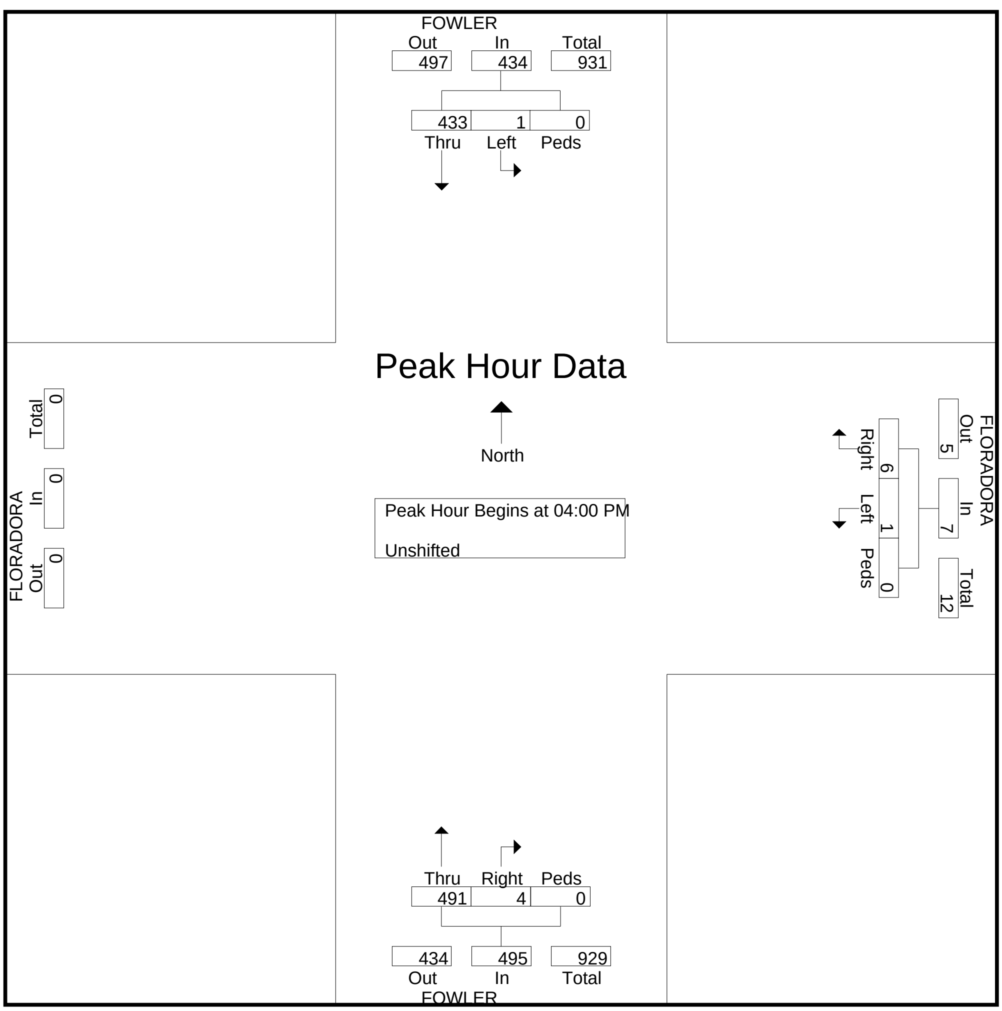
File Name : Fowler Floradora 05152019
Site Code : 00000000
Start Date : 5/15/2019
Page No : 3

	FOWLER Southbound				FLORADORA Westbound				FOWLER Northbound				
Start Time	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 06:00 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	0	**126**	0	**126**	0	1	0	1	124	0	0	124	**251**
04:15 PM	0	94	0	94	**1**	1	0	**2**	**128**	**3**	0	**131**	227
04:30 PM	0	113	0	113	0	**2**	0	2	116	0	0	116	231
04:45 PM	**1**	100	0	101	0	2	0	2	123	1	0	124	227
Total Volume	1	433	0	434	1	6	0	7	491	4	0	495	936
% App. Total	0.2	99.8	0		14.3	85.7	0		99.2	0.8	0		
PHF	.250	.859	.000	.861	.250	.750	.000	.875	.959	.333	.000	.945	.932



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File Name : Armstrong Floradora 08292018
Site Code : 00082918
Start Date : 8/29/2018
Page No : 1

Groups Printed- Unshifted

	Armstrong Southbound					Floradora Westbound					Armstrong Northbound					Floradora Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	119	0	1	120	5	1	5	0	11	0	37	0	0	37	1	2	0	0	3	171
07:15 AM	0	168	0	0	168	2	2	2	0	6	1	41	4	0	46	1	0	3	0	4	224
07:30 AM	0	163	1	0	164	10	1	2	0	13	1	46	0	0	47	0	1	5	0	6	230
07:45 AM	0	114	1	0	115	25	2	0	0	27	1	63	2	0	66	1	2	4	0	7	215
Total	0	564	2	1	567	42	6	9	0	57	3	187	6	0	196	3	5	12	0	20	840
08:00 AM	3	105	1	0	109	1	0	1	1	3	2	41	1	0	44	0	1	1	0	2	158
08:15 AM	0	81	1	0	82	3	0	0	1	4	3	13	1	0	17	0	0	3	0	3	106
08:30 AM	1	49	0	0	50	0	1	1	0	2	1	11	0	0	12	1	2	0	0	3	67
08:45 AM	0	43	0	0	43	2	2	2	0	6	0	14	1	0	15	3	0	0	0	3	67
Total	4	278	2	0	284	6	3	4	2	15	6	79	3	0	88	4	3	4	0	11	398
******																					
04:00 PM	1	46	1	1	49	0	3	2	0	5	1	69	1	0	71	0	2	1	0	3	128
04:15 PM	0	31	1	0	32	0	1	1	0	2	0	69	2	0	71	0	1	1	0	2	107
04:30 PM	2	36	0	0	38	1	1	0	0	2	0	66	3	0	69	1	0	2	0	3	112
04:45 PM	0	44	0	0	44	2	1	2	0	5	0	82	3	0	85	0	1	1	0	2	136
Total	3	157	2	1	163	3	6	5	0	14	1	286	9	0	296	1	4	5	0	10	483
05:00 PM	0	63	1	0	64	0	0	1	0	1	0	92	2	0	94	1	0	0	0	1	160
05:15 PM	1	40	0	0	41	1	0	1	0	2	0	110	1	0	111	0	0	0	0	0	154
05:30 PM	2	50	0	0	52	0	1	0	0	1	1	88	2	0	91	2	2	0	0	4	148
05:45 PM	1	45	0	0	46	1	0	1	0	2	0	79	1	0	80	1	0	0	0	1	129
Total	4	198	1	0	203	2	1	3	0	6	1	369	6	0	376	4	2	0	0	6	591
Grand Total	11	1197	7	2	1217	53	16	21	2	92	11	921	24	0	956	12	14	21	0	47	2312
Apprch %	0.9	98.4	0.6	0.2		57.6	17.4	22.8	2.2		1.2	96.3	2.5	0		25.5	29.8	44.7	0		
Total %	0.5	51.8	0.3	0.1	52.6	2.3	0.7	0.9	0.1	4	0.5	39.8	1	0	41.3	0.5	0.6	0.9	0	2	

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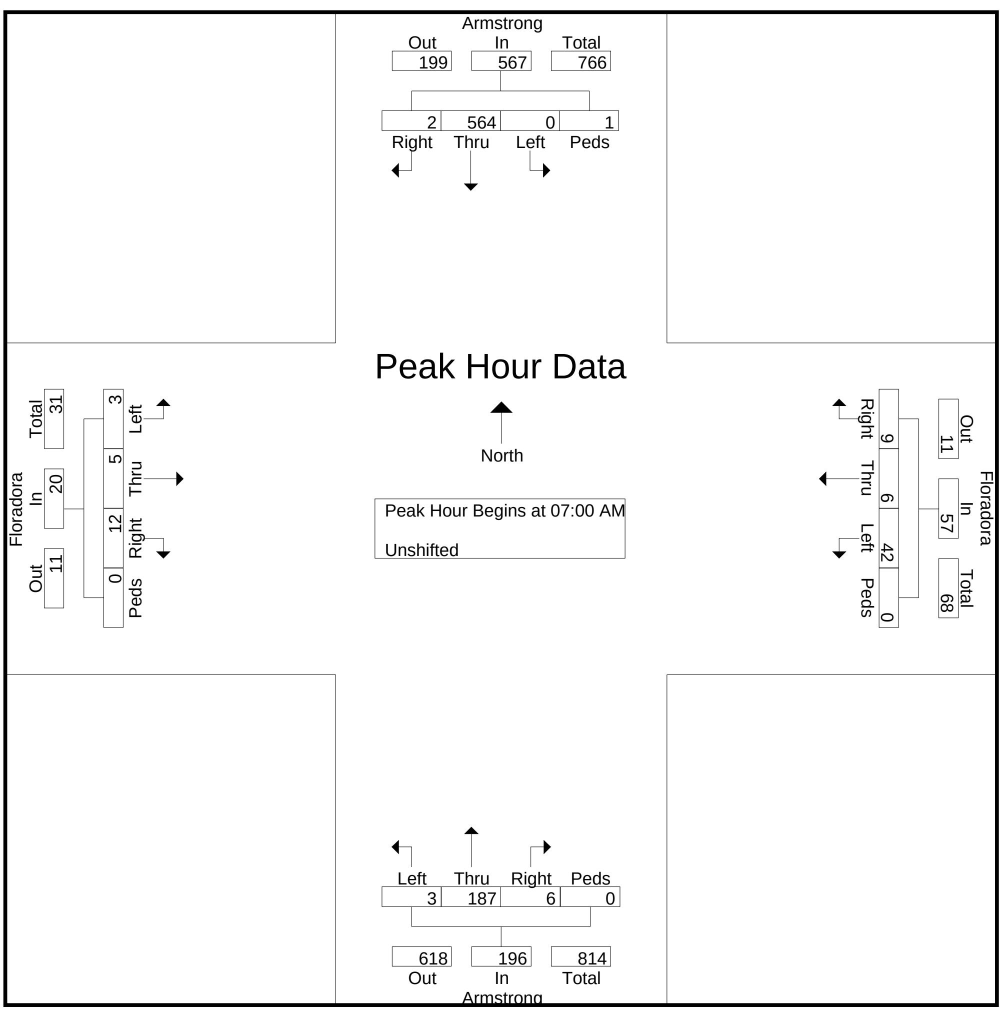
File Name : Armstrong Floradora 08292018
Site Code : 00082918
Start Date : 8/29/2018

	Armstrong Southbound					Floradora Westbound					Armstrong Northbound					Floradora Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	119	0	**1**	120	5	1	**5**	0	11	0	37	0	0	37	**1**	**2**	0	0	3	171
07:15 AM	0	**168**	0	0	**168**	2	**2**	2	0	6	**1**	41	**4**	0	46	1	0	3	0	4	224
07:30 AM	0	163	**1**	0	164	10	1	2	0	13	1	46	0	0	47	0	1	**5**	0	6	**230**
07:45 AM	0	114	1	0	115	**25**	2	0	0	**27**	1	**63**	2	0	**66**	1	2	4	0	**7**	215
Total Volume	0	564	2	1	567	42	6	9	0	57	3	187	6	0	196	3	5	12	0	20	840
% App. Total	0	99.5	0.4	0.2		73.7	10.5	15.8	0		1.5	95.4	3.1	0		15	25	60	0		
PHF	.000	.839	.500	.250	.844	.420	.750	.450	.000	.528	.750	.742	.375	.000	.742	.750	.625	.600	.000	.714	.913



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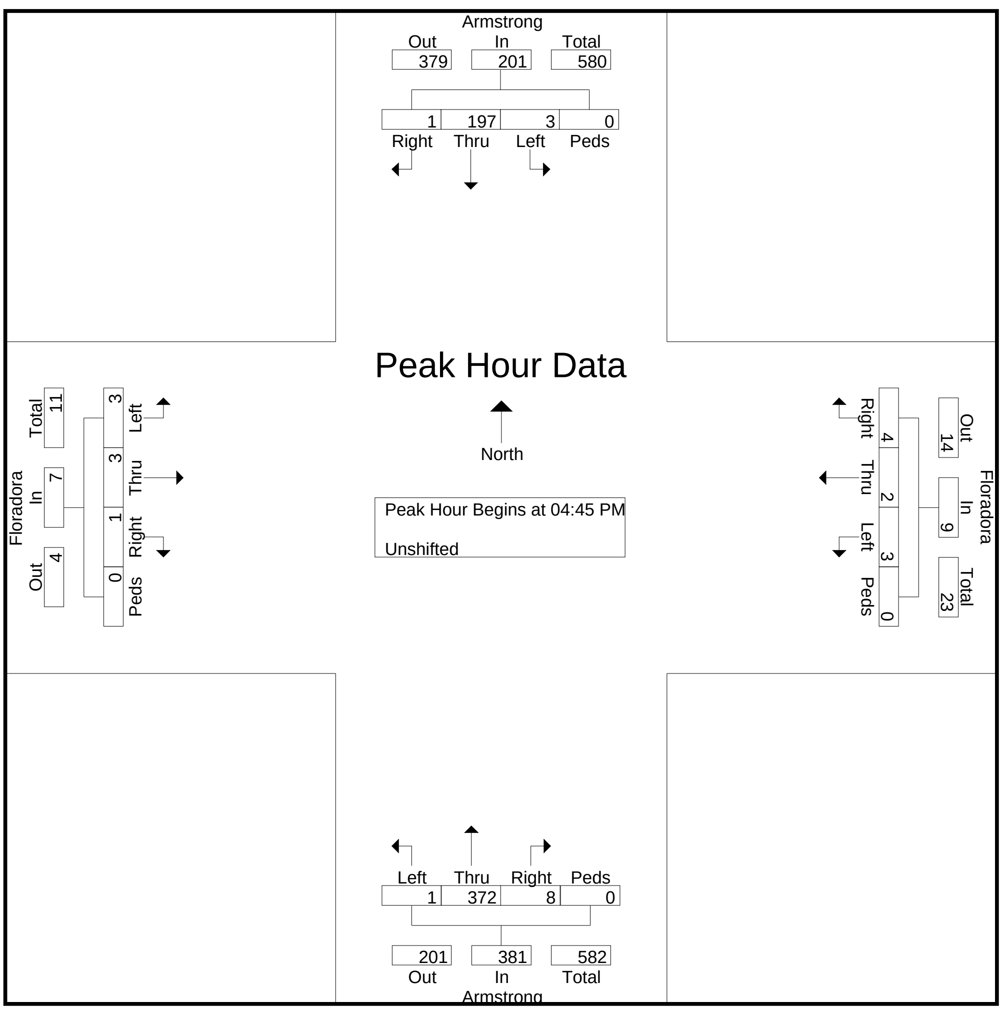
File Name : Armstrong Floradora 08292018
Site Code : 00082918
Start Date : 8/29/2018
Page No : 3

	Armstrong Southbound					Floradora Westbound					Armstrong Northbound					Floradora Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	44	0	0	44	**2**	**1**	**2**	0	**5**	0	82	**3**	0	85	0	1	**1**	0	2	136
05:00 PM	0	**63**	**1**	0	**64**	0	0	1	0	1	0	92	2	0	94	1	0	0	0	1	**160**
05:15 PM	1	40	0	0	41	1	0	1	0	2	0	**110**	1	0	**111**	0	0	0	0	0	154
05:30 PM	**2**	50	0	0	52	0	1	0	0	1	**1**	88	2	0	91	**2**	**2**	0	0	**4**	148
Total Volume	3	197	1	0	201	3	2	4	0	9	1	372	8	0	381	3	3	1	0	7	598
% App. Total	1.5	98	0.5	0		33.3	22.2	44.4	0		0.3	97.6	2.1	0		42.9	42.9	14.3	0		
PHF	.375	.782	.250	.000	.785	.375	.500	.500	.000	.450	.250	.845	.667	.000	.858	.375	.375	.250	.000	.438	.934



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File Name : Armstrong Olive 08302018
Site Code : 00000000
Start Date : 8/30/2018

Groups Printed- Unshifted

	ARMSTRONG Southbound					OLIVE Westbound					ARMSTRONG Northbound					OLIVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	3	23	76	0	102	13	48	2	0	63	1	27	13	0	41	8	29	2	0	39	245
07:15 AM	0	56	98	0	154	18	62	1	0	81	2	16	14	0	32	8	22	1	0	31	298
07:30 AM	3	60	111	0	174	20	56	5	0	81	4	37	23	0	64	10	24	3	0	37	356
07:45 AM	10	42	80	0	132	28	55	10	0	93	24	45	23	0	92	5	18	4	0	27	344
Total	16	181	365	0	562	79	221	18	0	318	31	125	73	0	229	31	93	10	0	134	1243
08:00 AM	9	47	75	0	131	21	65	15	0	101	16	36	29	0	81	17	16	4	0	37	350
08:15 AM	2	25	49	0	76	12	49	4	0	65	6	14	9	0	29	10	15	1	0	26	196
08:30 AM	1	14	38	1	54	2	37	1	0	40	3	12	2	0	17	5	13	1	0	19	130
08:45 AM	1	16	25	0	42	1	33	1	0	35	2	10	2	0	14	8	7	0	0	15	106
Total	13	102	187	1	303	36	184	21	0	241	27	72	42	0	141	40	51	6	0	97	782
******																					
04:00 PM	7	24	19	0	50	3	24	2	0	29	0	23	12	0	35	33	34	4	0	71	185
04:15 PM	8	23	22	0	53	12	24	3	0	39	2	39	19	0	60	30	26	0	0	56	208
04:30 PM	6	21	21	0	48	11	23	2	0	36	1	47	16	0	64	24	27	0	0	51	199
04:45 PM	7	19	7	0	33	3	24	2	0	29	6	56	11	0	73	31	33	2	0	66	201
Total	28	87	69	0	184	29	95	9	0	133	9	165	58	0	232	118	120	6	0	244	793
05:00 PM	3	24	37	0	64	1	17	2	0	20	4	53	10	0	67	30	35	2	0	67	218
05:15 PM	2	20	18	0	40	3	18	1	0	22	2	63	20	0	85	37	36	3	0	76	223
05:30 PM	6	22	27	0	55	5	26	2	0	33	1	58	14	0	73	31	41	3	0	75	236
05:45 PM	8	21	20	0	49	6	31	3	0	40	5	64	17	1	87	35	39	3	0	77	253
Total	19	87	102	0	208	15	92	8	0	115	12	238	61	1	312	133	151	11	0	295	930
Grand Total	76	457	723	1	1257	159	592	56	0	807	79	600	234	1	914	322	415	33	0	770	3748
Apprch %	6	36.4	57.5	0.1		19.7	73.4	6.9	0		8.6	65.6	25.6	0.1		41.8	53.9	4.3	0		
Total %	2	12.2	19.3	0	33.5	4.2	15.8	1.5	0	21.5	2.1	16	6.2	0	24.4	8.6	11.1	0.9	0	20.5	

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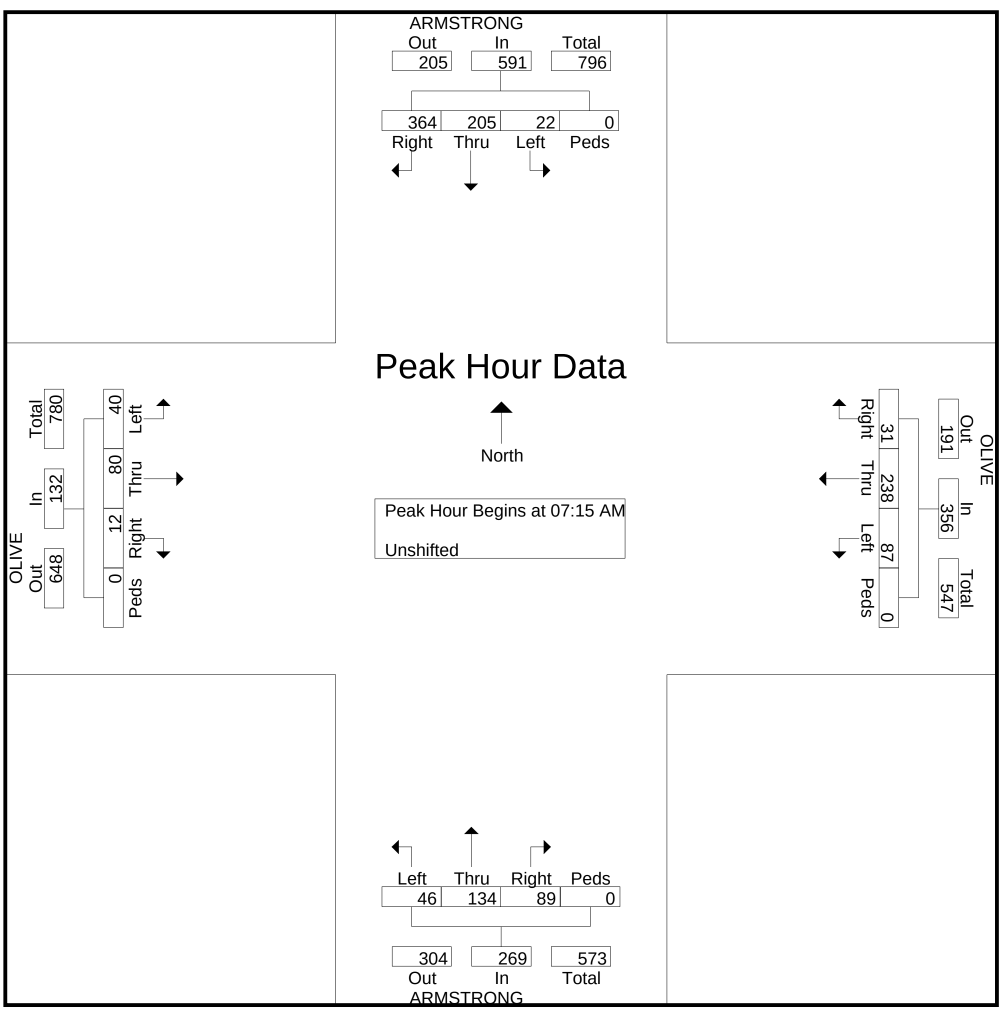
File Name : Armstrong Olive 08302018
Site Code : 00000000
Start Date : 8/30/2018

	ARMSTRONG Southbound					OLIVE Westbound					ARMSTRONG Northbound					OLIVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	56	98	0	154	18	62	1	0	81	2	16	14	0	32	8	22	1	0	31	298
07:30 AM	3	**60**	**111**	0	**174**	20	56	5	0	81	4	37	23	0	64	10	**24**	3	0	**37**	**356**
07:45 AM	**10**	42	80	0	132	**28**	55	10	0	93	**24**	**45**	23	0	**92**	5	18	**4**	0	27	344
08:00 AM	9	47	75	0	131	21	**65**	**15**	0	**101**	16	36	**29**	0	81	**17**	16	4	0	37	350
Total Volume	22	205	364	0	591	87	238	31	0	356	46	134	89	0	269	40	80	12	0	132	1348
% App. Total	3.7	34.7	61.6	0		24.4	66.9	8.7	0		17.1	49.8	33.1	0		30.3	60.6	9.1	0		
PHF	.550	.854	.820	.000	.849	.777	.915	.517	.000	.881	.479	.744	.767	.000	.731	.588	.833	.750	.000	.892	.947



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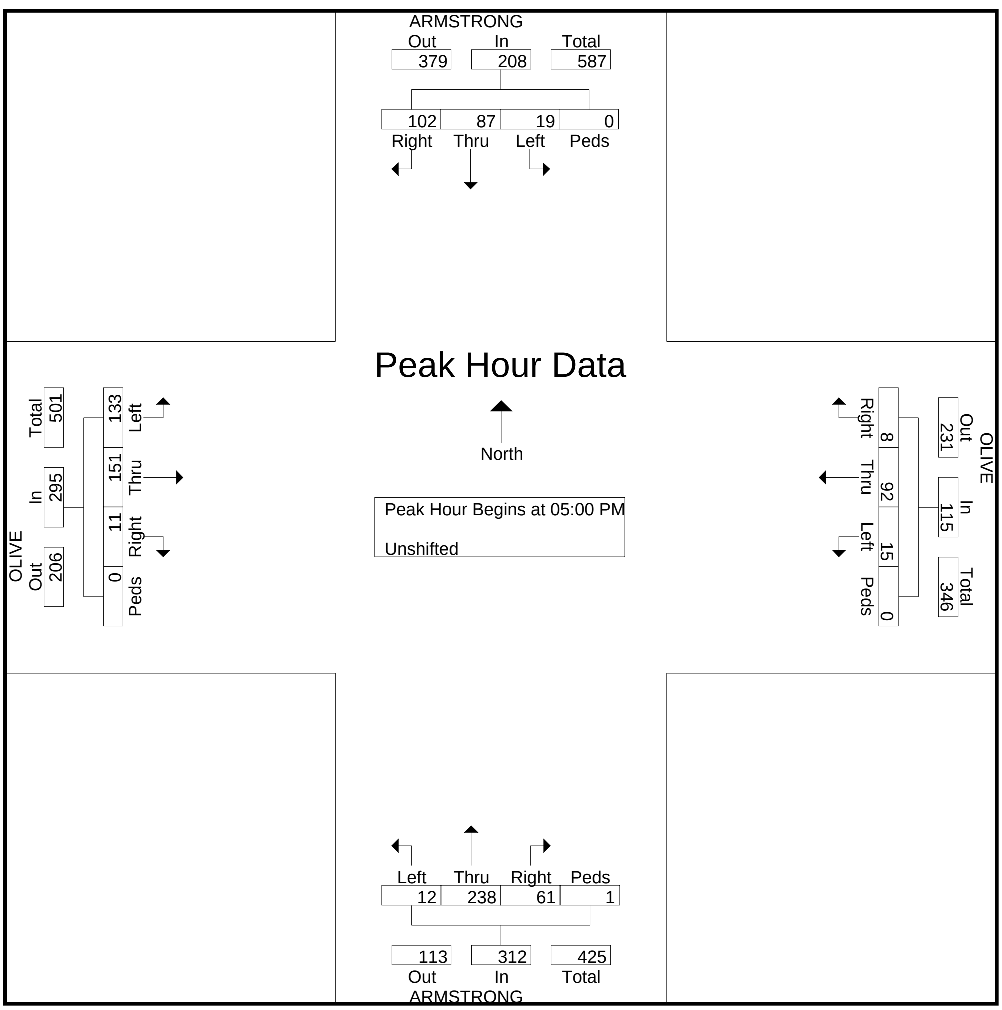
File Name : Armstrong Olive 08302018
Site Code : 00000000
Start Date : 8/30/2018

	ARMSTRONG Southbound					OLIVE Westbound					ARMSTRONG Northbound					OLIVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	3	**24**	**37**	0	**64**	1	17	2	0	20	4	53	10	0	67	30	35	2	0	67	218
05:15 PM	2	20	18	0	40	3	18	1	0	22	2	63	**20**	0	85	**37**	36	**3**	0	76	223
05:30 PM	6	22	27	0	55	5	26	2	0	33	1	58	14	0	73	31	**41**	3	0	75	236
05:45 PM	**8**	21	20	0	49	**6**	**31**	**3**	0	**40**	**5**	**64**	17	**1**	**87**	35	39	3	0	**77**	**253**
Total Volume	19	87	102	0	208	15	92	8	0	115	12	238	61	1	312	133	151	11	0	295	930
% App. Total	9.1	41.8	49	0		13	80	7	0		3.8	76.3	19.6	0.3		45.1	51.2	3.7	0		
PHF	.594	.906	.689	.000	.813	.625	.742	.667	.000	.719	.600	.930	.763	.250	.897	.899	.921	.917	.000	.958	.919



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File Name : Temperance at Olive
Site Code : 00000000
Start Date : 6/4/2019
Page No : 1

Groups Printed- Unshifted

	TEMPERANCE Southbound				**OLIVE Westbound**				**TEMPERANCE Northbound**				**OLIVE Eastbound**				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	0	104	31	0	42	36	4	0	0	69	12	0	5	16	3	0	322
07:15 AM	1	77	27	0	37	45	6	0	2	66	22	0	18	24	0	0	325
07:30 AM	0	103	37	0	38	58	5	0	2	83	11	0	17	15	2	0	371
07:45 AM	1	93	32	0	31	65	4	0	7	84	16	0	19	30	15	0	397
Total	2	377	127	0	148	204	19	0	11	302	61	0	59	85	20	0	1415
08:00 AM	3	78	28	0	40	40	7	0	3	65	11	0	10	23	18	0	326
08:15 AM	1	74	30	0	22	27	2	0	2	54	9	0	9	8	8	0	246
08:30 AM	0	61	22	0	15	28	1	0	2	51	3	0	6	17	3	0	209
08:45 AM	1	41	18	0	12	15	1	0	7	43	4	0	10	8	3	0	163
Total	5	254	98	0	89	110	11	0	14	213	27	0	35	56	32	0	944
******																	
04:00 PM	5	62	6	0	17	19	1	0	2	84	12	0	13	18	3	0	242
04:15 PM	2	63	13	0	13	10	2	0	5	103	28	0	14	19	3	0	275
04:30 PM	4	68	10	0	18	16	1	0	4	85	13	0	23	25	3	0	270
04:45 PM	1	81	6	0	10	16	4	0	3	107	19	0	26	23	3	0	299
Total	12	274	35	0	58	61	8	0	14	379	72	0	76	85	12	0	1086
05:00 PM	2	63	12	0	7	16	2	0	2	107	16	0	26	28	4	0	285
05:15 PM	1	67	11	0	15	15	3	0	1	122	15	0	18	26	4	0	298
05:30 PM	4	55	18	0	11	12	2	0	5	101	17	0	25	30	1	0	281
05:45 PM	5	41	18	0	6	12	1	0	4	117	25	0	19	26	3	0	277
Total	12	226	59	0	39	55	8	0	12	447	73	0	88	110	12	0	1141
Grand Total	31	1131	319	0	334	430	46	0	51	1341	233	0	258	336	76	0	4586
Apprch %	2.1	76.4	21.5	0	41.2	53.1	5.7	0	3.1	82.5	14.3	0	38.5	50.1	11.3	0	
Total %	0.7	24.7	7	0	7.3	9.4	1	0	1.1	29.2	5.1	0	5.6	7.3	1.7	0	

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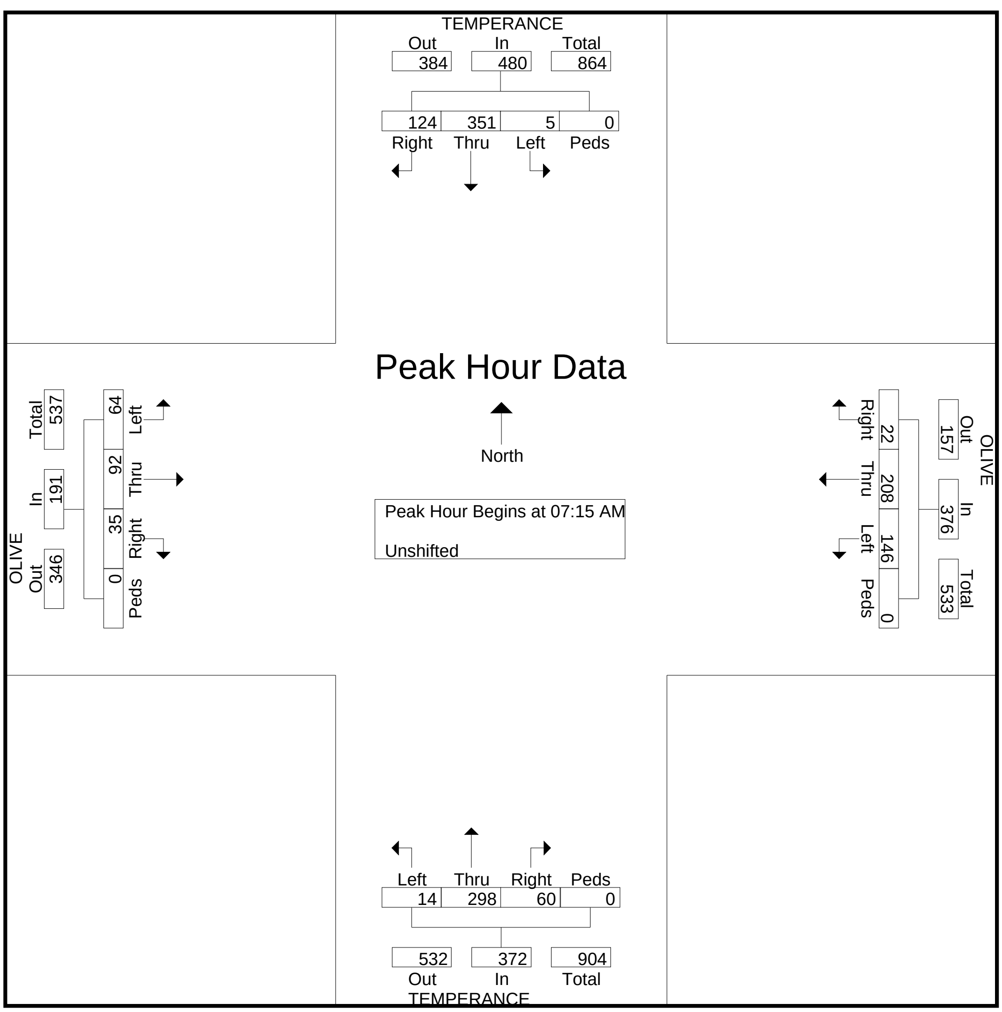
File Name : Temperance at Olive
Site Code : 00000000
Start Date : 6/4/2019

	TEMPERANCE Southbound					OLIVE Westbound					TEMPERANCE Northbound					OLIVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	77	27	0	105	37	45	6	0	88	2	66	**22**	0	90	18	24	0	0	42	325
07:30 AM	0	**103**	**37**	0	**140**	38	58	5	0	**101**	2	83	11	0	96	17	15	2	0	34	371
07:45 AM	1	93	32	0	126	31	**65**	4	0	100	**7**	**84**	16	0	**107**	**19**	**30**	15	0	**64**	**397**
08:00 AM	**3**	78	28	0	109	**40**	40	**7**	0	87	3	65	11	0	79	10	23	**18**	0	51	326
Total Volume	5	351	124	0	480	146	208	22	0	376	14	298	60	0	372	64	92	35	0	191	1419
% App. Total	1	73.1	25.8	0		38.8	55.3	5.9	0		3.8	80.1	16.1	0		33.5	48.2	18.3	0		
PHF	.417	.852	.838	.000	.857	.913	.800	.786	.000	.931	.500	.887	.682	.000	.869	.842	.767	.486	.000	.746	.894



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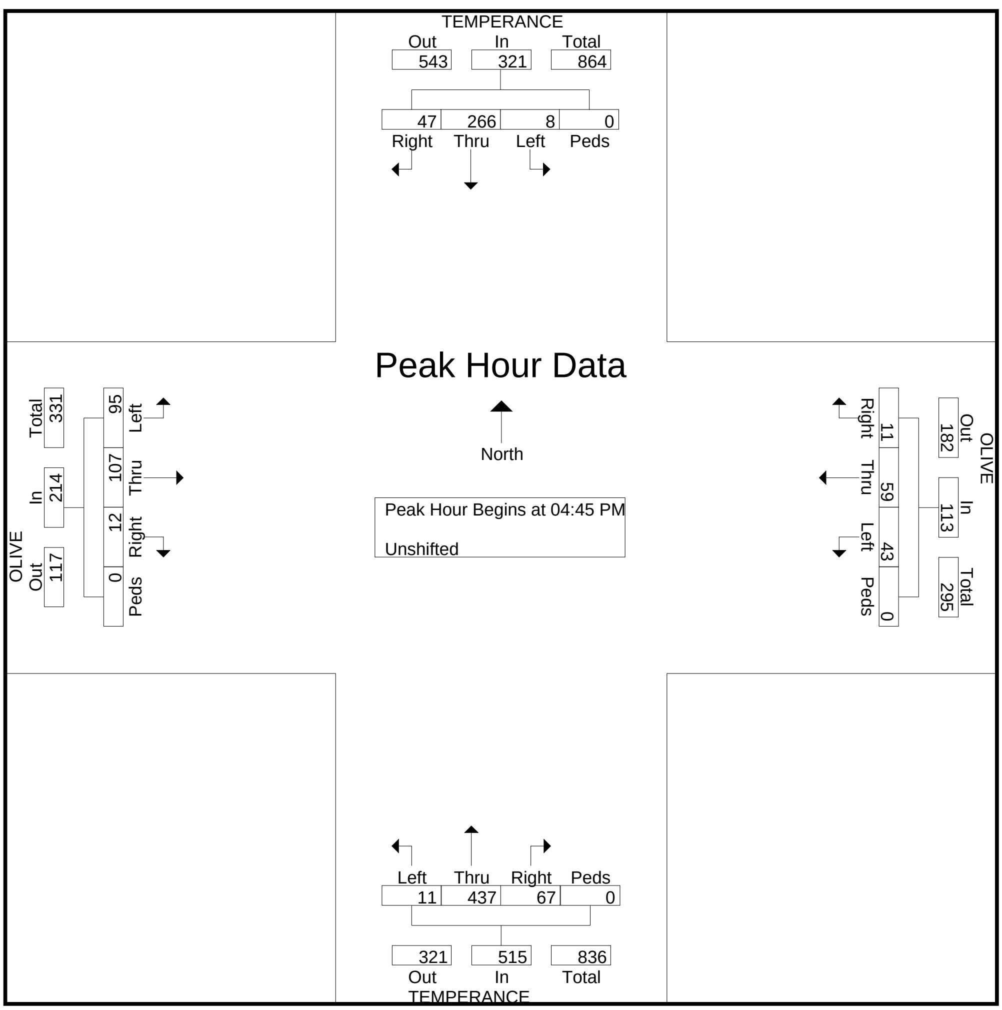
File Name : Temperance at Olive
Site Code : 00000000
Start Date : 6/4/2019

	TEMPERANCE Southbound					OLIVE Westbound					TEMPERANCE Northbound					OLIVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	1	**81**	6	0	**88**	10	**16**	**4**	0	30	3	107	**19**	0	129	**26**	23	3	0	52	**299**
05:00 PM	2	63	12	0	77	7	16	2	0	25	2	107	16	0	125	26	28	**4**	0	**58**	285
05:15 PM	1	67	11	0	79	**15**	15	3	0	**33**	1	**122**	15	0	**138**	18	26	4	0	48	298
05:30 PM	**4**	55	**18**	0	77	11	12	2	0	25	**5**	101	17	0	123	25	**30**	1	0	56	281
Total Volume	8	266	47	0	321	43	59	11	0	113	11	437	67	0	515	95	107	12	0	214	1163
% App. Total	2.5	82.9	14.6	0		38.1	52.2	9.7	0		2.1	84.9	13	0		44.4	50	5.6	0		
PHF	.500	.821	.653	.000	.912	.717	.922	.688	.000	.856	.550	.895	.882	.000	.933	.913	.892	.750	.000	.922	.972



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File Name : Armstrong at Belmont
Site Code : 00000000
Start Date : 5/22/2019
Page No : 1

Groups Printed- Unshifted - Bank 2 (uturns)

	ARMSTRONG Southbound				BELMONT Westbound				ARMSTRONG Northbound				BELMONT Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	10	1	35	0	0	25	3	0	0	1	1	0	28	49	0	0	153
07:15 AM	13	1	60	0	0	29	5	0	3	4	0	0	40	53	1	0	209
07:30 AM	12	0	70	0	1	39	8	0	0	0	1	0	76	58	0	0	265
07:45 AM	11	0	76	0	1	47	22	0	1	0	1	0	94	42	0	0	295
Total	46	2	241	0	2	140	38	0	4	5	3	0	238	202	1	0	922
08:00 AM	7	2	65	0	1	35	11	0	0	0	0	0	90	39	0	0	250
08:15 AM	6	0	39	0	0	24	4	0	1	1	0	0	20	26	0	0	121
08:30 AM	2	0	21	0	0	28	1	0	0	0	1	0	20	18	0	0	91
08:45 AM	3	1	14	0	1	19	1	0	2	0	1	0	7	31	1	0	81
Total	18	3	139	0	2	106	17	0	3	1	2	0	137	114	1	0	543
******																	
04:00 PM	5	0	16	0	1	27	5	0	0	0	1	0	58	48	0	0	161
04:15 PM	5	2	20	0	0	35	5	0	2	1	2	0	62	57	1	0	192
04:30 PM	6	0	14	0	0	36	7	0	1	0	0	0	56	50	0	0	170
04:45 PM	6	2	28	0	0	35	4	0	1	0	2	0	79	60	2	0	219
Total	22	4	78	0	1	133	21	0	4	1	5	0	255	215	3	0	742
05:00 PM	6	3	21	0	0	30	10	0	0	2	8	1	77	45	2	1	206
05:15 PM	13	0	21	0	1	25	6	0	1	0	0	0	88	59	1	0	215
05:30 PM	9	0	19	0	0	28	9	0	1	1	2	0	69	43	2	3	186
05:45 PM	8	2	32	0	0	23	1	0	0	0	2	0	51	42	1	0	162
Total	36	5	93	0	1	106	26	0	2	3	12	1	285	189	6	4	769
Grand Total	122	14	551	0	6	485	102	0	13	10	22	1	915	720	11	4	2976
Apprch %	17.8	2	80.2	0	1	81.8	17.2	0	28.3	21.7	47.8	2.2	55.5	43.6	0.7	0.2	
Total %	4.1	0.5	18.5	0	0.2	16.3	3.4	0	0.4	0.3	0.7	0	30.7	24.2	0.4	0.1	
Unshifted	121	14	551	0	6	485	102	0	13	10	22	1	912	720	10	4	2971
% Unshifted	99.2	100	100	0	100	100	100	0	100	100	100	100	99.7	100	90.9	100	99.8
Bank 2 (uturns)	1	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	5
% Bank 2 (uturns)	0.8	0	0	0	0	0	0	0	0	0	0	0	0.3	0	9.1	0	0.2

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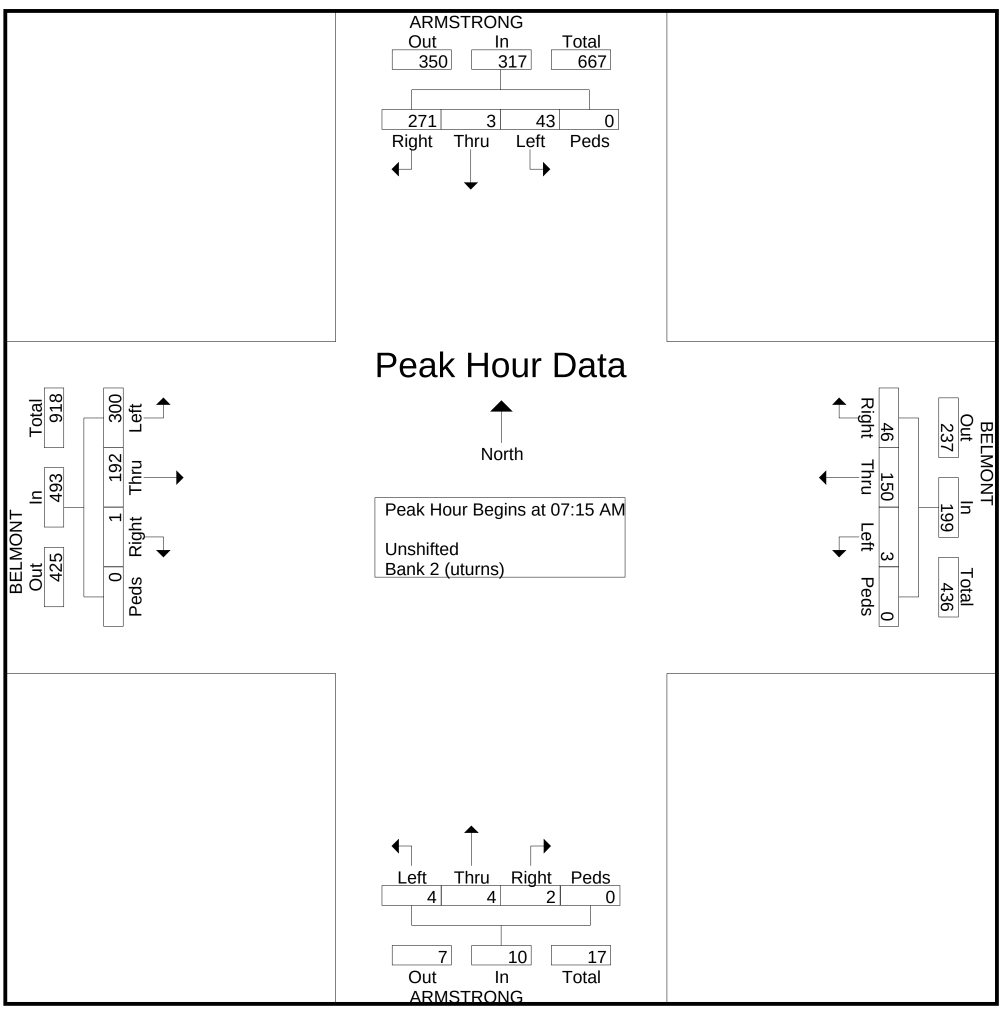
File Name : Armstrong at Belmont
Site Code : 00000000
Start Date : 5/22/2019
Page No : 2

	ARMSTRONG Southbound					BELMONT Westbound					ARMSTRONG Northbound					BELMONT Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	**13**	1	60	0	74	0	29	5	0	34	**3**	**4**	0	0	**7**	40	53	**1**	0	94	209
07:30 AM	12	0	70	0	82	**1**	39	8	0	48	0	0	**1**	0	1	76	**58**	0	0	134	265
07:45 AM	11	0	**76**	0	**87**	1	**47**	**22**	0	**70**	1	0	1	0	2	**94**	42	0	0	**136**	**295**
08:00 AM	7	**2**	65	0	74	1	35	11	0	47	0	0	0	0	0	90	39	0	0	129	250
Total Volume	43	3	271	0	317	3	150	46	0	199	4	4	2	0	10	300	192	1	0	493	1019
% App. Total	13.6	0.9	85.5	0		1.5	75.4	23.1	0		40	40	20	0		60.9	38.9	0.2	0		
PHF	.827	.375	.891	.000	.911	.750	.798	.523	.000	.711	.333	.250	.500	.000	.357	.798	.828	.250	.000	.906	.864



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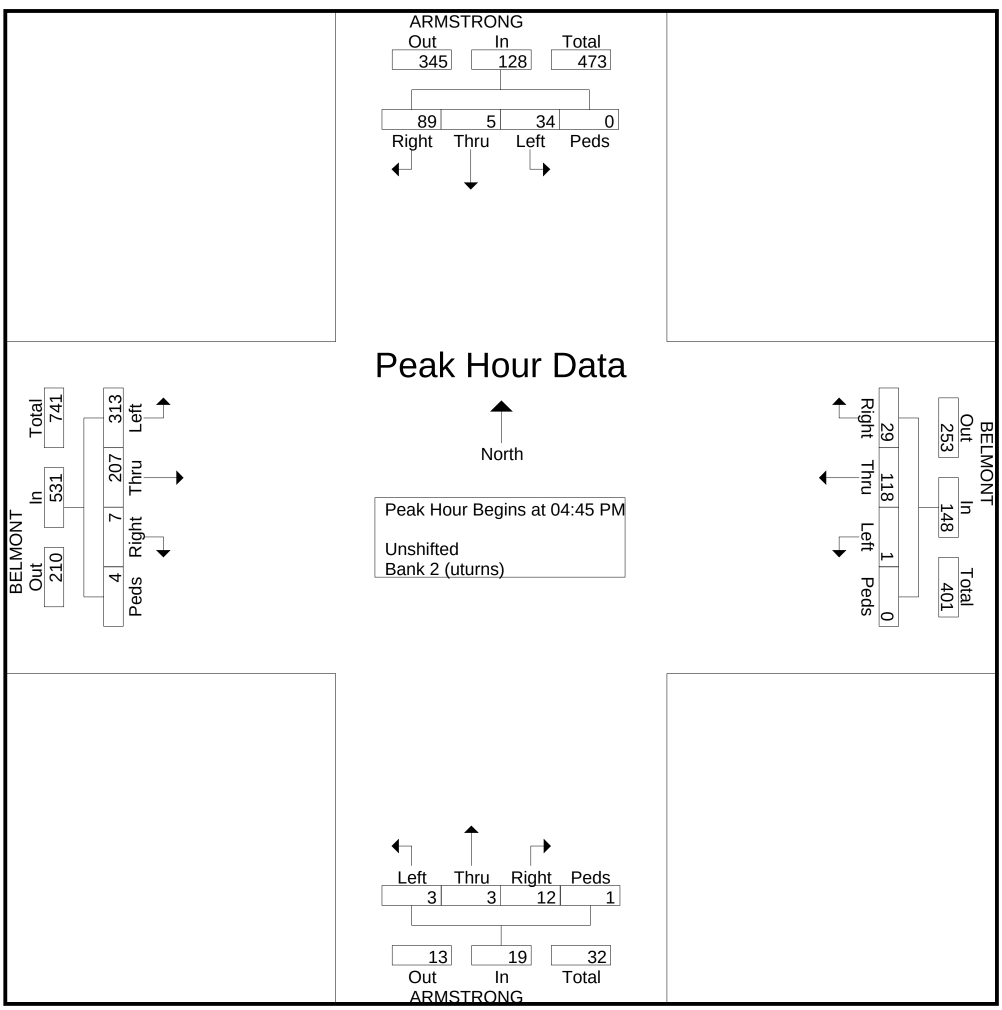
File Name : Armstrong at Belmont
Site Code : 00000000
Start Date : 5/22/2019
Page No : 3

	ARMSTRONG Southbound					BELMONT Westbound					ARMSTRONG Northbound					BELMONT Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	6	2	**28**	0	**36**	0	**35**	4	0	39	**1**	0	2	0	3	79	**60**	**2**	0	141	**219**
05:00 PM	6	**3**	21	0	30	0	30	**10**	0	**40**	0	**2**	**8**	**1**	**11**	77	45	2	1	125	206
05:15 PM	**13**	0	21	0	34	**1**	25	6	0	32	1	0	0	0	1	**88**	59	1	0	**148**	215
05:30 PM	9	0	19	0	28	0	28	9	0	37	1	1	2	0	4	69	43	2	**3**	117	186
Total Volume	34	5	89	0	128	1	118	29	0	148	3	3	12	1	19	313	207	7	4	531	826
% App. Total	26.6	3.9	69.5	0		0.7	79.7	19.6	0		15.8	15.8	63.2	5.3		58.9	39	1.3	0.8		
PHF	.654	.417	.795	.000	.889	.250	.843	.725	.000	.925	.750	.375	.375	.250	.432	.889	.863	.875	.333	.897	.943



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File Name : Temperance at Belmont
Site Code : 00000000
Start Date : 6/5/2019

Groups Printed- Unshifted

	TEMPERANCE Southbound				BELMONT Westbound				TEMPERANCE Northbound				BELMONT Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	4	123	4	0	27	15	5	0	3	68	10	0	24	18	12	0	313
07:15 AM	7	122	9	0	38	14	9	0	6	62	6	0	17	15	15	0	320
07:30 AM	7	105	6	0	35	38	14	0	5	65	6	0	28	18	17	0	344
07:45 AM	9	110	10	0	26	33	10	0	9	79	12	0	32	17	15	0	362
Total	27	460	29	0	126	100	38	0	23	274	34	0	101	68	59	0	1339
08:00 AM	6	105	22	0	15	25	10	0	9	69	3	0	20	15	14	0	313
08:15 AM	8	102	16	0	15	21	7	0	7	36	7	0	13	17	4	0	253
08:30 AM	6	76	11	0	8	22	8	0	7	34	7	0	11	21	7	0	218
08:45 AM	4	56	9	0	13	19	11	0	7	44	8	0	8	13	7	0	199
Total	24	339	58	0	51	87	36	0	30	183	25	0	52	66	32	0	983
******																	
04:00 PM	12	51	7	0	14	17	14	0	1	87	6	0	25	22	8	0	264
04:15 PM	11	59	5	1	13	19	14	0	1	103	7	0	23	27	14	0	297
04:30 PM	10	54	9	0	17	11	15	1	3	84	11	1	19	25	6	1	267
04:45 PM	8	65	11	0	17	17	10	0	2	110	10	0	22	27	2	0	301
Total	41	229	32	1	61	64	53	1	7	384	34	1	89	101	30	1	1129
05:00 PM	16	63	4	0	12	17	13	0	4	96	8	0	12	33	6	0	284
05:15 PM	5	66	6	0	13	22	7	0	1	106	5	0	21	38	3	0	293
05:30 PM	5	61	7	0	16	17	6	0	6	93	14	0	22	33	3	0	283
05:45 PM	8	59	5	0	7	10	14	0	7	65	8	0	18	24	9	0	234
Total	34	249	22	0	48	66	40	0	18	360	35	0	73	128	21	0	1094
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Grand Total	126	1277	141	1	286	317	167	1	78	1201	128	1	316	363	142	1	4546
Apprch %	8.2	82.7	9.1	0.1	37.1	41.1	21.7	0.1	5.5	85.3	9.1	0.1	38.4	44.2	17.3	0.1	
Total %	2.8	28.1	3.1	0	6.3	7	3.7	0	1.7	26.4	2.8	0	7	8	3.1	0	

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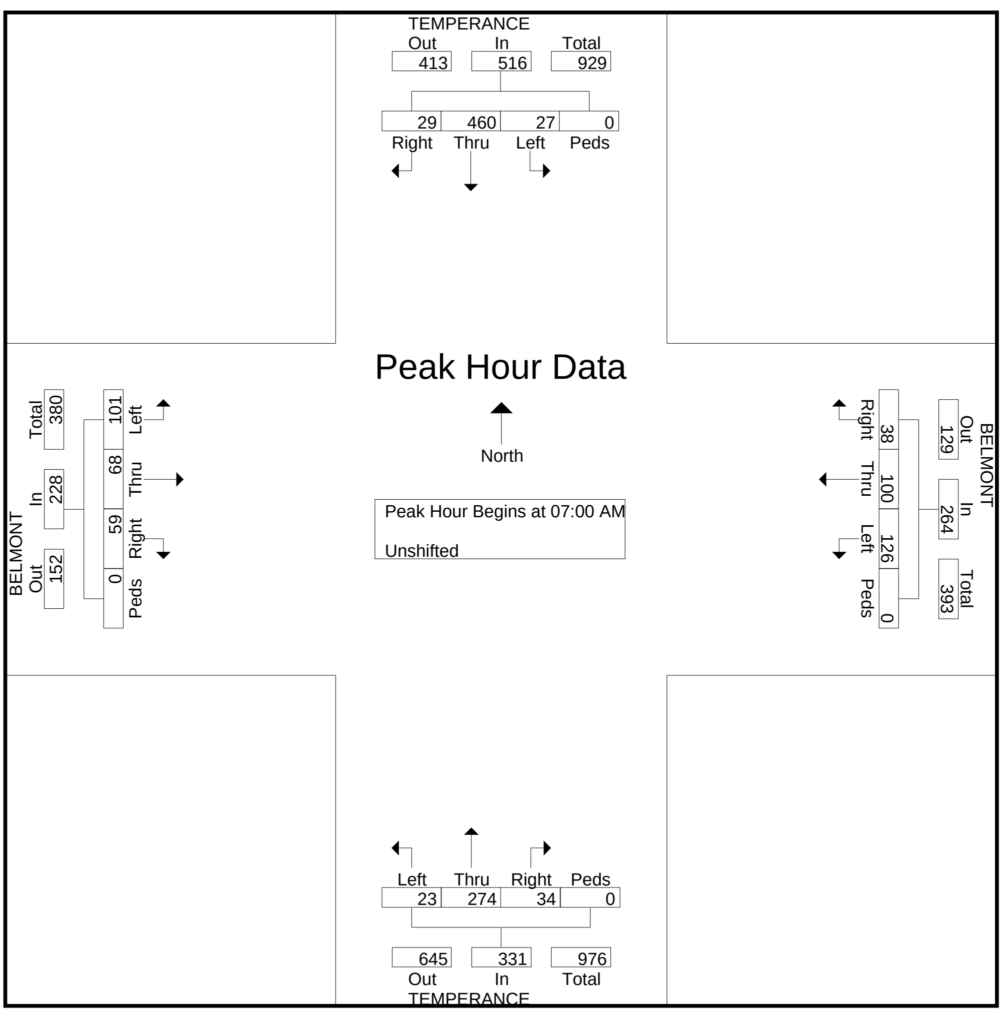
File Name : Temperance at Belmont
Site Code : 00000000
Start Date : 6/5/2019

	TEMPERANCE Southbound					BELMONT Westbound					TEMPERANCE Northbound					BELMONT Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	4	**123**	4	0	131	27	15	5	0	47	3	68	10	0	81	24	**18**	12	0	54	313
07:15 AM	7	122	9	0	**138**	**38**	14	9	0	61	6	62	6	0	74	17	15	15	0	47	320
07:30 AM	7	105	6	0	118	35	**38**	**14**	0	**87**	5	65	6	0	76	28	18	**17**	0	63	344
07:45 AM	**9**	110	**10**	0	129	26	33	10	0	69	**9**	**79**	**12**	0	**100**	**32**	17	15	0	**64**	**362**
Total Volume	27	460	29	0	516	126	100	38	0	264	23	274	34	0	331	101	68	59	0	228	1339
% App. Total	5.2	89.1	5.6	0		47.7	37.9	14.4	0		6.9	82.8	10.3	0		44.3	29.8	25.9	0		
PHF	.750	.935	.725	.000	.935	.829	.658	.679	.000	.759	.639	.867	.708	.000	.828	.789	.944	.868	.000	.891	.925



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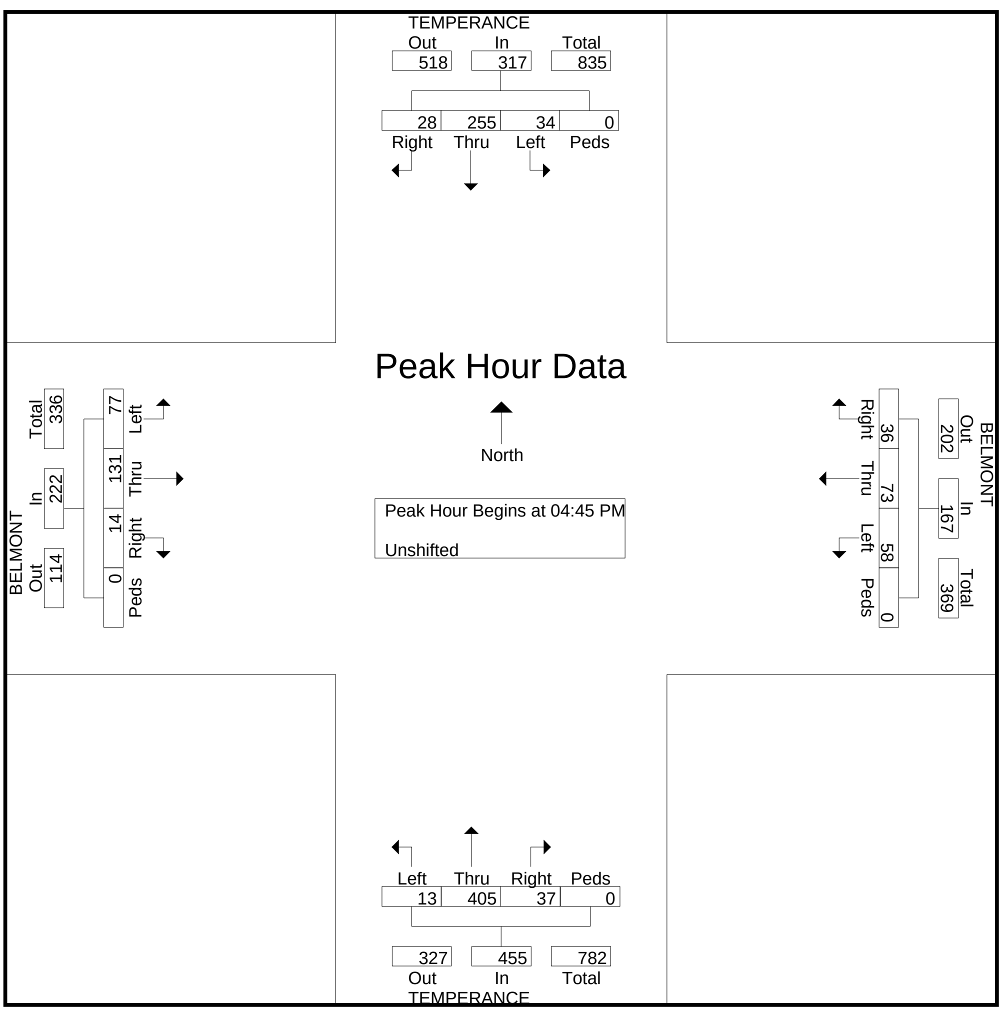
File Name : Temperance at Belmont
Site Code : 00000000
Start Date : 6/5/2019
Page No : 3

	TEMPERANCE Southbound					BELMONT Westbound					TEMPERANCE Northbound					BELMONT Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 06:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	8	65	**11**	0	**84**	**17**	17	10	0	**44**	2	**110**	10	0	**122**	**22**	27	2	0	51	**301**
05:00 PM	**16**	63	4	0	83	12	17	**13**	0	42	4	96	8	0	108	12	33	**6**	0	51	284
05:15 PM	5	**66**	6	0	77	13	**22**	7	0	42	1	106	5	0	112	21	**38**	3	0	**62**	293
05:30 PM	5	61	7	0	73	16	17	6	0	39	**6**	93	**14**	0	113	22	33	3	0	58	283
Total Volume	34	255	28	0	317	58	73	36	0	167	13	405	37	0	455	77	131	14	0	222	1161
% App. Total	10.7	80.4	8.8	0		34.7	43.7	21.6	0		2.9	89	8.1	0		34.7	59	6.3	0		
PHF	.531	.966	.636	.000	.943	.853	.830	.692	.000	.949	.542	.920	.661	.000	.932	.875	.862	.583	.000	.895	.964



Prepared by National Data & Surveying Services

Fowler Ave & Olive Ave

Peak Hour Turning Movement Count

ID: 18-02013-001
City: Fresno

Day: Thursday
Date: 01/25/2018

PEAK HOURS	COUNT PERIODS
AM: 07:15 AM - 08:15 AM	AM: 07:00 AM - 09:00 AM
NOON: NONE	NOON: NONE
PM: 03:30 PM - 04:30 PM	PM: 02:00 PM - 06:00 PM

Fowler Ave – SOUTHBOUND

	Right	Through	Left	U-Turn	Departing
AM	5	441	3	0	363
NOON	0	0	0	0	0
PM	13	470	3	0	466
Lanes	0	1	0	0	

Olive Ave – EASTBOUND

	U-Turn	Left	Through	Right	Departing
AM	0	17	38	23	130
NOON	0	0	0	0	0
PM	0	24	62	31	66
Lanes	0	1	1	0	

Olive Ave – WESTBOUND

	Right	Through	Left	U-Turn	Departing
PM	7	47	201	0	222
NOON	0	0	0	0	0
AM	0	110	461	0	123
Lanes	0	1	1	0	

Fowler Ave – NORTHBOUND

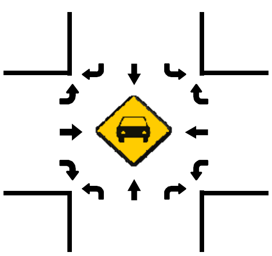
	Departing	U-Turn	Left	Through	Right
PM	702	0	6	435	157
NOON	0	0	0	0	0
AM	925	0	15	346	82
Lanes		0	0	1	0

CONTROL

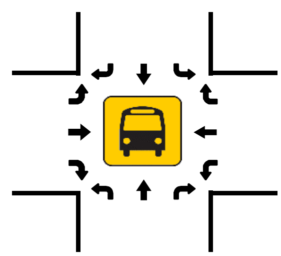
4-Way Stop

	AM	NOON	PM
TEV	1541	0	1456
PHF	0.97		0.91

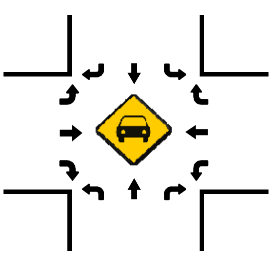
Total Vehicles (AM)



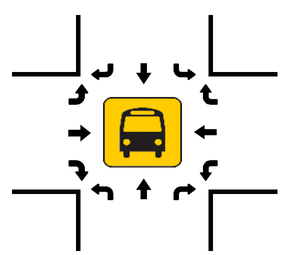
Total Vehicles (AM)



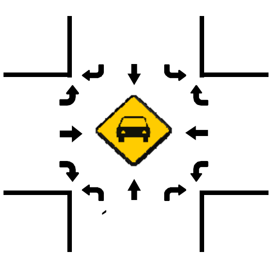
Total Vehicles (NOON)



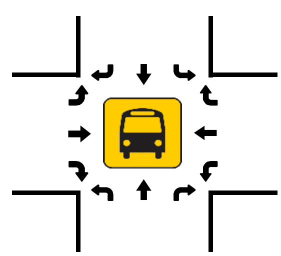
Total Vehicles (NOON)



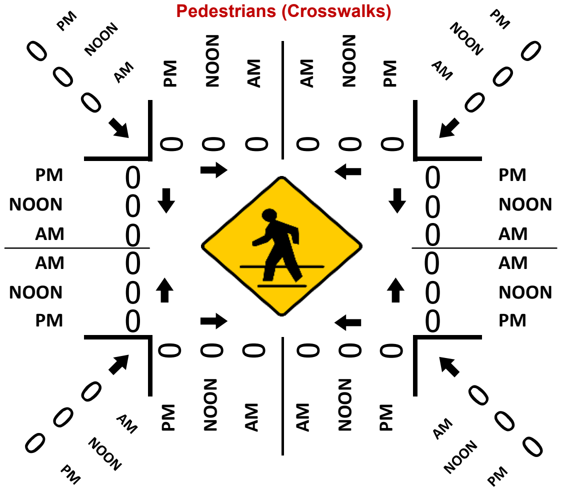
Total Vehicles (PM)



Total Vehicles (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Fowler Ave & Olive Ave
City: Fresno
Control: 4-Way Stop

Project ID: 18-02013-001
Date: 1/25/2018

Total

NS/EW Streets:	Fowler Ave				Fowler Ave				Olive Ave				Olive Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	5	86	30	0	1	89	0	0	1	11	3	0	95	6	2	0	329
7:15 AM	4	90	26	0	0	131	2	0	1	8	5	0	111	13	0	0	391
7:30 AM	4	82	19	0	1	96	1	0	5	10	8	0	122	24	0	0	372
7:45 AM	3	102	15	0	1	101	0	0	6	11	7	0	111	40	0	0	397
8:00 AM	4	72	22	0	1	113	2	0	5	9	3	0	117	33	0	0	381
8:15 AM	6	98	13	0	0	126	6	0	1	7	6	0	73	17	0	0	353
8:30 AM	3	77	13	0	3	99	2	0	3	3	4	0	56	9	1	0	273
8:45 AM	2	80	16	0	2	94	1	0	7	3	1	0	39	7	1	0	253
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	31	687	154	0	9	849	14	0	29	62	37	0	724	149	4	0	2749
APPROACH %'s :	3.56%	####	####	0.00%	1.03%	####	1.61%	0.00%	####	####	####	0.00%	####	####	0.46%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	15	346	82	0	3	441	5	0	17	38	23	0	461	110	0	0	1541
PEAK HR FACTOR :	0.938	0.848	0.788	0.000	0.750	0.842	0.625	0.000	0.708	0.864	0.719	0.000	0.945	0.688	0.000	0.000	0.970
	0.923				0.844				0.813				0.945				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	1	1	0	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	5	83	22	0	1	109	6	0	4	4	8	0	37	7	7	0	293
2:15 PM	4	117	28	0	2	83	2	0	5	9	5	0	29	6	0	0	290
2:30 PM	3	100	28	0	0	89	6	0	8	9	3	0	36	6	3	0	291
2:45 PM	3	113	30	0	2	108	5	0	6	7	4	0	39	11	1	0	329
3:00 PM	4	112	36	0	1	103	4	0	4	10	4	0	36	10	2	0	326
3:15 PM	2	105	27	0	3	106	2	0	8	15	3	0	57	26	6	0	360
3:30 PM	2	101	30	0	1	115	5	0	6	19	15	0	83	21	2	0	400
3:45 PM	1	114	37	0	1	124	3	0	9	12	6	0	45	10	1	0	363
4:00 PM	2	108	35	0	0	114	4	0	3	17	4	0	32	5	2	0	326
4:15 PM	1	112	55	0	1	117	1	0	6	14	6	0	41	11	2	0	367
4:30 PM	2	105	41	0	2	111	4	0	9	15	13	0	41	6	1	0	350
4:45 PM	5	108	44	0	2	97	2	0	5	20	9	0	33	3	0	0	328
5:00 PM	4	99	37	0	1	117	1	0	8	29	6	0	42	7	3	0	354
5:15 PM	2	110	57	0	1	123	2	0	6	25	4	0	26	4	1	0	361
5:30 PM	1	110	38	0	1	101	0	0	5	14	2	0	31	6	0	0	309
5:45 PM	2	107	49	0	0	104	0	0	3	11	3	0	35	6	0	0	320
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	43	1704	594	0	19	1721	47	0	95	230	95	0	643	145	31	0	5367
APPROACH %'s :	1.84%	72.79%	25.37%	0.00%	1.06%	96.31%	2.63%	0.00%	22.62%	54.76%	22.62%	0.00%	78.51%	17.70%	3.79%	0.00%	
PEAK HR :	03:30 PM - 04:30 PM																TOTAL
PEAK HR VOL :	6	435	157	0	3	470	13	0	24	62	31	0	201	47	7	0	1456
PEAK HR FACTOR :	0.750	0.954	0.714	0.000	0.750	0.948	0.650	0.000	0.667	0.816	0.517	0.000	0.605	0.560	0.875	0.000	0.910
	0.890				0.949				0.731				0.601				

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

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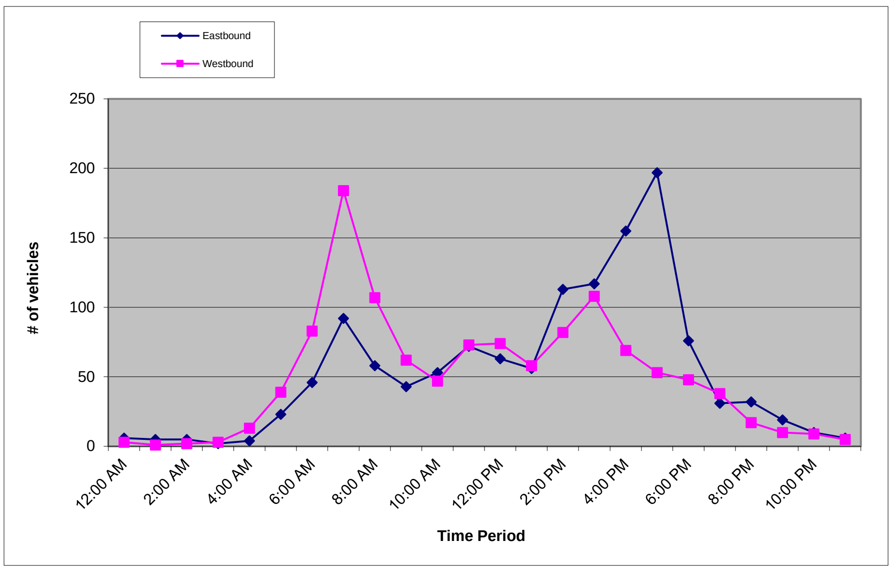
24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**
1300 E. Shaw Ave, Suite 103
Fresno, CA

STREET Clinton Ave
SEGMENT btw Fowler/Armstrong
COLLECTION DATE Tuesday, May 21, 2019
NUMBER OF LANES 2
LATITUDE 36.7721197
LONGITUDE -119.6776336
WEATHER Clear

	Eastbound					Westbound					Hourly
Hour	:00	:15	:30	:45	Total	:00	:15	:30	:45	Total	Totals
12:00 AM	1	1	2	2	6	2	0	0	1	3	9
1:00 AM	0	0	1	4	5	0	0	1	0	1	6
2:00 AM	0	2	2	1	5	0	0	1	1	2	7
3:00 AM	1	0	0	1	2	1	0	2	0	3	5
4:00 AM	0	2	1	1	4	0	0	6	7	13	17
5:00 AM	1	6	7	9	23	2	7	17	13	39	62
6:00 AM	10	8	12	16	46	2	16	21	44	83	129
7:00 AM	19	16	21	36	92	28	34	58	64	184	276
8:00 AM	19	17	12	10	58	37	34	19	17	107	165
9:00 AM	15	4	10	14	43	19	12	14	17	62	105
10:00 AM	14	8	14	17	53	11	9	18	9	47	100
11:00 AM	17	16	23	16	72	15	21	14	23	73	145
12:00 PM	17	24	16	6	63	16	21	16	21	74	137
1:00 PM	16	15	15	10	56	25	14	12	7	58	114
2:00 PM	18	28	33	34	113	20	24	20	18	82	195
3:00 PM	34	21	28	34	117	25	41	23	19	108	225
4:00 PM	35	36	49	35	155	16	21	18	14	69	224
5:00 PM	73	46	48	30	197	13	18	10	12	53	250
6:00 PM	27	16	19	14	76	23	11	5	9	48	124
7:00 PM	7	11	4	9	31	14	7	7	10	38	69
8:00 PM	10	9	8	5	32	4	6	4	3	17	49
9:00 PM	5	6	6	2	19	2	5	1	2	10	29
10:00 PM	2	1	3	4	10	2	2	2	3	9	19
11:00 PM	1	1	2	2	6	0	1	2	2	5	11
Total	51.9%				1284	48.1%				1188	
	2472										

AM%	41.5%	AM Peak	286	7:30 am to 8:30 am	AM P.H.F.	0.72
PM%	58.5%	PM Peak	266	4:30 pm to 5:30 pm	PM P.H.F.	0.77



Metro Traffic Data Inc.
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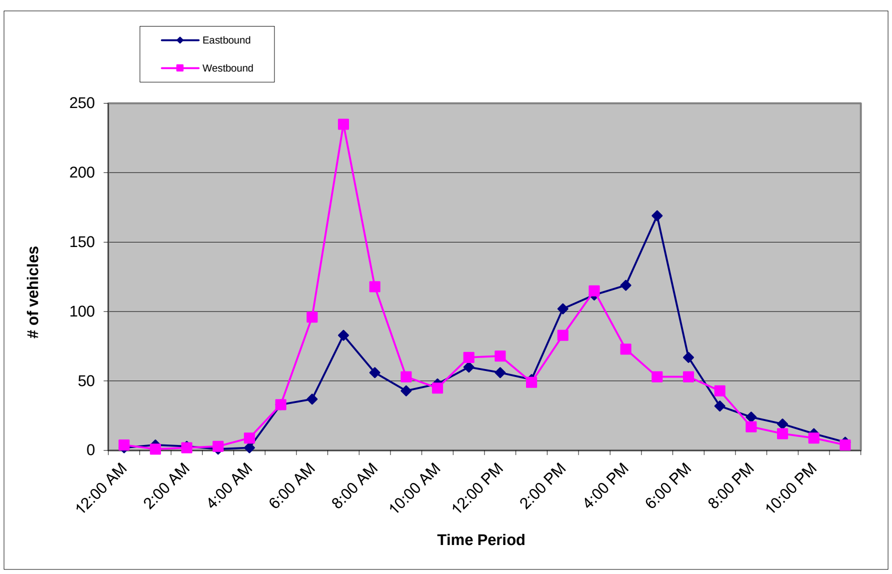
24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**
1300 E. Shaw Ave, Suite 103
Fresno, CA

STREET Clinton Ave
LATITUDE 36.7721272
SEGMENT btw Armstrong/Temperance
LONGITUDE -119.6722842
COLLECTION DATE Tuesday, May 21, 2019
WEATHER Clear
NUMBER OF LANES 2

	Eastbound					Westbound					Hourly
Hour	:00	:15	:30	:45	Total	:00	:15	:30	:45	Total	Totals
12:00 AM	0	0	0	2	2	3	0	0	1	4	6
1:00 AM	0	0	0	4	4	0	0	1	0	1	5
2:00 AM	0	1	1	1	3	0	0	0	2	2	5
3:00 AM	0	0	0	1	1	1	0	2	0	3	4
4:00 AM	0	0	1	1	2	0	2	5	2	9	11
5:00 AM	2	5	12	14	33	4	6	13	10	33	66
6:00 AM	9	10	10	8	37	6	17	22	51	96	133
7:00 AM	15	13	22	33	83	43	57	61	74	235	318
8:00 AM	21	14	11	10	56	49	38	18	13	118	174
9:00 AM	13	5	12	13	43	17	8	12	16	53	96
10:00 AM	13	8	15	12	48	12	14	10	9	45	93
11:00 AM	17	12	22	9	60	11	18	17	21	67	127
12:00 PM	15	20	14	7	56	15	12	22	19	68	124
1:00 PM	14	13	17	7	51	19	7	12	11	49	100
2:00 PM	15	24	27	36	102	14	27	20	22	83	185
3:00 PM	36	22	21	33	112	28	52	22	13	115	227
4:00 PM	24	33	28	34	119	20	21	18	14	73	192
5:00 PM	54	46	39	30	169	13	16	15	9	53	222
6:00 PM	21	13	20	13	67	25	9	4	15	53	120
7:00 PM	7	11	6	8	32	16	9	7	11	43	75
8:00 PM	9	8	5	2	24	5	5	3	4	17	41
9:00 PM	6	5	6	2	19	3	5	2	2	12	31
10:00 PM	2	4	2	4	12	3	1	3	2	9	21
11:00 PM	2	1	2	1	6	0	1	3	0	4	10
Total	47.8%				1141	52.2%				1245	
	2386										

AM%	43.5%	AM Peak	330	7:15 am to 8:15 am	AM P.H.F.	0.77
PM%	56.5%	PM Peak	243	2:30 pm to 3:30 pm	PM P.H.F.	0.82



Metro Traffic Data Inc.
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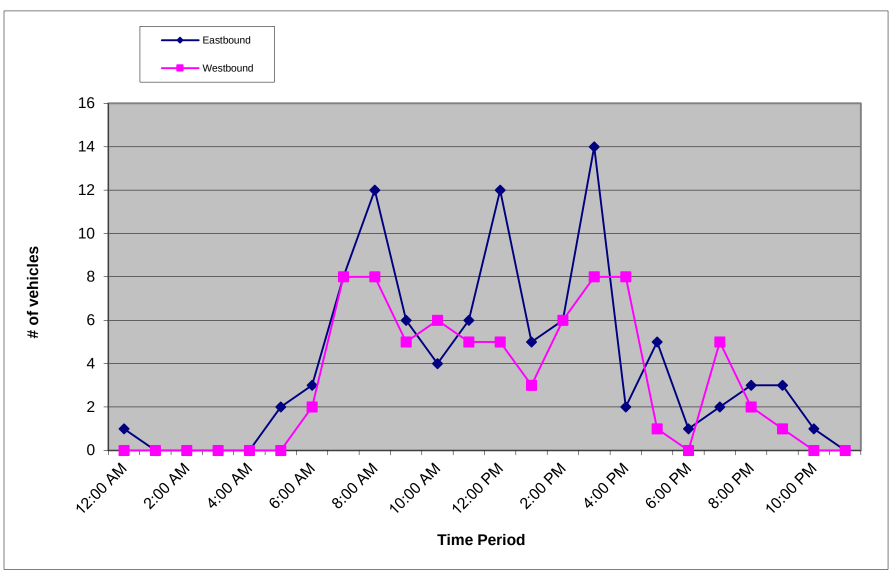
24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**
1300 E. Shaw Ave, Suite 103
Fresno, CA

STREET Floradora Ave
LATITUDE 36.7611345
SEGMENT btw Fowler/Armstrong
LONGITUDE -119.6804774
COLLECTION DATE Tuesday, May 21, 2019
WEATHER Clear
NUMBER OF LANES 2

	Eastbound					Westbound					Hourly
Hour	:00	:15	:30	:45	Total	:00	:15	:30	:45	Total	Totals
12:00 AM	0	0	0	1	1	0	0	0	0	0	1
1:00 AM	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	1	1	2	0	0	0	0	0	2
6:00 AM	1	0	0	2	3	0	0	2	0	2	5
7:00 AM	1	1	3	3	8	0	1	3	4	8	16
8:00 AM	5	2	2	3	12	2	3	1	2	8	20
9:00 AM	1	1	4	0	6	1	1	3	0	5	11
10:00 AM	1	1	1	1	4	1	2	1	2	6	10
11:00 AM	0	0	1	5	6	3	0	0	2	5	11
12:00 PM	3	1	2	6	12	1	1	0	3	5	17
1:00 PM	2	1	1	1	5	0	0	3	0	3	8
2:00 PM	1	3	1	1	6	4	2	0	0	6	12
3:00 PM	8	4	1	1	14	3	2	1	2	8	22
4:00 PM	0	1	0	1	2	2	1	2	3	8	10
5:00 PM	0	1	3	1	5	0	0	1	0	1	6
6:00 PM	1	0	0	0	1	0	0	0	0	0	1
7:00 PM	0	0	2	0	2	0	5	0	0	5	7
8:00 PM	0	3	0	0	3	0	1	1	0	2	5
9:00 PM	1	1	1	0	3	0	0	1	0	1	4
10:00 PM	1	0	0	0	1	0	0	0	0	0	1
11:00 PM	0	0	0	0	0	0	0	0	0	0	0
Total	56.8%				96	43.2%				73	
	169										

AM%	45.0%	AM Peak 25	7:30 am to 8:30 am	AM P.H.F.	0.89
PM%	55.0%	PM Peak 22	3:00 pm to 4:00 pm	PM P.H.F.	0.50



Prepared by NDS/ATD

VOLUME

E Floradora Ave Bet. N Armstrong Ave & N Temperance Ave

Day: Thursday
Date: 9/13/2018

City: Fresno
Project #: CA18_7292_010

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	112	122	234

AM Period	NB	SB	EB		WB		TOTAL	
00:00			0		0		0	
00:15			0		0		0	
00:30			0		0		0	
00:45			0		0		0	
01:00			0		0		0	
01:15			0		0		0	
01:30			0		0		0	
01:45			0		0		0	
02:00			0		0		0	
02:15			0		0		0	
02:30			0		0		0	
02:45			0		0		0	
03:00			0		1		1	
03:15			0		1		1	
03:30			0		0		0	
03:45			0		0	2	0	2
04:00			0		0		0	
04:15			0		0		0	
04:30			0		0		0	
04:45			0		1	1	1	1
05:00			1		0		1	
05:15			0		0		0	
05:30			1		1		2	
05:45			1	3	0	1	1	4
06:00			0		1		1	
06:15			0		0		0	
06:30			5		1		6	
06:45			3	8	4	6	7	14
07:00			1		6		7	
07:15			3		5		8	
07:30			1		4		5	
07:45			1	6	14	29	15	35
08:00			3		3		6	
08:15			2		2		4	
08:30			0		0		0	
08:45			3	8	1	6	4	14
09:00			1		3		4	
09:15			0		4		4	
09:30			0		3		3	
09:45			2	3	2	12	4	15
10:00			0		2		2	
10:15			3		1		4	
10:30			4		1		5	
10:45			1	8	3	7	4	15
11:00			2		0		2	
11:15			2		4		6	
11:30			1		1		2	
11:45			2	7	1	6	3	13
TOTALS				43		70		**113**
SPLIT %				38.1%		61.9%		**48.3%**

PM Period	NB	SB	EB		WB		TOTAL	
12:00			3		2		5	
12:15			1		0		1	
12:30			1		2		3	
12:45			0	5	0	4	0	9
13:00			0		1		1	
13:15			2		1		3	
13:30			2		0		2	
13:45			1	5	1	3	2	8
14:00			2		3		5	
14:15			1		0		1	
14:30			2		1		3	
14:45			1	6	1	5	2	11
15:00			2		5		7	
15:15			5		1		6	
15:30			5		2		7	
15:45			3	15	3	11	6	26
16:00			2		2		4	
16:15			6		2		8	
16:30			0		2		2	
16:45			5	13	2	8	7	21
17:00			3		3		6	
17:15			3		1		4	
17:30			2		3		5	
17:45			2	10	1	8	3	18
18:00			2		3		5	
18:15			2		2		4	
18:30			1		0		1	
18:45			2	7	0	5	2	12
19:00			1		0		1	
19:15			0		2		2	
19:30			1		0		1	
19:45			0	2	2	4	2	6
20:00			1		0		1	
20:15			0		0		0	
20:30			1		0		1	
20:45			1	3	0		1	3
21:00			0		1		1	
21:15			1		0		1	
21:30			0		0		0	
21:45			1	2	0	1	1	3
22:00			0		0		0	
22:15			0		0		0	
22:30			0		0		0	
22:45			0		1	1	1	1
23:00			0		0		0	
23:15			0		2		2	
23:30			0		0		0	
23:45			1	1	0	2	1	3
TOTALS				69		52		**121**
SPLIT %				57.0%		43.0%		**51.7%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	112	122	234

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			06:30	07:00	**07:00**	**PM Peak Hour**			15:30	15:00	**15:00**
AM Pk Volume			12	29	**35**	**PM Pk Volume**			16	11	**26**
Pk Hr Factor			0.600	0.518	**0.583**	**Pk Hr Factor**			0.667	0.550	**0.929**
7 - 9 Volume	0	0	14	35	**49**	**4 - 6 Volume**	0	0	23	16	**39**
7 - 9 Peak Hour			07:15	07:00	**07:00**	**4 - 6 Peak Hour**			16:15	16:15	**16:15**
7 - 9 Pk Volume	0	0	8	29	**35**	**4 - 6 Pk Volume**	0	0	14	9	**23**
Pk Hr Factor	0.000	0.000	0.667	0.518	**0.583**	**Pk Hr Factor**	0.000	0.000	0.583	0.750	**0.719**

Prepared by NDS/ATD

VOLUME

E Olive Ave Bet. N Fowler Ave & N Armstrong Ave

Day: Thursday **City:** Fresno
Date: 9/13/2018 **Project #:** CA18_7292_011

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,840	3,998	6,838

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			4		2		6		12:00			36		24		60	
00:15			5		2		7		12:15			32		47		79	
00:30			6		3		9		12:30			39		48		87	
00:45			2	17	2	9	4	26	12:45			30	137	44	163	74	300
01:00			5		3		8		13:00			34		55		89	
01:15			4		1		5		13:15			37		46		83	
01:30			5		1		6		13:30			37		52		89	
01:45			1	15	1	6	2	21	13:45			41	149	49	202	90	351
02:00			3		0		3		14:00			39		44		83	
02:15			8		1		9		14:15			51		55		106	
02:30			3		8		11		14:30			60		60		120	
02:45			1	15	6	15	7	30	14:45			68	218	52	211	120	429
03:00			3		4		7		15:00			68		47		115	
03:15			4		5		9		15:15			53		111		164	
03:30			1		9		10		15:30			57		77		134	
03:45			3	11	8	26	11	37	15:45			57	235	41	276	98	511
04:00			0		10		10		16:00			45		53		98	
04:15			2		10		12		16:15			67		58		125	
04:30			4		25		29		16:30			78		51		129	
04:45			4	10	10	55	14	65	16:45			63	253	41	203	104	456
05:00			5		26		31		17:00			70		52		122	
05:15			5		23		28		17:15			84		54		138	
05:30			10		61		71		17:30			89		65		154	
05:45			38	58	65	175	103	233	17:45			73	316	34	205	107	521
06:00			31		60		91		18:00			64		44		108	
06:15			31		60		91		18:15			67		44		111	
06:30			24		130		154		18:30			48		56		104	
06:45			32	118	114	364	146	482	18:45			55	234	40	184	95	418
07:00			31		167		198		19:00			37		30		67	
07:15			35		149		184		19:15			46		34		80	
07:30			33		161		194		19:30			49		38		87	
07:45			37	136	164	641	201	777	19:45			42	174	25	127	67	301
08:00			45		156		201		20:00			40		14		54	
08:15			21		121		142		20:15			31		22		53	
08:30			21		79		100		20:30			31		22		53	
08:45			33	120	62	418	95	538	20:45			30	132	17	75	47	207
09:00			25		54		79		21:00			19		18		37	
09:15			24		48		72		21:15			29		10		39	
09:30			28		55		83		21:30			19		12		31	
09:45			24	101	44	201	68	302	21:45			28	95	14	54	42	149
10:00			27		35		62		22:00			16		15		31	
10:15			30		38		68		22:15			15		7		22	
10:30			20		56		76		22:30			14		10		24	
10:45			21	98	37	166	58	264	22:45			12	57	7	39	19	96
11:00			23		27		50		23:00			14		12		26	
11:15			33		30		63		23:15			9		8		17	
11:30			21		53		74		23:30			5		8		13	
11:45			31	108	42	152	73	260	23:45			5	33	3	31	8	64
TOTALS				807		2228		**3035**	**TOTALS**				2033		1770		**3803**
SPLIT %				26.6%		73.4%		**44.4%**	**SPLIT %**				53.5%		46.5%		**55.6%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,840	3,998	6,838

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			07:15	07:00	**07:15**	**PM Peak Hour**			17:00	14:45	**14:45**
AM Pk Volume			150	641	**780**	**PM Pk Volume**			316	287	**533**
Pk Hr Factor			0.833	0.960	**0.970**	**Pk Hr Factor**			0.888	0.646	**0.813**
7 - 9 Volume	0	0	256	1059	**1315**	**4 - 6 Volume**	0	0	569	408	**977**
7 - 9 Peak Hour			07:15	07:00	**07:15**	**4 - 6 Peak Hour**			17:00	16:45	**17:00**
7 - 9 Pk Volume	0	0	150	641	**780**	**4 - 6 Pk Volume**	0	0	316	212	**521**
Pk Hr Factor	0.000	0.000	0.833	0.960	**0.970**	**Pk Hr Factor**	0.000	0.000	0.888	0.815	**0.846**

Prepared by NDS/ATD

VOLUME

E Olive Ave Bet. N Armstrong Ave & N Temperance Ave

Day: Thursday
Date: 9/13/2018

City: Fresno
Project #: CA18_7292_012

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,907	2,061	3,968

AM Period	NB	SB	EB		WB		TOTAL	
00:00			1		3		4	
00:15			5		1		6	
00:30			2		2		4	
00:45			0	8	2	8	2	16
01:00			4		2		6	
01:15			2		0		2	
01:30			3		1		4	
01:45			1	10	0	3	1	13
02:00			1		0		1	
02:15			4		1		5	
02:30			2		4		6	
02:45			1	8	3	8	4	16
03:00			3		0		3	
03:15			1		3		4	
03:30			3		4		7	
03:45			1	8	6	13	7	21
04:00			0		3		3	
04:15			2		4		6	
04:30			3		12		15	
04:45			5	10	7	26	12	36
05:00			2		8		10	
05:15			2		18		20	
05:30			6		28		34	
05:45			22	32	27	81	49	113
06:00			25		25		50	
06:15			24		28		52	
06:30			20		60		80	
06:45			30	99	52	165	82	264
07:00			29		71		100	
07:15			35		68		103	
07:30			36		79		115	
07:45			41	141	86	304	127	445
08:00			43		71		114	
08:15			24		50		74	
08:30			19		33		52	
08:45			20	106	32	186	52	292
09:00			13		35		48	
09:15			15		26		41	
09:30			14		26		40	
09:45			12	54	20	107	32	161
10:00			15		18		33	
10:15			18		24		42	
10:30			14		28		42	
10:45			11	58	14	84	25	142
11:00			21		18		39	
11:15			22		16		38	
11:30			10		29		39	
11:45			15	68	19	82	34	150
TOTALS				602		1067		**1669**
SPLIT %				36.1%		63.9%		**42.1%**

PM Period	NB	SB	EB		WB		TOTAL	
12:00			26		11		37	
12:15			13		23		36	
12:30			23		30		53	
12:45			15	77	23	87	38	164
13:00			16		32		48	
13:15			26		29		55	
13:30			18		30		48	
13:45			33	93	24	115	57	208
14:00			23		22		45	
14:15			39		29		68	
14:30			32		35		67	
14:45			50	144	37	123	87	267
15:00			39		48		87	
15:15			62		41		103	
15:30			29		46		75	
15:45			31	161	32	167	63	328
16:00			39		33		72	
16:15			43		30		73	
16:30			52		27		79	
16:45			48	182	18	108	66	290
17:00			34		23		57	
17:15			63		25		88	
17:30			55		28		83	
17:45			59	211	20	96	79	307
18:00			45		30		75	
18:15			35		31		66	
18:30			32		31		63	
18:45			31	143	18	110	49	253
19:00			27		20		47	
19:15			33		15		48	
19:30			22		23		45	
19:45			24	106	12	70	36	176
20:00			30		12		42	
20:15			16		16		32	
20:30			16		14		30	
20:45			18	80	7	49	25	129
21:00			13		7		20	
21:15			14		7		21	
21:30			10		6		16	
21:45			13	50	9	29	22	79
22:00			9		11		20	
22:15			8		3		11	
22:30			8		6		14	
22:45			7	32	4	24	11	56
23:00			9		5		14	
23:15			7		4		11	
23:30			5		5		10	
23:45			5	26	2	16	7	42
TOTALS				1305		994		**2299**
SPLIT %				56.8%		43.2%		**57.9%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,907	2,061	3,968

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			07:15	07:00	**07:15**	**PM Peak Hour**			17:15	14:45	**14:45**
AM Pk Volume			155	304	**459**	**PM Pk Volume**			222	172	**352**
Pk Hr Factor			0.901	0.884	**0.904**	**Pk Hr Factor**			0.881	0.896	**0.854**
7 - 9 Volume	0	0	247	490	**737**	**4 - 6 Volume**	0	0	393	204	**597**
7 - 9 Peak Hour			07:15	07:00	**07:15**	**4 - 6 Peak Hour**			17:00	16:00	**17:00**
7 - 9 Pk Volume	0	0	155	304	**459**	**4 - 6 Pk Volume**	0	0	211	108	**307**
Pk Hr Factor	0.000	0.000	0.901	0.884	**0.904**	**Pk Hr Factor**	0.000	0.000	0.837	0.818	**0.872**

Prepared by NDS/ATD

VOLUME

E Olive Ave Bet. N Temperance Ave & N Locan Ave

Day: Thursday **City:** Fresno
Date: 9/13/2018 **Project #:** CA18_7292_013

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,431	1,872	3,303

AM Period	NB	SB	EB		WB		TOTAL	
00:00			0		0		0	
00:15			4		1		5	
00:30			0		1		1	
00:45			1	5	0	2	1	7
01:00			1		1		2	
01:15			0		0		0	
01:30			1		0		1	
01:45			1	3	0	1	1	4
02:00			1		0		1	
02:15			2		0		2	
02:30			2		1		3	
02:45			0	5	2	3	2	8
03:00			2		1		3	
03:15			1		3		4	
03:30			2		2		4	
03:45			2	7	2	8	4	15
04:00			0		5		5	
04:15			0		4		4	
04:30			1		4		5	
04:45			3	4	11	24	14	28
05:00			1		6		7	
05:15			3		9		12	
05:30			12		16		28	
05:45			21	37	10	41	31	78
06:00			26		15		41	
06:15			26		25		51	
06:30			15		63		78	
06:45			22	89	55	158	77	247
07:00			20		74		94	
07:15			26		94		120	
07:30			34		79		113	
07:45			33	113	73	320	106	433
08:00			20		77		97	
08:15			21		46		67	
08:30			12		20		32	
08:45			10	63	23	166	33	229
09:00			10		29		39	
09:15			11		28		39	
09:30			11		28		39	
09:45			8	40	12	97	20	137
10:00			12		23		35	
10:15			12		19		31	
10:30			12		15		27	
10:45			6	42	13	70	19	112
11:00			9		9		18	
11:15			22		20		42	
11:30			12		21		33	
11:45			14	57	21	71	35	128
TOTALS				465		961		**1426**
SPLIT %				32.6%		67.4%		**43.2%**

PM Period	NB	SB	EB		WB		TOTAL	
12:00			11		21		32	
12:15			16		18		34	
12:30			21		19		40	
12:45			10	58	13	71	23	129
13:00			8		20		28	
13:15			15		13		28	
13:30			17		28		45	
13:45			22	62	16	77	38	139
14:00			16		11		27	
14:15			30		18		48	
14:30			31		37		68	
14:45			45	122	45	111	90	233
15:00			21		63		84	
15:15			39		45		84	
15:30			30		55		85	
15:45			35	125	42	205	77	330
16:00			24		25		49	
16:15			31		46		77	
16:30			30		22		52	
16:45			33	118	23	116	56	234
17:00			35		26		61	
17:15			38		27		65	
17:30			36		23		59	
17:45			41	150	27	103	68	253
18:00			42		22		64	
18:15			22		18		40	
18:30			25		25		50	
18:45			25	114	13	78	38	192
19:00			28		14		42	
19:15			23		14		37	
19:30			14		14		28	
19:45			22	87	13	55	35	142
20:00			16		22		38	
20:15			9		16		25	
20:30			9		9		18	
20:45			12	46	2	49	14	95
21:00			7		3		10	
21:15			10		5		15	
21:30			13		4		17	
21:45			9	39	6	18	15	57
22:00			8		8		16	
22:15			11		4		15	
22:30			3		4		7	
22:45			11	33	1	17	12	50
23:00			3		3		6	
23:15			5		6		11	
23:30			1		0		1	
23:45			3	12	2	11	5	23
TOTALS				966		911		**1877**
SPLIT %				51.5%		48.5%		**56.8%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,431	1,872	3,303

	NB	SB	EB	WB	Total
AM Peak Hour			07:00	07:15	**07:15**
AM Pk Volume			113	323	**436**
Pk Hr Factor			0.831	0.859	**0.908**
7 - 9 Volume	0	0	176	486	**662**
7 - 9 Peak Hour			07:00	07:15	**07:15**
7 - 9 Pk Volume	0	0	113	323	**436**
Pk Hr Factor	0.000	0.000	0.831	0.859	**0.908**

	NB	SB	EB	WB	Total
PM Peak Hour			17:15	14:45	**14:45**
PM Pk Volume			157	208	**343**
Pk Hr Factor			0.935	0.825	**0.953**
4 - 6 Volume	0	0	268	219	**487**
4 - 6 Peak Hour			17:00	16:15	**17:00**
4 - 6 Pk Volume	0	0	150	117	**253**
Pk Hr Factor	0.000	0.000	0.915	0.636	**0.930**

Prepared by NDS/ATD

VOLUME

E Belmont Ave Bet. N Fowler Ave & N Armstrong Ave

Day: Thursday **City:** Fresno
Date: 9/13/2018 **Project #:** CA18_7292_014

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,621	3,141	6,762

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			3		1		4		12:00			40		33		73	
00:15			2		3		5		12:15			39		45		84	
00:30			4		1		5		12:30			40		35		75	
00:45			2	11	2	7	4	18	12:45			34	153	41	154	75	307
01:00			2		0		2		13:00			28		30		58	
01:15			2		3		5		13:15			32		49		81	
01:30			1		0		1		13:30			39		34		73	
01:45			4	9	3	6	7	15	13:45			32	131	54	167	86	298
02:00			2		1		3		14:00			44		34		78	
02:15			3		2		5		14:15			48		35		83	
02:30			1		4		5		14:30			71		40		111	
02:45			1	7	1	8	2	15	14:45			70	233	48	157	118	390
03:00			1		1		2		15:00			106		63		169	
03:15			2		1		3		15:15			85		103		188	
03:30			5		4		9		15:30			90		72		162	
03:45			2	10	6	12	8	22	15:45			74	355	78	316	152	671
04:00			3		2		5		16:00			98		45		143	
04:15			1		9		10		16:15			99		46		145	
04:30			1		5		6		16:30			95		64		159	
04:45			5	10	6	22	11	32	16:45			99	391	46	201	145	592
05:00			4		4		8		17:00			118		57		175	
05:15			11		6		17		17:15			128		60		188	
05:30			15		7		22		17:30			139		52		191	
05:45			25	55	21	38	46	93	17:45			106	491	52	221	158	712
06:00			24		17		41		18:00			62		43		105	
06:15			41		25		66		18:15			68		51		119	
06:30			59		33		92		18:30			45		45		90	
06:45			72	196	53	128	125	324	18:45			40	215	33	172	73	387
07:00			68		61		129		19:00			29		34		63	
07:15			60		85		145		19:15			32		47		79	
07:30			121		115		236		19:30			32		56		88	
07:45			133	382	106	367	239	749	19:45			34	127	37	174	71	301
08:00			93		101		194		20:00			25		55		80	
08:15			38		90		128		20:15			35		47		82	
08:30			40		41		81		20:30			18		28		46	
08:45			28	199	30	262	58	461	20:45			26	104	28	158	54	262
09:00			34		25		59		21:00			20		24		44	
09:15			46		24		70		21:15			11		19		30	
09:30			31		32		63		21:30			16		19		35	
09:45			24	135	35	116	59	251	21:45			11	58	19	81	30	139
10:00			26		26		52		22:00			8		13		21	
10:15			35		33		68		22:15			10		17		27	
10:30			28		40		68		22:30			10		22		32	
10:45			29	118	36	135	65	253	22:45			11	39	13	65	24	104
11:00			35		33		68		23:00			7		4		11	
11:15			45		39		84		23:15			8		4		12	
11:30			40		40		80		23:30			9		12		21	
11:45			47	167	34	146	81	313	23:45			1	25	8	28	9	53
TOTALS				1299		1247		**2546**	**TOTALS**				2322		1894		**4216**
SPLIT %				51.0%		49.0%		**37.7%**	**SPLIT %**				55.1%		44.9%		**62.3%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	3,621	3,141	6,762

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			07:15	07:30	**07:15**	**PM Peak Hour**			17:00	15:00	**17:00**
AM Pk Volume			407	412	**814**	**PM Pk Volume**			491	316	**712**
Pk Hr Factor			0.765	0.896	**0.851**	**Pk Hr Factor**			0.883	0.767	**0.932**
7 - 9 Volume	0	0	581	629	**1210**	**4 - 6 Volume**	0	0	882	422	**1304**
7 - 9 Peak Hour			07:15	07:30	**07:15**	**4 - 6 Peak Hour**			17:00	16:30	**17:00**
7 - 9 Pk Volume	0	0	407	412	**814**	**4 - 6 Pk Volume**	0	0	491	227	**712**
Pk Hr Factor	0.000	0.000	0.765	0.896	**0.851**	**Pk Hr Factor**	0.000	0.000	0.883	0.887	**0.932**

Prepared by NDS/ATD

VOLUME

E Belmont Ave Bet. N Armstrong Ave & N Temperance Ave

Day: Thursday
Date: 9/13/2018

City: Fresno
Project #: CA18_7292_015

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,221	1,989	4,210

AM Period	NB		SB		EB		WB		TOTAL	
00:00					0		0		0	
00:15					2		3		5	
00:30					3		1		4	
00:45					1	6	0	4	1	10
01:00					0		0		0	
01:15					2		2		4	
01:30					1		0		1	
01:45					3	6	3	5	6	11
02:00					1		0		1	
02:15					1		1		2	
02:30					1		2		3	
02:45					0	3	1	4	1	7
03:00					0		0		0	
03:15					2		0		2	
03:30					4		1		5	
03:45					2	8	3	4	5	12
04:00					1		1		2	
04:15					0		5		5	
04:30					2		2		4	
04:45					5	8	7	15	12	23
05:00					3		0		3	
05:15					8		1		9	
05:30					9		4		13	
05:45					20	40	19	24	39	64
06:00					22		12		34	
06:15					34		16		50	
06:30					49		18		67	
06:45					38	143	26	72	64	215
07:00					53		33		86	
07:15					36		26		62	
07:30					58		49		107	
07:45					49	196	54	162	103	358
08:00					40		50		90	
08:15					30		42		72	
08:30					31		27		58	
08:45					22	123	16	135	38	258
09:00					29		24		53	
09:15					32		15		47	
09:30					30		24		54	
09:45					20	111	26	89	46	200
10:00					21		21		42	
10:15					25		27		52	
10:30					21		28		49	
10:45					26	93	23	99	49	192
11:00					23		27		50	
11:15					22		33		55	
11:30					33		22		55	
11:45					30	108	25	107	55	215
TOTALS						845		720		**1565**
SPLIT %						54.0%		46.0%		**37.2%**

PM Period	NB		SB		EB		WB		TOTAL	
12:00					33		31		64	
12:15					29		24		53	
12:30					23		33		56	
12:45					23	108	21	109	44	217
13:00					22		29		51	
13:15					24		38		62	
13:30					25		28		53	
13:45					32	103	33	128	65	231
14:00					37		17		54	
14:15					34		23		57	
14:30					44		33		77	
14:45					38	153	31	104	69	257
15:00					47		49		96	
15:15					53		38		91	
15:30					58		40		98	
15:45					40	198	51	178	91	376
16:00					51		30		81	
16:15					47		40		87	
16:30					61		31		92	
16:45					37	196	31	132	68	328
17:00					51		33		84	
17:15					65		31		96	
17:30					67		27		94	
17:45					49	232	27	118	76	350
18:00					33		29		62	
18:15					44		35		79	
18:30					26		25		51	
18:45					33	136	28	117	61	253
19:00					21		21		42	
19:15					25		33		58	
19:30					21		39		60	
19:45					23	90	26	119	49	209
20:00					24		48		72	
20:15					27		38		65	
20:30					13		21		34	
20:45					13	77	24	131	37	208
21:00					16		16		32	
21:15					7		14		21	
21:30					12		16		28	
21:45					4	39	14	60	18	99
22:00					6		13		19	
22:15					9		9		18	
22:30					5		16		21	
22:45					9	29	12	50	21	79
23:00					2		3		5	
23:15					4		2		6	
23:30					8		12		20	
23:45					1	15	6	23	7	38
TOTALS						1376		1269		**2645**
SPLIT %						52.0%		48.0%		**62.8%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,221	1,989	4,210

	NB	SB	EB	WB	Total
AM Peak Hour			07:00	07:30	**07:30**
AM Pk Volume			196	195	**372**
Pk Hr Factor			0.845	0.903	**0.869**
7 - 9 Volume	0	0	319	297	**616**
7 - 9 Peak Hour			07:00	07:30	**07:30**
7 - 9 Pk Volume	0	0	196	195	**372**
Pk Hr Factor	0.000	0.000	0.845	0.903	**0.869**

	NB	SB	EB	WB	Total
PM Peak Hour			17:00	15:00	**15:00**
PM Pk Volume			232	178	**376**
Pk Hr Factor			0.866	0.873	**0.959**
4 - 6 Volume	0	0	428	250	**678**
4 - 6 Peak Hour			17:00	16:15	**17:00**
4 - 6 Pk Volume	0	0	232	135	**350**
Pk Hr Factor	0.000	0.000	0.866	0.844	**0.911**

Prepared by NDS/ATD

VOLUME

N Armstrong Ave Bet. E Shields Ave & E Clinton Ave

Day: Thursday
Date: 9/13/2018

City: Fresno
Project #: CA18_7292_001

DAILY TOTALS	NB	SB	EB	WB	Total
	2,757	3,188	0	0	5,945

AM Period	NB		SB		EB	WB	TOTAL	
00:00	3		1				4	
00:15	2		1				3	
00:30	4		0				4	
00:45	3	12	2	4			5	16
01:00	3		1				4	
01:15	1		1				2	
01:30	3		0				3	
01:45	1	8	1	3			2	11
02:00	1		1				2	
02:15	7		0				7	
02:30	2		6				8	
02:45	2	12	3	10			5	22
03:00	2		3				5	
03:15	2		1				3	
03:30	0		8				8	
03:45	1	5	4	16			5	21
04:00	3		7				10	
04:15	1		7				8	
04:30	1		18				19	
04:45	2	7	10	42			12	49
05:00	4		21				25	
05:15	4		14				18	
05:30	3		37				40	
05:45	16	27	45	117			61	144
06:00	9		46				55	
06:15	15		51				66	
06:30	15		98				113	
06:45	24	63	100	295			124	358
07:00	32		123				155	
07:15	32		164				196	
07:30	53		140				193	
07:45	64	181	137	564			201	745
08:00	63		114				177	
08:15	33		84				117	
08:30	25		51				76	
08:45	23	144	39	288			62	432
09:00	20		31				51	
09:15	22		34				56	
09:30	22		33				55	
09:45	22	86	30	128			52	214
10:00	21		34				55	
10:15	25		32				57	
10:30	17		37				54	
10:45	25	88	30	133			55	221
11:00	14		36				50	
11:15	29		31				60	
11:30	32		36				68	
11:45	50	125	25	128			75	253
TOTALS		758		1728				**2486**
SPLIT %		30.5%		69.5%				**41.8%**

PM Period	NB		SB		EB	WB	TOTAL	
12:00	37		26				63	
12:15	24		36				60	
12:30	32		37				69	
12:45	29	122	40	139			69	261
13:00	27		30				57	
13:15	31		36				67	
13:30	24		39				63	
13:45	37	119	29	134			66	253
14:00	35		42				77	
14:15	40		40				80	
14:30	45		40				85	
14:45	75	195	58	180			133	375
15:00	52		68				120	
15:15	60		77				137	
15:30	67		37				104	
15:45	65	244	45	227			110	471
16:00	64		44				108	
16:15	92		49				141	
16:30	93		49				142	
16:45	89	338	38	180			127	518
17:00	118		49				167	
17:15	102		51				153	
17:30	96		49				145	
17:45	88	404	35	184			123	588
18:00	58		27				85	
18:15	57		52				109	
18:30	38		42				80	
18:45	39	192	27	148			66	340
19:00	35		25				60	
19:15	35		36				71	
19:30	38		22				60	
19:45	44	152	17	100			61	252
20:00	31		16				47	
20:15	21		29				50	
20:30	20		17				37	
20:45	24	96	16	78			40	174
21:00	15		10				25	
21:15	16		8				24	
21:30	17		8				25	
21:45	18	66	21	47			39	113
22:00	15		6				21	
22:15	14		7				21	
22:30	8		8				16	
22:45	7	44	8	29			15	73
23:00	12		5				17	
23:15	7		4				11	
23:30	5		5				10	
23:45	3	27	0	14			3	41
TOTALS		1999		1460				**3459**
SPLIT %		57.8%		42.2%				**58.2%**

DAILY TOTALS	NB	SB	EB	WB	Total
	2,757	3,188	0	0	5,945

	NB	SB	EB	WB	TOTAL
AM Peak Hour	07:30	07:00			**07:15**
AM Pk Volume	213	564			**767**
Pk Hr Factor	0.832	0.860			**0.954**
7 - 9 Volume	325	852	0	0	**1177**
7 - 9 Peak Hour	07:30	07:00			**07:15**
7 - 9 Pk Volume	213	564	0	0	**767**
Pk Hr Factor	0.832	0.860	0.000	0.000	**0.954**

	NB	SB	EB	WB	TOTAL
PM Peak Hour	16:45	14:30			**16:45**
PM Pk Volume	405	243			**592**
Pk Hr Factor	0.858	0.789			**0.886**
4 - 6 Volume	742	364	0	0	**1106**
4 - 6 Peak Hour	16:45	16:30			**16:45**
4 - 6 Pk Volume	405	187	0	0	**592**
Pk Hr Factor	0.858	0.917	0.000	0.000	**0.886**

Prepared by NDS/ATD

VOLUME

N Armstrong Ave Bet. E Clinton Ave & E Floradora Ave

Day: Thursday
Date: 9/13/2018

City: Fresno
Project #: CA18_7292_002

DAILY TOTALS	NB	SB	EB	WB	Total
	2,408	3,041	0	0	5,449

AM Period	NB		SB		EB	WB	TOTAL	
00:00	2		1				3	
00:15	2		0				2	
00:30	3		2				5	
00:45	2	9	1	4			3	13
01:00	2		1				3	
01:15	1		1				2	
01:30	3		0				3	
01:45	1	7	1	3			2	10
02:00	2		2				4	
02:15	6		0				6	
02:30	2		6				8	
02:45	2	12	1	9			3	21
03:00	1		3				4	
03:15	2		1				3	
03:30	0		6				6	
03:45	0	3	5	15			5	18
04:00	2		7				9	
04:15	0		7				7	
04:30	0		14				14	
04:45	2	4	4	32			6	36
05:00	4		21				25	
05:15	5		12				17	
05:30	8		32				40	
05:45	18	35	43	108			61	143
06:00	11		45				56	
06:15	14		45				59	
06:30	12		92				104	
06:45	33	70	87	269			120	339
07:00	27		136				163	
07:15	35		162				197	
07:30	54		155				209	
07:45	66	182	140	593			206	775
08:00	50		116				166	
08:15	24		98				122	
08:30	14		54				68	
08:45	14	102	38	306			52	408
09:00	18		19				37	
09:15	21		33				54	
09:30	18		24				42	
09:45	15	72	26	102			41	174
10:00	19		25				44	
10:15	19		25				44	
10:30	17		34				51	
10:45	16	71	33	117			49	188
11:00	10		29				39	
11:15	28		30				58	
11:30	28		27				55	
11:45	37	103	27	113			64	216
TOTALS		670		1671				**2341**
SPLIT %		28.6%		71.4%				**43.0%**

PM Period	NB		SB		EB	WB	TOTAL	
12:00	32		27				59	
12:15	21		36				57	
12:30	31		29				60	
12:45	25	109	33	125			58	234
13:00	22		27				49	
13:15	22		36				58	
13:30	22		38				60	
13:45	33	99	31	132			64	231
14:00	32		35				67	
14:15	28		40				68	
14:30	45		38				83	
14:45	55	160	53	166			108	326
15:00	41		58				99	
15:15	55		76				131	
15:30	65		43				108	
15:45	56	217	36	213			92	430
16:00	52		40				92	
16:15	77		48				125	
16:30	88		47				135	
16:45	81	298	37	172			118	470
17:00	97		53				150	
17:15	93		57				150	
17:30	88		51				139	
17:45	70	348	34	195			104	543
18:00	48		26				74	
18:15	49		40				89	
18:30	37		39				76	
18:45	31	165	28	133			59	298
19:00	27		17				44	
19:15	36		28				64	
19:30	35		20				55	
19:45	39	137	18	83			57	220
20:00	22		15				37	
20:15	24		21				45	
20:30	21		20				41	
20:45	21	88	16	72			37	160
21:00	15		9				24	
21:15	16		7				23	
21:30	14		7				21	
21:45	17	62	13	36			30	98
22:00	13		7				20	
22:15	8		7				15	
22:30	9		8				17	
22:45	4	34	4	26			8	60
23:00	10		5				15	
23:15	6		6				12	
23:30	2		4				6	
23:45	3	21	2	17			5	38
TOTALS		1738		1370				**3108**
SPLIT %		55.9%		44.1%				**57.0%**

DAILY TOTALS	NB	SB	EB	WB	Total
	2,408	3,041	0	0	5,449

	NB	SB	EB	WB	Total
AM Peak Hour	07:15	07:00			**07:15**
AM Pk Volume	205	593			**778**
Pk Hr Factor	0.777	0.915			**0.931**
7 - 9 Volume	284	899	0	0	**1183**
7 - 9 Peak Hour	07:15	07:00			**07:15**
7 - 9 Pk Volume	205	593	0	0	**778**
Pk Hr Factor	0.777	0.915	0.000	0.000	**0.931**

	NB	SB	EB	WB	Total
PM Peak Hour	16:30	14:45			**16:45**
PM Pk Volume	359	230			**557**
Pk Hr Factor	0.925	0.757			**0.928**
4 - 6 Volume	646	367	0	0	**1013**
4 - 6 Peak Hour	16:30	16:45			**16:45**
4 - 6 Pk Volume	359	198	0	0	**557**
Pk Hr Factor	0.925	0.868	0.000	0.000	**0.928**

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

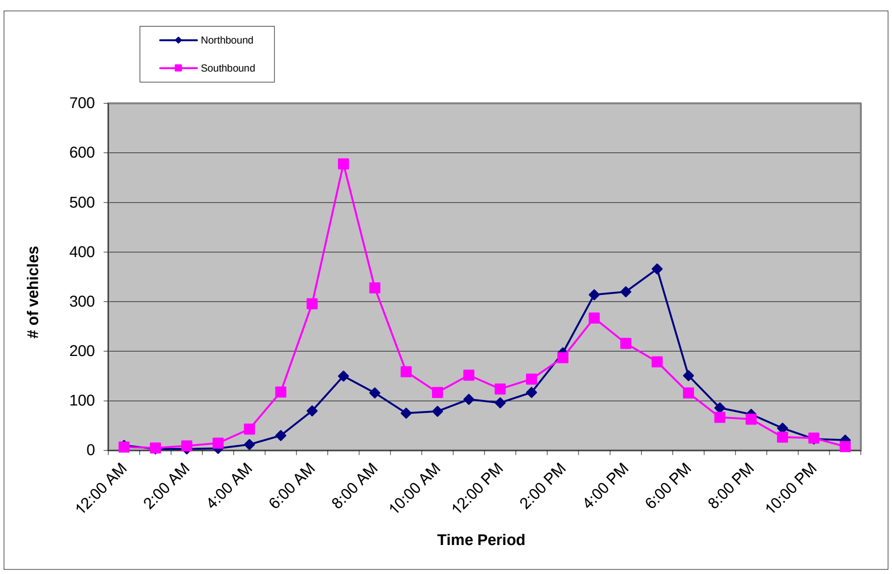
24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**
1300 E. Shaw Ave, Suite 103
Fresno, CA

STREET Armstrong Ave
LATITUDE 36.7589085
SEGMENT btw Floradora/Olive
LONGITUDE -119.6731477
COLLECTION DATE Tuesday, May 21, 2019
WEATHER Clear
NUMBER OF LANES 2

	Northbound					Southbound					Hourly
Hour	:00	:15	:30	:45	Total	:00	:15	:30	:45	Total	Totals
12:00 AM	2	0	6	2	10	3	0	2	2	7	17
1:00 AM	1	0	1	1	3	1	1	1	2	5	8
2:00 AM	1	1	1	0	3	4	2	3	0	9	12
3:00 AM	0	2	2	0	4	1	5	7	2	15	19
4:00 AM	1	1	1	9	12	9	11	9	14	43	55
5:00 AM	2	2	11	15	30	18	27	38	35	118	148
6:00 AM	5	12	19	44	80	42	53	95	106	296	376
7:00 AM	29	27	40	54	150	137	153	174	114	578	728
8:00 AM	52	28	19	17	116	134	89	57	48	328	444
9:00 AM	24	15	16	20	75	45	50	33	31	159	234
10:00 AM	20	21	20	18	79	32	22	22	41	117	196
11:00 AM	23	33	29	18	103	35	37	41	39	152	255
12:00 PM	28	27	26	15	96	34	27	39	24	124	220
1:00 PM	32	30	29	26	117	35	27	39	43	144	261
2:00 PM	44	41	51	61	197	39	49	49	50	187	384
3:00 PM	62	83	71	98	314	89	76	53	49	267	581
4:00 PM	78	86	63	93	320	52	59	51	54	216	536
5:00 PM	103	105	89	69	366	43	40	56	40	179	545
6:00 PM	56	43	28	24	151	39	30	29	18	116	267
7:00 PM	25	18	25	18	86	17	26	11	13	67	153
8:00 PM	19	16	18	20	73	15	21	14	13	63	136
9:00 PM	12	21	6	6	45	9	6	6	6	27	72
10:00 PM	5	8	3	7	23	6	5	8	6	25	48
11:00 PM	5	5	7	4	21	3	1	2	2	8	29
Total	43.2%				2474	56.8%				3250	
	5724										

AM%	43.5%	AM Peak	748	7:15 am to 8:15 am	AM P.H.F.	0.87
PM%	56.5%	PM Peak	581	3:00 pm to 4:00 pm	PM P.H.F.	0.91



Prepared by NDS/ATD

VOLUME

N Armstrong Ave Bet. E Olive Ave & E Belmont Ave

Day: Thursday **City:** Fresno
Date: 9/13/2018 **Project #:** CA18_7292_004

DAILY TOTALS	NB	SB	EB	WB	Total
	1,833	1,519	0	0	3,352

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	1		0				1		12:00	14		18				32	
00:15	1		0				1		12:15	12		20				32	
00:30	1		1				2		12:30	15		12				27	
00:45	0	3	1	2			1	5	12:45	13	54	10	60			23	114
01:00	2		0				2		13:00	11		13				24	
01:15	0		0				0		13:15	10		15				25	
01:30	0		0				0		13:30	31		14				45	
01:45	1	3	0				1	3	13:45	12	64	32	74			44	138
02:00	0		2				2		14:00	12		15				27	
02:15	1		0				1		14:15	19		19				38	
02:30	1		2				3		14:30	28		17				45	
02:45	1	3	0	4			1	7	14:45	53	112	27	78			80	190
03:00	0		1				1		15:00	64		30				94	
03:15	0		0				0		15:15	51		76				127	
03:30	0		1				1		15:30	39		35				74	
03:45	0		2	4			2	4	15:45	43	197	33	174			76	371
04:00	2		1				3		16:00	51		23				74	
04:15	0		3				3		16:15	67		26				93	
04:30	0		2				2		16:30	52		43				95	
04:45	1	3	1	7			2	10	16:45	70	240	22	114			92	354
05:00	2		4				6		17:00	67		32				99	
05:15	1		5				6		17:15	78		25				103	
05:30	5		3				8		17:30	67		33				100	
05:45	11	19	7	19			18	38	17:45	73	285	38	128			111	413
06:00	7		11				18		18:00	37		16				53	
06:15	8		13				21		18:15	31		19				50	
06:30	14		21				35		18:30	22		16				38	
06:45	32	61	31	76			63	137	18:45	11	101	11	62			22	163
07:00	35		42				77		19:00	9		11				20	
07:15	42		70				112		19:15	13		22				35	
07:30	82		82				164		19:30	12		21				33	
07:45	114	273	85	279			199	552	19:45	15	49	13	67			28	116
08:00	95		80				175		20:00	13		14				27	
08:15	18		53				71		20:15	10		13				23	
08:30	11		18				29		20:30	6		9				15	
08:45	3	127	13	164			16	291	20:45	9	38	6	42			15	80
09:00	9		5				14		21:00	7		4				11	
09:15	9		10				19		21:15	5		4				9	
09:30	4		4				8		21:30	4		3				7	
09:45	10	32	11	30			21	62	21:45	7	23	8	19			15	42
10:00	11		9				20		22:00	5		4				9	
10:15	11		10				21		22:15	1		1				2	
10:30	14		13				27		22:30	2		6				8	
10:45	6	42	9	41			15	83	22:45	0	8	2	13			2	21
11:00	22		16				38		23:00	4		0				4	
11:15	24		8				32		23:15	4		2				6	
11:30	18		25				43		23:30	1		1				2	
11:45	22	86	10	59			32	145	23:45	1	10	0	3			1	13
TOTALS		652		685				**1337**	**TOTALS**		1181		834				**2015**
SPLIT %		48.8%		51.2%				**39.9%**	**SPLIT %**		58.6%		41.4%				**60.1%**

DAILY TOTALS	NB	SB	EB	WB	Total
	1,833	1,519	0	0	3,352

	NB	SB	EB	WB	TOTAL		NB	SB	EB	WB	TOTAL
AM Peak Hour	07:15	07:15			**07:15**	**PM Peak Hour**	17:00	15:00			**17:00**
AM Pk Volume	333	317			**650**	**PM Pk Volume**	285	174			**413**
Pk Hr Factor	0.730	0.932			**0.817**	**Pk Hr Factor**	0.913	0.572			**0.930**
7 - 9 Volume	400	443	0	0	**843**	**4 - 6 Volume**	525	242	0	0	**767**
7 - 9 Peak Hour	07:15	07:15			**07:15**	**4 - 6 Peak Hour**	17:00	17:00			**17:00**
7 - 9 Pk Volume	333	317	0	0	**650**	**4 - 6 Pk Volume**	285	128	0	0	**413**
Pk Hr Factor	0.730	0.932	0.000	0.000	**0.817**	**Pk Hr Factor**	0.913	0.842	0.000	0.000	**0.930**

Prepared by NDS/ATD

VOLUME

N Armstrong Ave Bet. E Belmont Ave & N Laverne Ave

Day: Thursday
Date: 9/13/2018

City: Fresno
Project #: CA18_7292_005

DAILY TOTALS	NB	SB	EB	WB	Total
	124	146	0	0	270

AM Period	NB		SB		EB	WB	TOTAL	
00:00	0		0				0	
00:15	0		0				0	
00:30	0		1				1	
00:45	2	2	1	2			3	4
01:00	0		0				0	
01:15	0		0				0	
01:30	0		0				0	
01:45	0		0				0	
02:00	1		1				2	
02:15	0		0				0	
02:30	0		0				0	
02:45	0	1	0	1			0	2
03:00	0		1				1	
03:15	1		0				1	
03:30	0		0				0	
03:45	0	1	0	1			0	2
04:00	0		0				0	
04:15	0		0				0	
04:30	1		1				2	
04:45	0	1	0	1			0	2
05:00	0		0				0	
05:15	0		0				0	
05:30	1		4				5	
05:45	1	2	2	6			3	8
06:00	0		5				5	
06:15	0		1				1	
06:30	2		4				6	
06:45	3	5	4	14			7	19
07:00	1		2				3	
07:15	5		7				12	
07:30	0		4				4	
07:45	1	7	2	15			3	22
08:00	3		5				8	
08:15	0		3				3	
08:30	0		3				3	
08:45	3	6	4	15			7	21
09:00	1		1				2	
09:15	0		0				0	
09:30	2		0				2	
09:45	2	5	2	3			4	8
10:00	3		2				5	
10:15	0		3				3	
10:30	1		1				2	
10:45	2	6	2	8			4	14
11:00	4		4				8	
11:15	0		3				3	
11:30	4		2				6	
11:45	5	13	4	13			9	26
TOTALS		49		79				128
SPLIT %		38.3%		61.7%				47.4%

PM Period	NB		SB		EB	WB	TOTAL	
12:00	3		2				5	
12:15	2		4				6	
12:30	2		1				3	
12:45	0	7	3	10			3	17
13:00	1		3				4	
13:15	2		3				5	
13:30	3		0				3	
13:45	0	6	1	7			1	13
14:00	3		1				4	
14:15	1		4				5	
14:30	4		1				5	
14:45	0	8	0	6			0	14
15:00	0		1				1	
15:15	1		2				3	
15:30	4		7				11	
15:45	1	6	1	11			2	17
16:00	3		4				7	
16:15	1		2				3	
16:30	9		1				10	
16:45	4	17	1	8			5	25
17:00	2		2				4	
17:15	6		0				6	
17:30	2		1				3	
17:45	3	13	2	5			5	18
18:00	3		2				5	
18:15	0		0				0	
18:30	1		1				2	
18:45	0	4	0	3			0	7
19:00	0		1				1	
19:15	3		3				6	
19:30	1		1				2	
19:45	0	4	0	5			0	9
20:00	2		2				4	
20:15	1		3				4	
20:30	1		0				1	
20:45	0	4	1	6			1	10
21:00	0		0				0	
21:15	0		1				1	
21:30	2		1				3	
21:45	1	3	0	2			1	5
22:00	0		0				0	
22:15	0		0				0	
22:30	0		2				2	
22:45	2	2	2	4			4	6
23:00	1		0				1	
23:15	0		0				0	
23:30	0		0				0	
23:45	0	1	0				0	1
TOTALS		75		67				142
SPLIT %		52.8%		47.2%				52.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	124	146	0	0	270

	NB	SB	EB	WB	TOTAL
AM Peak Hour	11:30	07:15			06:30
AM Pk Volume	14	18			28
Pk Hr Factor	0.700	0.643			0.583
7 - 9 Volume	13	30	0	0	43
7 - 9 Peak Hour	07:15	07:15			07:15
7 - 9 Pk Volume	9	18	0	0	27
Pk Hr Factor	0.450	0.643	0.000	0.000	0.563

	NB	SB	EB	WB	TOTAL
PM Peak Hour	16:30	15:15			16:00
PM Pk Volume	21	14			25
Pk Hr Factor	0.583	0.500			0.625
4 - 6 Volume	30	13	0	0	43
4 - 6 Peak Hour	16:30	16:00			16:00
4 - 6 Pk Volume	21	8	0	0	25
Pk Hr Factor	0.583	0.500	0.000	0.000	0.625

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

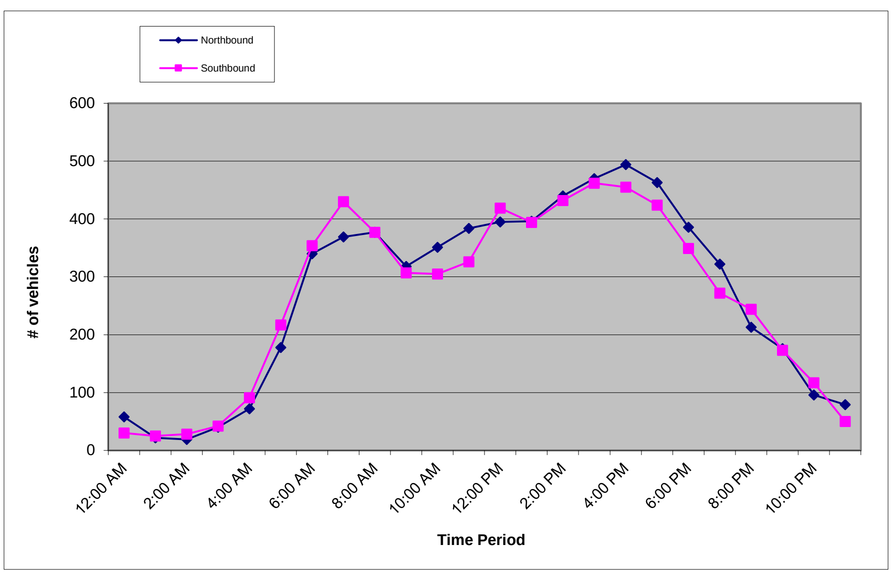
24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**
1300 E. Shaw Ave, Suite 103
Fresno, CA

STREET Fowler Ave
SEGMENT btw Clinton/Floradora
COLLECTION DATE Tuesday, May 21, 2019
NUMBER OF LANES 2
LATITUDE 36.7650922
LONGITUDE -119.6821673
WEATHER Clear

	Northbound					Southbound					Hourly
Hour	:00	:15	:30	:45	Total	:00	:15	:30	:45	Total	Totals
12:00 AM	18	13	15	12	**58**	9	12	5	4	**30**	88
1:00 AM	7	9	3	3	**22**	9	3	6	7	**25**	47
2:00 AM	7	6	4	2	**19**	3	9	11	5	**28**	47
3:00 AM	6	6	11	17	**40**	7	9	10	16	**42**	82
4:00 AM	5	11	21	35	**72**	20	16	21	34	**91**	163
5:00 AM	18	30	55	75	**178**	37	60	63	57	**217**	395
6:00 AM	48	88	105	99	**340**	61	78	105	110	**354**	694
7:00 AM	90	78	102	99	**369**	98	114	121	97	**430**	799
8:00 AM	95	91	99	92	**377**	113	84	95	85	**377**	754
9:00 AM	83	67	74	94	**318**	87	81	71	68	**307**	625
10:00 AM	95	92	75	89	**351**	60	80	83	82	**305**	656
11:00 AM	87	96	100	101	**384**	78	72	94	82	**326**	710
12:00 PM	92	103	113	87	**395**	91	98	119	111	**419**	814
1:00 PM	102	93	113	88	**396**	78	84	119	113	**394**	790
2:00 PM	102	99	125	114	**440**	86	103	125	118	**432**	872
3:00 PM	118	106	112	134	**470**	148	94	122	98	**462**	932
4:00 PM	128	120	120	126	**494**	115	114	134	92	**455**	949
5:00 PM	109	128	112	114	**463**	118	113	109	84	**424**	887
6:00 PM	114	96	88	88	**386**	94	91	101	63	**349**	735
7:00 PM	81	79	71	91	**322**	75	69	67	61	**272**	594
8:00 PM	54	57	48	54	**213**	61	72	53	58	**244**	457
9:00 PM	52	41	48	35	**176**	56	38	42	37	**173**	349
10:00 PM	35	17	21	23	**96**	36	36	27	18	**117**	213
11:00 PM	21	18	21	19	**79**	14	7	16	13	**50**	129
Total	50.5%				6458	49.5%				6323	
	12781										

AM%	39.6%	AM Peak 819	7:15 am to 8:15 am	AM P.H.F.	0.92
PM%	60.4%	PM Peak 963	3:45 pm to 4:45 pm	PM P.H.F.	0.95



Metro Traffic Data Inc.

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
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24 Hour Volume Report

Prepared For: **JLB Traffic Engineering, Inc.**
1300 E. Shaw Ave, Suite 103
Fresno, CA

STREET Fowler Ave | **LATITUDE** 36.7597783

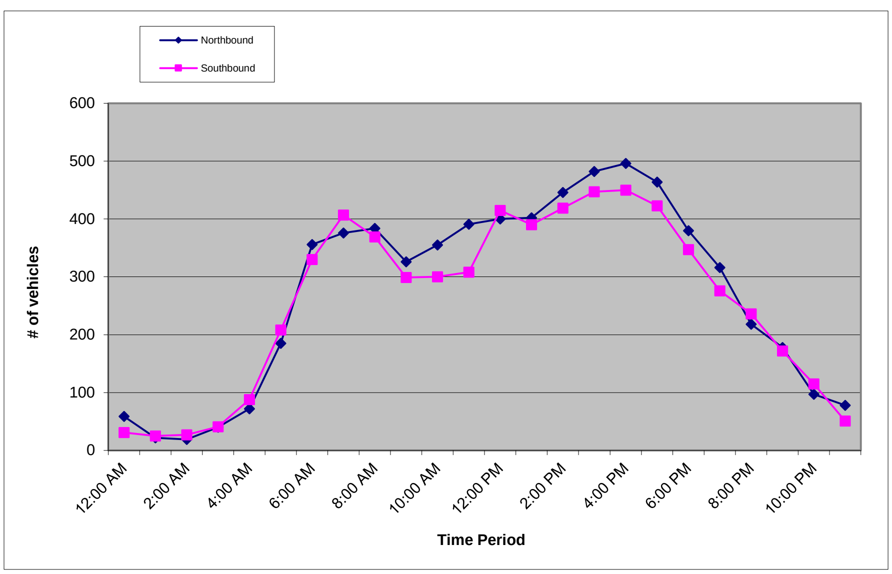
SEGMENT btw Floradora/Olive | **LONGITUDE** -119.6821462

COLLECTION DATE Tuesday, May 21, 2019 | **WEATHER** Clear

NUMBER OF LANES 2

	Northbound					Southbound					Hourly
Hour	:00	:15	:30	:45	**Total**	:00	:15	:30	:45	**Total**	**Totals**
12:00 AM	18	12	16	13	**59**	8	15	5	3	**31**	**90**
1:00 AM	7	9	3	3	**22**	9	3	5	8	**25**	**47**
2:00 AM	7	6	4	2	**19**	3	9	11	4	**27**	**46**
3:00 AM	6	6	11	17	**40**	7	8	8	18	**41**	**81**
4:00 AM	6	10	21	35	**72**	18	18	20	32	**88**	**160**
5:00 AM	19	30	56	80	**185**	38	54	63	53	**208**	**393**
6:00 AM	50	94	107	105	**356**	55	64	107	104	**330**	**686**
7:00 AM	96	80	103	97	**376**	94	100	127	86	**407**	**783**
8:00 AM	100	93	99	92	**384**	102	85	90	92	**369**	**753**
9:00 AM	82	72	74	98	**326**	82	85	74	58	**299**	**625**
10:00 AM	95	95	76	89	**355**	67	73	82	78	**300**	**655**
11:00 AM	88	96	106	101	**391**	74	68	93	73	**308**	**699**
12:00 PM	89	107	112	92	**400**	95	98	113	109	**415**	**815**
1:00 PM	104	97	112	89	**402**	68	89	113	120	**390**	**792**
2:00 PM	103	101	124	118	**446**	86	101	118	114	**419**	**865**
3:00 PM	122	117	109	134	**482**	131	102	115	99	**447**	**929**
4:00 PM	127	125	120	124	**496**	117	105	132	96	**450**	**946**
5:00 PM	109	125	114	116	**464**	112	125	106	80	**423**	**887**
6:00 PM	112	94	86	88	**380**	97	88	98	64	**347**	**727**
7:00 PM	81	75	70	90	**316**	77	65	70	64	**276**	**592**
8:00 PM	55	59	50	54	**218**	54	75	47	60	**236**	**454**
9:00 PM	53	42	48	35	**178**	58	37	38	39	**172**	**350**
10:00 PM	36	17	21	23	**97**	31	37	28	19	**115**	**212**
11:00 PM	21	18	21	18	**78**	14	6	16	15	**51**	**129**
Total	**51.4%**				**6542**	**48.6%**				**6174**	
	12716										

AM%	**39.5%**	**AM Peak**	**809**	**6:45 am to 7:45 am**	**AM P.H.F.**	**0.88**
PM%	**60.5%**	**PM Peak**	**959**	**3:45 pm to 4:45 pm**	**PM P.H.F.**	**0.95**



Prepared by NDS/ATD

VOLUME

N Temperance Ave Bet. E Floradora Ave & E Olive Ave

Day: Thursday
Date: 9/13/2018

City: Fresno
Project #: CA18_7292_008

DAILY TOTALS	NB	SB	EB	WB	Total
	5,647	5,153	0	0	10,800

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	9		6				15		12:00	67		61				128	
00:15	10		2				12		12:15	47		52				99	
00:30	7		4				11		12:30	47		80				127	
00:45	3	29	6	18			9	47	12:45	68	229	52	245			120	474
01:00	6		2				8		13:00	47		65				112	
01:15	3		2				5		13:15	57		77				134	
01:30	7		6				13		13:30	64		62				126	
01:45	4	20	4	14			8	34	13:45	62	230	63	267			125	497
02:00	3		1				4		14:00	84		49				133	
02:15	4		4				8		14:15	106		68				174	
02:30	2		7				9		14:30	113		80				193	
02:45	6	15	2	14			8	29	14:45	119	422	96	293			215	715
03:00	6		1				7		15:00	92		111				203	
03:15	4		4				8		15:15	100		122				222	
03:30	4		13				17		15:30	90		88				178	
03:45	4	18	13	31			17	49	15:45	136	418	90	411			226	829
04:00	2		15				17		16:00	128		77				205	
04:15	3		14				17		16:15	128		90				218	
04:30	7		28				35		16:30	145		90				235	
04:45	11	23	32	89			43	112	16:45	140	541	72	329			212	870
05:00	10		28				38		17:00	138		88				226	
05:15	9		48				57		17:15	156		73				229	
05:30	15		63				78		17:30	153		87				240	
05:45	32	66	60	199			92	265	17:45	152	599	69	317			221	916
06:00	41		72				113		18:00	129		77				206	
06:15	74		82				156		18:15	107		105				212	
06:30	91		125				216		18:30	93		78				171	
06:45	115	321	129	408			244	729	18:45	87	416	70	330			157	746
07:00	102		124				226		19:00	68		55				123	
07:15	131		122				253		19:15	74		58				132	
07:30	113		116				229		19:30	66		63				129	
07:45	121	467	104	466			225	933	19:45	79	287	40	216			119	503
08:00	105		107				212		20:00	84		54				138	
08:15	56		109				165		20:15	65		74				139	
08:30	49		82				131		20:30	56		35				91	
08:45	54	264	73	371			127	635	20:45	59	264	35	198			94	462
09:00	63		82				145		21:00	41		27				68	
09:15	48		59				107		21:15	44		31				75	
09:30	58		78				136		21:30	40		25				65	
09:45	54	223	48	267			102	490	21:45	29	154	26	109			55	263
10:00	65		47				112		22:00	28		19				47	
10:15	59		54				113		22:15	27		11				38	
10:30	45		61				106		22:30	30		11				41	
10:45	51	220	46	208			97	428	22:45	17	102	10	51			27	153
11:00	69		71				140		23:00	17		11				28	
11:15	65		57				122		23:15	16		5				21	
11:30	55		64				119		23:30	18		13				31	
11:45	64	253	73	265			137	518	23:45	15	66	8	37			23	103
TOTALS		1919		2350				**4269**	**TOTALS**		3728		2803				**6531**
SPLIT %		45.0%		55.0%				**39.5%**	**SPLIT %**		57.1%		42.9%				**60.5%**

DAILY TOTALS	NB	SB	EB	WB	Total
	5,647	5,153	0	0	10,800

	NB	SB	EB	WB	TOTAL		NB	SB	EB	WB	TOTAL
AM Peak Hour	07:15	06:30			**06:45**	**PM Peak Hour**	17:00	14:45			**17:00**
AM Pk Volume	470	500			**952**	**PM Pk Volume**	599	417			**916**
Pk Hr Factor	0.897	0.969			**0.941**	**Pk Hr Factor**	0.960	0.855			**0.954**
7 - 9 Volume	731	837	0	0	**1568**	**4 - 6 Volume**	1140	646	0	0	**1786**
7 - 9 Peak Hour	07:15	07:00			**07:00**	**4 - 6 Peak Hour**	17:00	16:15			**17:00**
7 - 9 Pk Volume	470	466	0	0	**933**	**4 - 6 Pk Volume**	599	340	0	0	**916**
Pk Hr Factor	0.897	0.940	0.000	0.000	**0.922**	**Pk Hr Factor**	0.960	0.944	0.000	0.000	**0.954**

Prepared by NDS/ATD

VOLUME

N Temperance Ave Bet. E Olive Ave & E Belmont Ave

Day: Thursday
Date: 9/13/2018

City: Fresno
Project #: CA18_7292_009

DAILY TOTALS	NB	SB	EB	WB	Total
	5,302	4,959	0	0	10,261

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	6		5				11		12:00	54		65				119	
00:15	6		2				8		12:15	53		46				99	
00:30	6		3				9		12:30	49		69				118	
00:45	4	22	4	14			8	36	12:45	67	223	49	229			116	452
01:00	3		2				5		13:00	43		57				100	
01:15	4		3				7		13:15	53		64				117	
01:30	2		5				7		13:30	64		55				119	
01:45	4	13	4	14			8	27	13:45	65	225	69	245			134	470
02:00	3		1				4		14:00	86		49				135	
02:15	3		5				8		14:15	105		57				162	
02:30	2		4				6		14:30	105		82				187	
02:45	5	13	1	11			6	24	14:45	109	405	97	285			206	690
03:00	3		0				3		15:00	89		110				199	
03:15	5		3				8		15:15	89		98				187	
03:30	2		10				12		15:30	51		63				114	
03:45	3	13	8	21			11	34	15:45	119	348	72	343			191	691
04:00	2		16				18		16:00	121		73				194	
04:15	2		14				16		16:15	129		103				232	
04:30	6		23				29		16:30	123		99				222	
04:45	11	21	37	90			48	111	16:45	130	503	81	356			211	859
05:00	9		25				34		17:00	142		77				219	
05:15	14		38				52		17:15	148		81				229	
05:30	23		47				70		17:30	148		83				231	
05:45	31	77	53	163			84	240	17:45	123	561	72	313			195	874
06:00	48		64				112		18:00	133		74				207	
06:15	80		81				161		18:15	104		99				203	
06:30	87		120				207		18:30	87		67				154	
06:45	104	319	132	397			236	716	18:45	80	404	68	308			148	712
07:00	100		125				225		19:00	80		51				131	
07:15	112		145				257		19:15	69		58				127	
07:30	104		104				208		19:30	68		53				121	
07:45	126	442	108	482			234	924	19:45	74	291	39	201			113	492
08:00	76		134				210		20:00	68		62				130	
08:15	57		104				161		20:15	65		74				139	
08:30	50		85				135		20:30	53		31				84	
08:45	47	230	59	382			106	612	20:45	53	239	28	195			81	434
09:00	62		77				139		21:00	40		23				63	
09:15	38		59				97		21:15	36		27				63	
09:30	60		80				140		21:30	40		22				62	
09:45	50	210	55	271			105	481	21:45	23	139	27	99			50	238
10:00	60		55				115		22:00	28		15				43	
10:15	49		48				97		22:15	29		14				43	
10:30	46		46				92		22:30	26		12				38	
10:45	47	202	55	204			102	406	22:45	22	105	8	49			30	154
11:00	67		60				127		23:00	14		11				25	
11:15	53		64				117		23:15	13		7				20	
11:30	63		54				117		23:30	15		5				20	
11:45	61	244	77	255			138	499	23:45	11	53	9	32			20	85
TOTALS		1806		2304				**4110**	**TOTALS**		3496		2655				**6151**
SPLIT %		43.9%		56.1%				**40.1%**	**SPLIT %**		56.8%		43.2%				**59.9%**

DAILY TOTALS	NB	SB	EB	WB	Total
	5,302	4,959	0	0	10,261

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	07:00	06:30			**06:45**	**PM Peak Hour**	16:45	14:30			**16:45**
AM Pk Volume	442	522			**926**	**PM Pk Volume**	568	387			**890**
Pk Hr Factor	0.877	0.900			**0.901**	**Pk Hr Factor**	0.959	0.880			**0.963**
7 - 9 Volume	672	864	0	0	**1536**	**4 - 6 Volume**	1064	669	0	0	**1733**
7 - 9 Peak Hour	07:00	07:15			**07:00**	**4 - 6 Peak Hour**	16:45	16:15			**16:45**
7 - 9 Pk Volume	442	491	0	0	**924**	**4 - 6 Pk Volume**	568	360	0	0	**890**
Pk Hr Factor	0.877	0.847	0.000	0.000	**0.899**	**Pk Hr Factor**	0.959	0.874	0.000	0.000	**0.963**

City of Fresno
Traffic Engineering

STREET : BELMONT
CROSS STREET : E/O TEMPERANCE
TYPE OF COUNT : C11 DIR

Seven Day Volume, per Channel (Volume factor 0.500)

WEST BOUND

Interval Start	Wed 6/10/2015	Thu 6/11/2015	Fri 6/12/2015	Sat 6/13/2015	Sun 6/14/2015	Mon 6/15/2015	Tue 6/16/2015	Mon - Fri Average	7 Day Average
12:00 AM	-	10	14	-	-	-	-	12.0	12.0
1:00 AM	-	4	17	-	-	-	-	10.5	10.5
2:00 AM	-	8	7	-	-	-	-	7.5	7.5
3:00 AM	-	3	4	-	-	-	-	3.5	3.5
4:00 AM	-	17	10	-	-	-	-	13.5	13.5
5:00 AM	-	68	64	-	-	-	-	66.0	66.0
6:00 AM	-	146	131	-	-	-	-	138.5	138.5
7:00 AM	-	258	208	-	-	-	-	233.0	233.0
8:00 AM	-	214	192	-	-	-	-	203.0	203.0
9:00 AM	-	124	128	-	-	-	-	126.0	126.0
10:00 AM	-	148	98	-	-	-	-	148.0	148.0
11:00 AM	98	129	-	-	-	-	-	129.0	129.0
12:00 PM	127	125	-	-	-	-	-	126.0	126.0
1:00 PM	136	140	-	-	-	-	-	138.0	138.0
2:00 PM	157	140	-	-	-	-	-	148.5	148.5
3:00 PM	160	152	-	-	-	-	-	156.0	156.0
4:00 PM	139	170	-	-	-	-	-	154.5	154.5
5:00 PM	166	168	-	-	-	-	-	167.0	167.0
6:00 PM	114	126	-	-	-	-	-	120.0	120.0
7:00 PM	74	62	-	-	-	-	-	68.0	68.0
8:00 PM	104	115	-	-	-	-	-	109.5	109.5
9:00 PM	78	82	-	-	-	-	-	80.0	80.0
10:00 PM	32	27	-	-	-	-	-	29.5	29.5
11:00 PM	14	15	-	-	-	-	-	14.5	14.5
Totals	1399	2451	873	0	0	0	0	2402.0	2402.0

Peak Hours

12:00 AM - 12:00 PM	11:15 AM	7:00 AM	7:00 AM	-	-	-	-	7:00 AM	7:00 AM
Volume	98	258	208	-	-	-	-	233.0	233.0
12:00 PM - 12:00 AM	5:00 PM	4:00 PM	-	-	-	-	-	5:00 PM	5:00 PM
Volume	166	170	-	-	-	-	-	167.0	167.0

City of Fresno
Traffic Engineering

STREET : TEMPERANCE
CROSS STREET : S/O BELMONT
TYPE OF COUNT : C51 DIR

Seven Day Volume

Interval Start	Wed 6/10/2015		Thu 6/11/2015		Fri 6/12/2015		Sat 6/13/2015		Sun 6/14/2015		Mon 6/15/2015		Tue 6/16/2015		Mon - Fri Average		7 Day Average	
	NORTH BOUND	SOUTH BOUND	NORTH BOUND	SOUTH BOUND	NORTH BOUND	SOUTH BOUND	NORTH BOUND	SOUTH BOUND	NORTH BOUND	SOUTH BOUND	NORTH BOUND	SOUTH BOUND	NORTH BOUND	SOUTH BOUND	NORTH BOUND	SOUTH BOUND	NORTH BOUND	SOUTH BOUND
12:00 AM	-	-	29	21	28	19	-	-	-	-	-	-	-	-	28.5	20.0	28.5	20.0
1:00 AM	-	-	20	10	24	8	-	-	-	-	-	-	-	-	22.0	9.0	22.0	9.0
2:00 AM	-	-	11	12	10	8	-	-	-	-	-	-	-	-	10.5	10.0	10.5	10.0
3:00 AM	-	-	8	20	8	18	-	-	-	-	-	-	-	-	8.0	19.0	8.0	19.0
4:00 AM	-	-	10	55	13	38	-	-	-	-	-	-	-	-	11.5	46.5	11.5	46.5
5:00 AM	-	-	70	169	79	135	-	-	-	-	-	-	-	-	74.5	152.0	74.5	152.0
6:00 AM	-	-	233	309	243	281	-	-	-	-	-	-	-	-	238.0	295.0	238.0	295.0
7:00 AM	-	-	364	522	338	478	-	-	-	-	-	-	-	-	351.0	500.0	351.0	500.0
8:00 AM	-	-	242	394	222	355	-	-	-	-	-	-	-	-	232.0	374.5	232.0	374.5
9:00 AM	-	-	171	234	191	252	-	-	-	-	-	-	-	-	181.0	243.0	181.0	243.0
10:00 AM	-	-	190	213	179	226	-	-	-	-	-	-	-	-	184.5	219.5	184.5	219.5
11:00 AM	162	233	165	204	-	-	-	-	-	-	-	-	-	-	163.5	218.5	163.5	218.5
12:00 PM	186	190	213	233	-	-	-	-	-	-	-	-	-	-	199.5	211.5	199.5	211.5
1:00 PM	236	235	243	209	-	-	-	-	-	-	-	-	-	-	239.5	222.0	239.5	222.0
2:00 PM	313	262	341	250	-	-	-	-	-	-	-	-	-	-	327.0	256.0	327.0	256.0
3:00 PM	331	384	309	412	-	-	-	-	-	-	-	-	-	-	320.0	398.0	320.0	398.0
4:00 PM	419	289	424	293	-	-	-	-	-	-	-	-	-	-	421.5	291.0	421.5	291.0
5:00 PM	429	262	502	278	-	-	-	-	-	-	-	-	-	-	465.5	270.0	465.5	270.0
6:00 PM	298	214	298	258	-	-	-	-	-	-	-	-	-	-	298.0	236.0	298.0	236.0
7:00 PM	189	158	210	161	-	-	-	-	-	-	-	-	-	-	199.5	159.5	199.5	159.5
8:00 PM	159	146	150	156	-	-	-	-	-	-	-	-	-	-	154.5	151.0	154.5	151.0
9:00 PM	110	114	120	131	-	-	-	-	-	-	-	-	-	-	115.0	122.5	115.0	122.5
10:00 PM	78	63	99	70	-	-	-	-	-	-	-	-	-	-	88.5	66.5	88.5	66.5
11:00 PM	46	35	56	37	-	-	-	-	-	-	-	-	-	-	51.0	36.0	51.0	36.0
Totals	2956	2585	4478	4651	1335	1818	0	0	0	0	0	0	0	0	4384.5	4527.0	4384.5	4527.0
Combined	5541		9129		3153		0		0		0		0		8911.5		8911.5	
Split (%)	53.3	46.7	49.1	50.9	42.3	57.7	-	-	-	-	-	-	-	-	49.2	50.8	49.2	50.8

Peak Hours

12:00 AM - 12:00 PM	11:00 AM	11:00 AM	7:15 AM	7:15 AM	7:15 AM	7:15 AM	-	-	-	-	-	-	-	-	7:15 AM	7:15 AM	7:15 AM	7:15 AM
Volume	162	233	381	539	356	496	-	-	-	-	-	-	-	-	368.5	517.5	368.5	517.5
Factor	0.86	0.88	0.85	0.82	0.85	0.90	-	-	-	-	-	-	-	-	0.85	0.87	0.85	0.87
12:00 PM - 12:00 AM	4:45 PM	3:00 PM	4:45 PM	3:15 PM	-	-	-	-	-	-	-	-	-	-	4:45 PM	3:00 PM	4:45 PM	3:00 PM
Volume	475	384	520	416	-	-	-	-	-	-	-	-	-	-	497.5	398.0	497.5	398.0
Factor	0.92	0.87	0.84	0.82	-	-	-	-	-	-	-	-	-	-	0.88	0.84	0.88	0.84

Appendix C: Traffic Modeling

May 15, 2019

Kai Han, TE
Council of Fresno County Governments
2035 Tulare Street, Suite 201
Fresno, CA 93721

Via E-mail Only: khan@fresnocog.org

Subject: ***Traffic Modeling Request for the Preparation of a Traffic Impact Analysis for Tentative Tract 6241 Located on the Southwest Quadrant of Clinton Avenue and Armstrong Avenue in the City of Fresno (JLB Project 004-097)***

Dear Mr. Han,

JLB Traffic Engineering, Inc. (JLB) hereby requests traffic modeling for the Project described below. The Project proposes to develop 19.83 acres located on the southwest quadrant of Clinton Avenue and Armstrong Avenue with up to 226 single family residential units for an overall density of 11.54 units per acre. Based on information provided to JLB, the Project will be blending the density between the two planned land uses (Urban Neighborhood and Medium Density Residential) and as a result the Project will be consistent with the City of Fresno 2035 General Plan land use designation. An aerial of the Project vicinity and Project Site Plan are shown in Exhibits A and Exhibit B, respectively.

The purpose of the TIA is to evaluate the potential on-site and off-site traffic impacts, identify short-term roadway and circulation needs, determine potential mitigation measures and identify any critical traffic issues that should be addressed in the on-going planning process.

Scenarios:

The following scenarios are requested:

1. Base Year 2019 (with Link and TAZ modifications)
2. Year 2019 plus Project Select Zone (with Link and TAZ modifications)
3. Cumulative Year 2035 plus Project Select Zone (with Link and TAZ modifications)
4. Differences between model runs 3 and 1 above

Changes and/or additions to the Model Network or TAZ's

JLB reviewed the Fresno COG model network for the Base Year 2019 and Cumulative Year 2035. Based on this review, JLB requests the following link and TAZ network modifications. Details on the requested Link and TAZ modifications for Base Year 2019 and Cumulative Year 2035 are illustrated in Exhibit C.

LINK and TAZ MODIFICATIONS (For Base Year 2019 and Year 2019 plus Project Select Zone Scenarios):

1. Modify Clinton Avenue to reduce the lanes between Clovis Avenue and Fowler Avenue to one lane in each direction.

2. Modify Fowler Avenue to increase the lanes north of Clinton Avenue to two lanes in each direction.
3. Modify Armstrong Avenue to increase the lanes north of Shields Avenue to two lanes in each direction.
4. Modify TAZ 1684 as follows:
   a. Eliminate existing TAZ 1684 and TAZ connectors to Fowler Avenue, Clinton Avenue, and Armstrong Avenue.
   b. Split existing TAZ 1684 into two TAZs – TAZ 1684A and TAZ 1684B.
      i. Create TAZ 1684A generally located midway between Fowler Avenue and Armstrong Avenue and approximately 675 feet south of Clinton Avenue. TAZ 1684A shall have TAZ connectors to Fowler Avenue, Clinton Avenue and Armstrong Avenue.
      ii. Create TAZ 1684B generally located midway between Fowler Avenue and Armstrong Avenue and approximately 1,960 feet south Clinton Avenue. TAZ 1684B shall have TAZ connectors to Fowler Avenue and Armstrong Avenue.
5. Modify TAZ 1415 to eliminate TAZ connector to Fowler Avenue.

LINK and TAZ MODIFICATIONS (For Year 2019 plus Project Select Zone Scenario Only):

1. Create TAZ A generally located 1,000 feet south of Clinton Avenue and 750 feet west of Armstrong Avenue. TAZ A shall have a TAZ connector to Armstrong Avenue.

LINK and TAZ MODIFICATIONS (For Cumulative Year 2035 plus Project Select Zone Scenario Only):

1. Modify Sunnyside Avenue to reduce the lanes south of Clinton Avenue to one lane in each direction.
2. Modify Fowler Avenue to increase the lanes to two lanes in each direction.
3. Modify McKinley Avenue to reduce the lanes east of Sunnyside Avenue to one lane in each direction.
4. Create Kerry Avenue between Fowler Avenue and Armstrong Avenue. Kerry Avenue is located midway between Clinton Avenue and McKinley Avenue.
   a. Classification: Local Street
   b. Lanes: One in each direction
   c. Speed: 30 MPH
5. Modify TAZ 1684 as follows:
   a. Eliminate existing TAZ 1684 and TAZ connectors to Fowler Avenue, Clinton Avenue, Armstrong Avenue, and McKinley Avenue.
   b. Split existing TAZ 1684 into two TAZs – TAZ 1684A and TAZ 1684B.
      i. Create TAZ 1684A generally located midway between Fowler Avenue and Armstrong Avenue and Clinton Avenue and Kerry Avenue. TAZ 1684A shall have TAZ connectors to Fowler Avenue, Clinton Avenue, Armstrong Avenue, and Kerry Avenue.
      ii. Create TAZ 1684B generally located midway between Fowler Avenue and Armstrong Avenue and Kerry Avenue and McKinley Avenue. TAZ 1684B shall have TAZ connectors to Fowler Avenue, Kerry Avenue, Armstrong Avenue, and McKinley Avenue.
6. Create TAZ A generally located 1,000 feet south of Clinton Avenue and 750 feet west of Armstrong Avenue. TAZ A shall have a TAZ connector to Armstrong Avenue and Kerry Avenue.

TAZ A (Project) Trip Generation (For Year 2019 plus Project Select Zone and Cumulative Year 2035 plus Project Select Zone Scenarios Only)

Table I presents the trip generation for TAZ A (Project) pursuant to the 10th Edition of the Trip Generation Manual with trip generation rates for Single-Family Detached Housing. At build-out, the Project is estimated to generate a maximum of 2,133 daily trips, 167 AM peak hour trips and 224 PM peak hour trips.

Table I: TAZ A (Project) Trip Generation

Land Use (ITE Code)	*Size*	*Unit*	*Daily*		*AM (7-9) Peak Hour*						*PM (4-6) Peak Hour*					
			Rate	*Total*	*Trip Rate*	*In %*	*Out %*	*In*	*Out*	*Total*	*Trip Rate*	*In %*	*Out %*	*In*	*Out*	*Total*
Single-Family Detached Housing (210)	226	d.u.	9.44	2,133	0.74	25	75	42	125	167	0.99	63	37	141	83	224
Total Project Trips				**2,133**				**42**	**125**	**167**				**141**	**83**	**224**

Note: d.u. = Dwelling Units

Access to the Project

Access to and from the Project site will be from two access points. One access point will be located along the west side of Armstrong Avenue approximately 1,000 feet south of Clinton Avenue and is proposed to be a full access. The other access point will be located along the north side of Kerry Avenue approximately 1,000 feet west of Armstrong Avenue. Access to Kerry Avenue will be limited to exit only. Additional Project details can be found on Exhibit B.

Please invoice JLB Traffic Engineering, Inc. and reference JLB Project No. 004-097 on the invoice. If you have any questions or require additional information, please do not hesitate to contact me by phone at (559) 317-6243 or by e-mail at marndt@JLBtraffic.com.

Sincerely,

Matt Arndt, EIT
Engineer I/II

cc: Lang Yu, Fresno Council of Governments
Susana Maciel, JLB Traffic Engineering, Inc.

Exhibit A – Aerial

Exhibit B – Site Plan

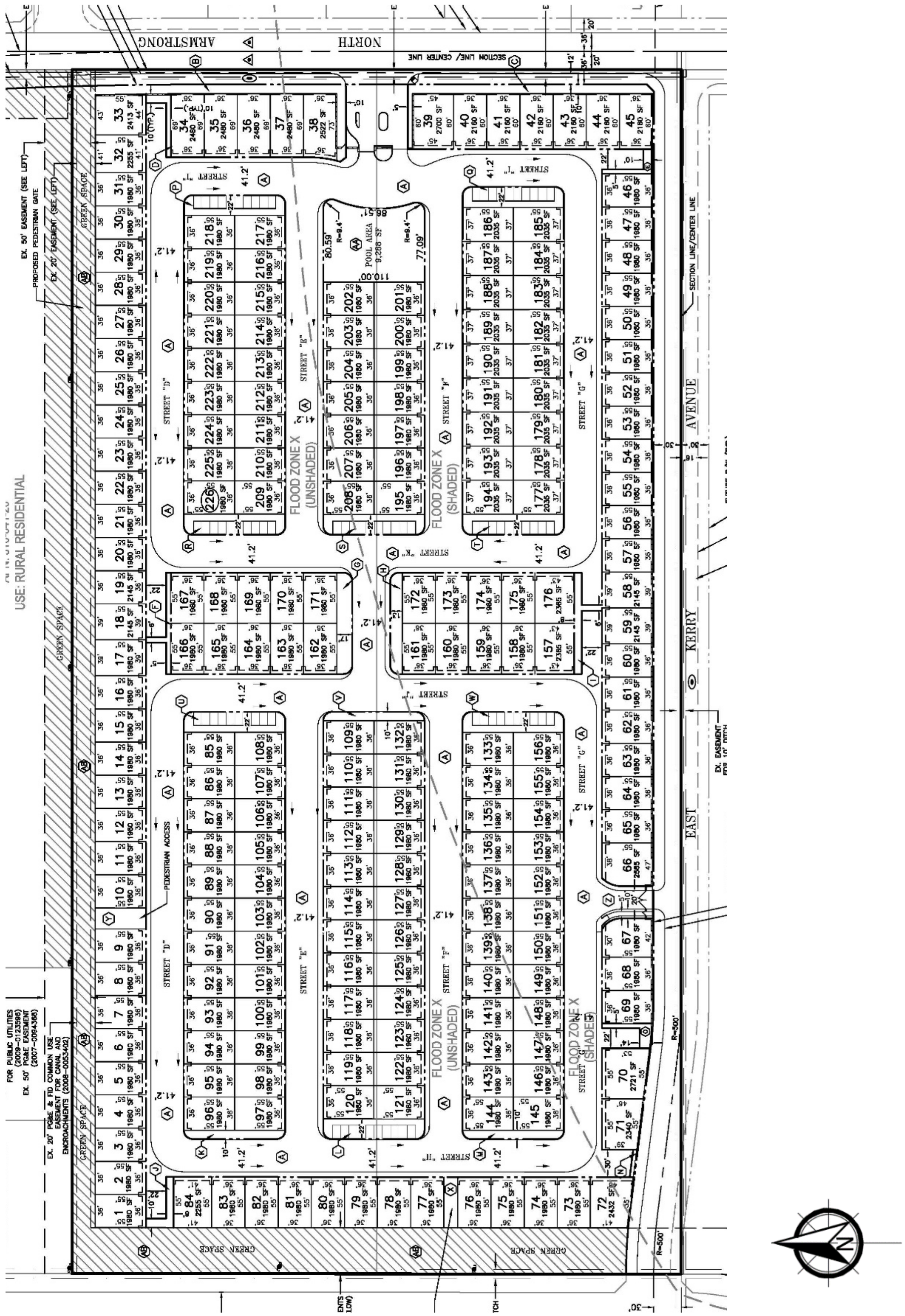
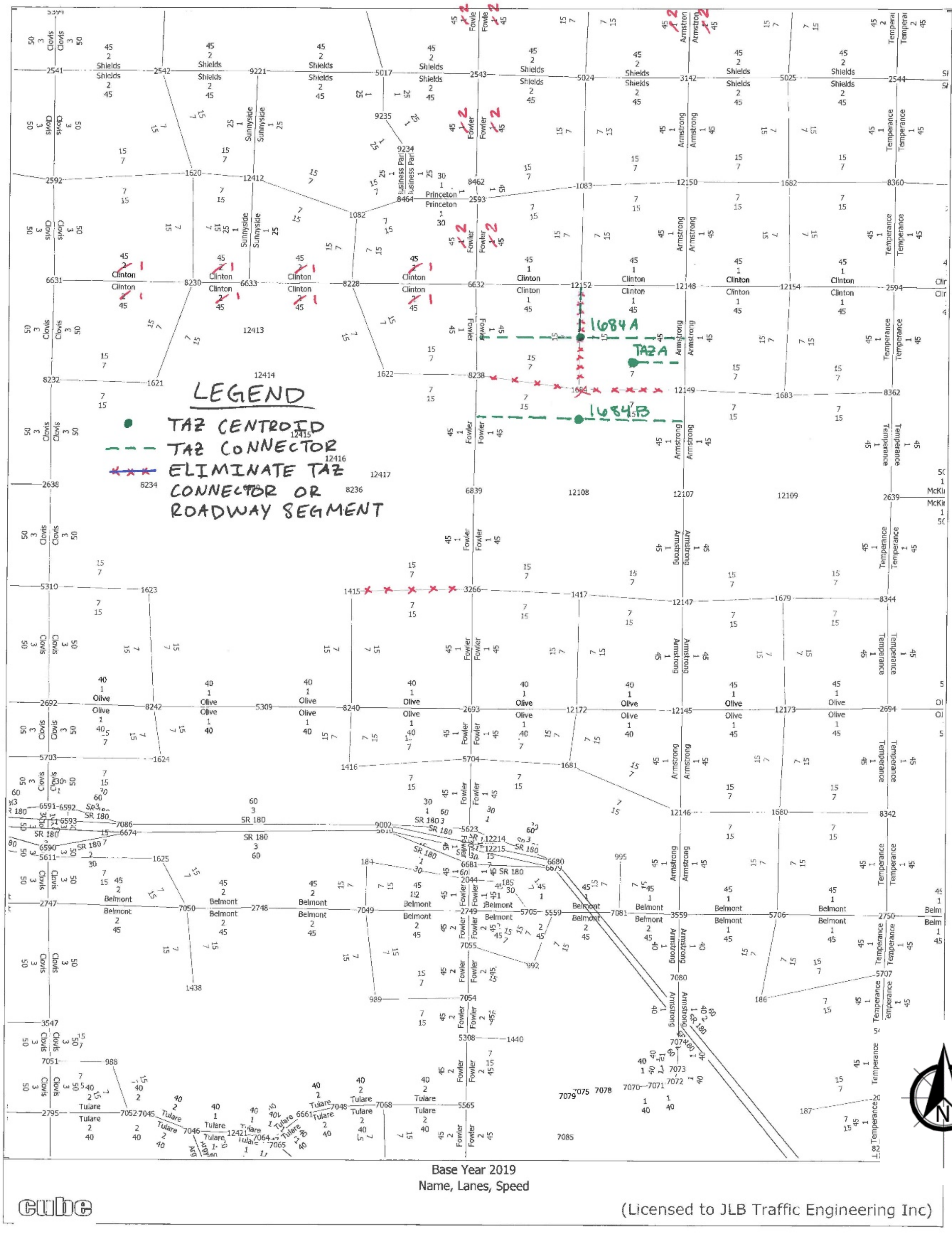
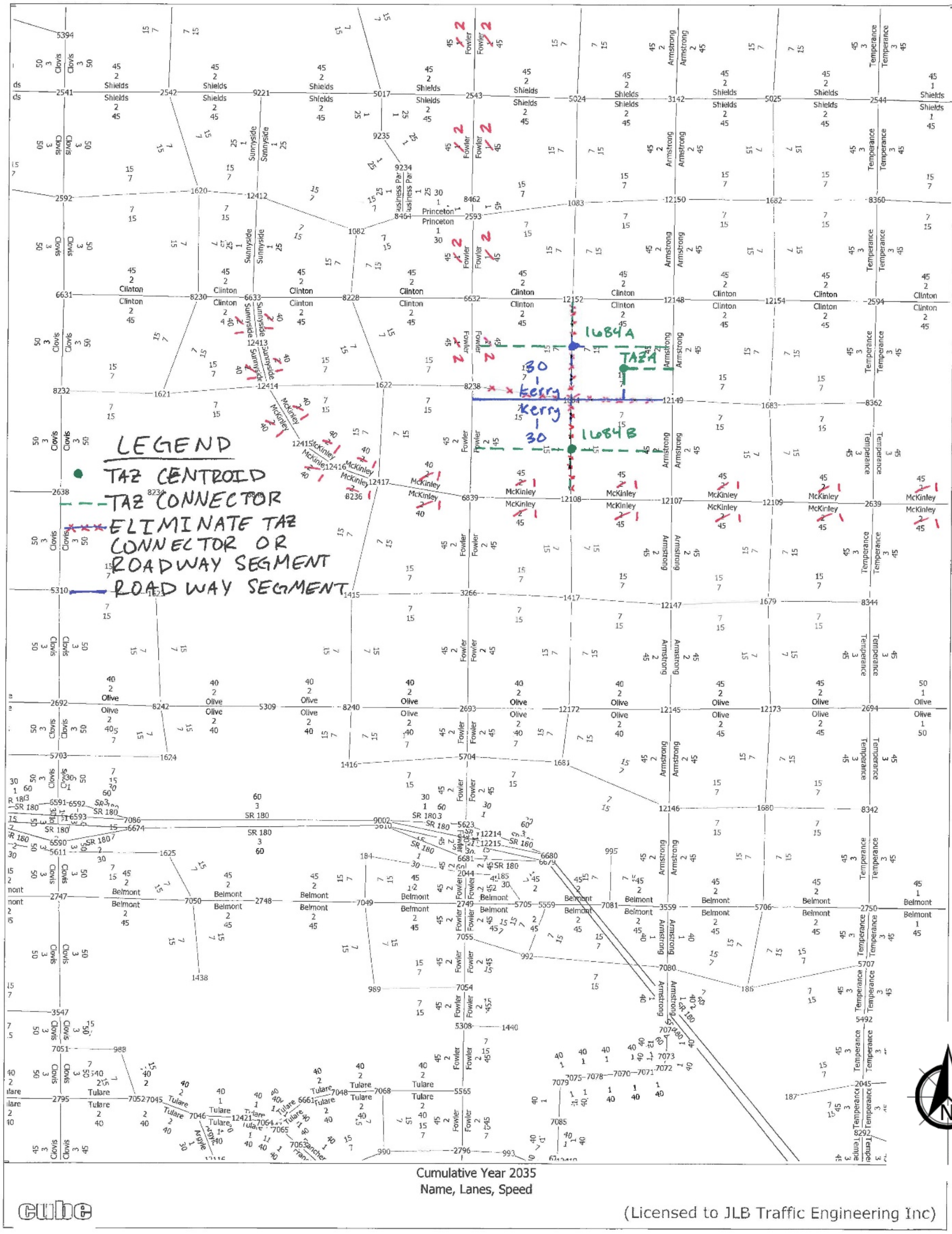
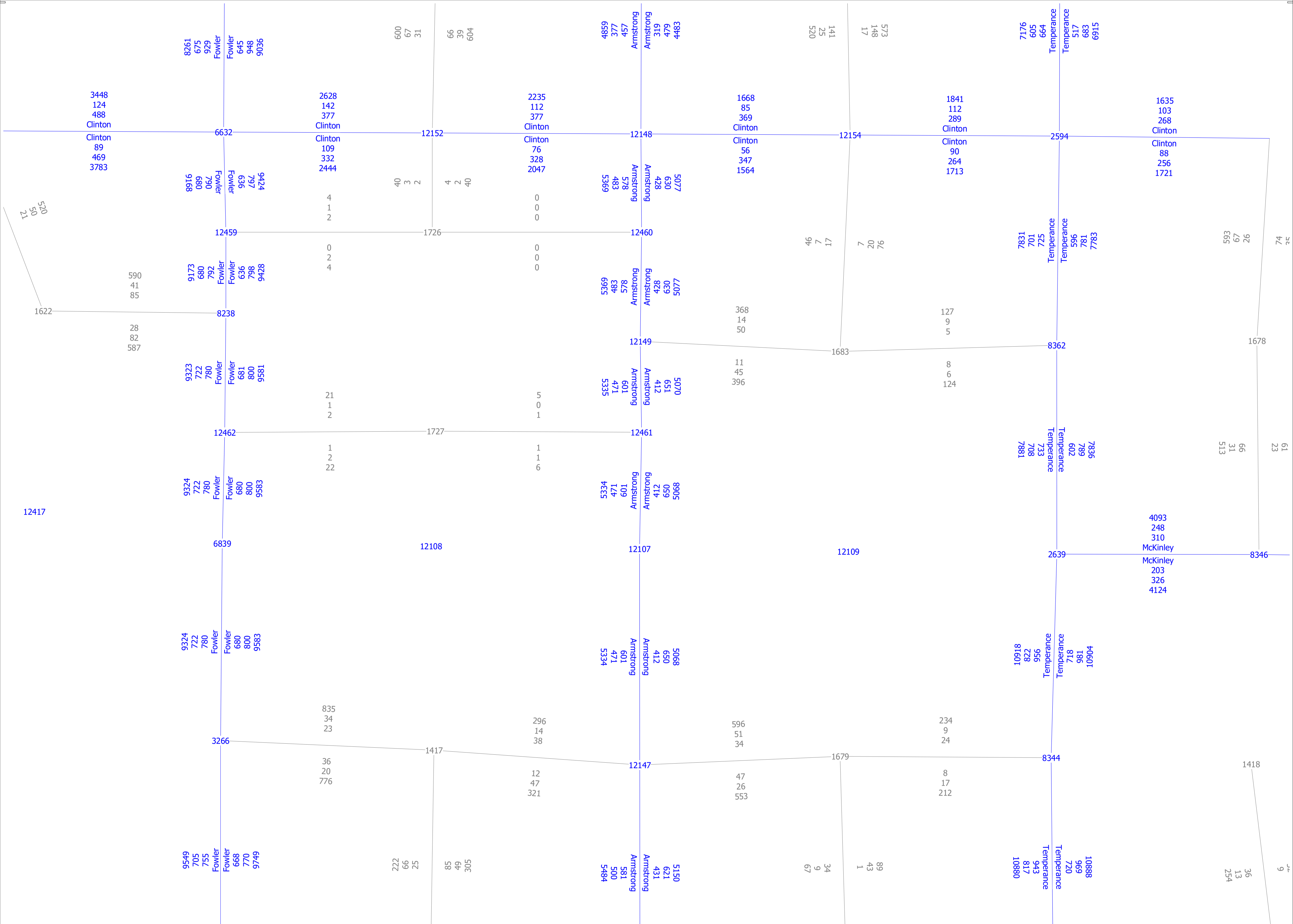


Exhibit C – Model TAZ Modifications



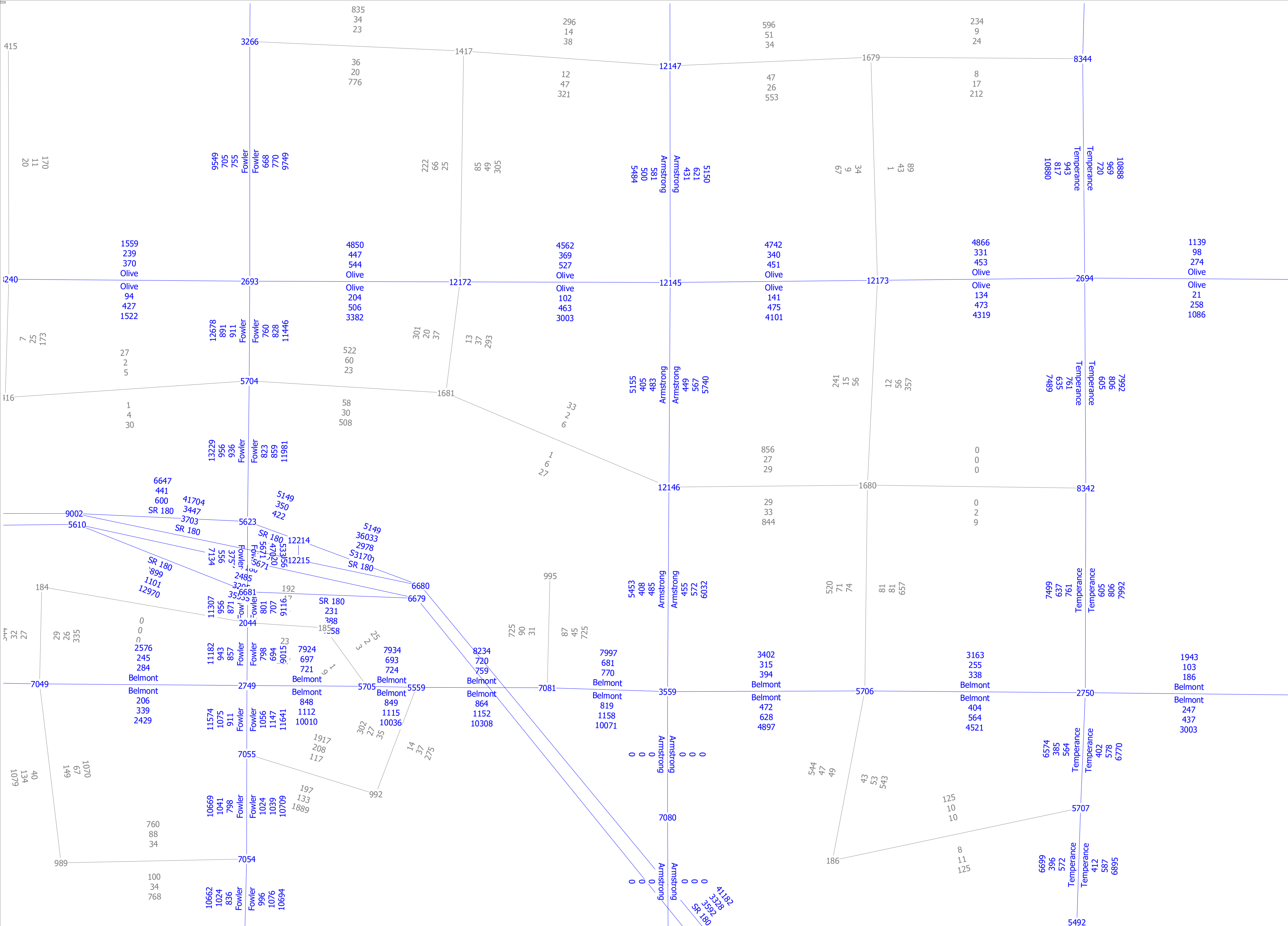

LEGEND
TAZ CENTROID
TAZ CONNECTOR
ELIMINATE TAZ CONNECTOR OR ROADWAY SEGMENT
ROADWAY SEGMENT
16844A
TAZ 4
16844B
30
Kerry
Kerry
30
Shields
Clinton
McKinley
Olive
Belmont
Tulare
SR 180
Clovis
Fowler
Armstrong
Temperance
Sunnyside
Princeton
Cumulative Year 2035
Name, Lanes, Speed
cube
(Licensed to JLB Traffic Engineering Inc)



Base Year 2019
AM, PM and Daily Volumes

cube

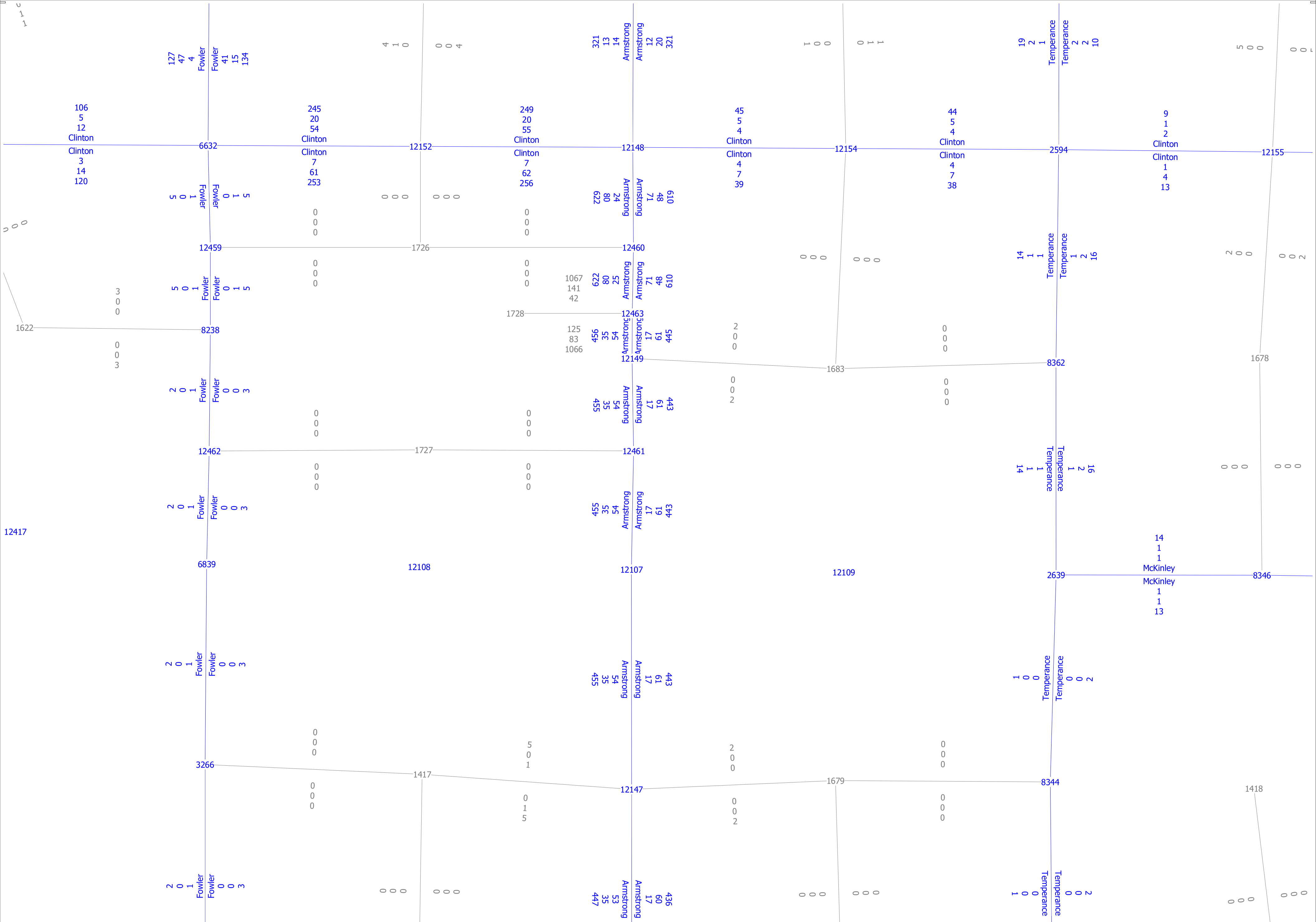
(Licensed to JLB Traffic Engineering Inc)



Base Year 2019
AM, PM and Daily Volumes

cube

(Licensed to JLB Traffic Engineering Inc)



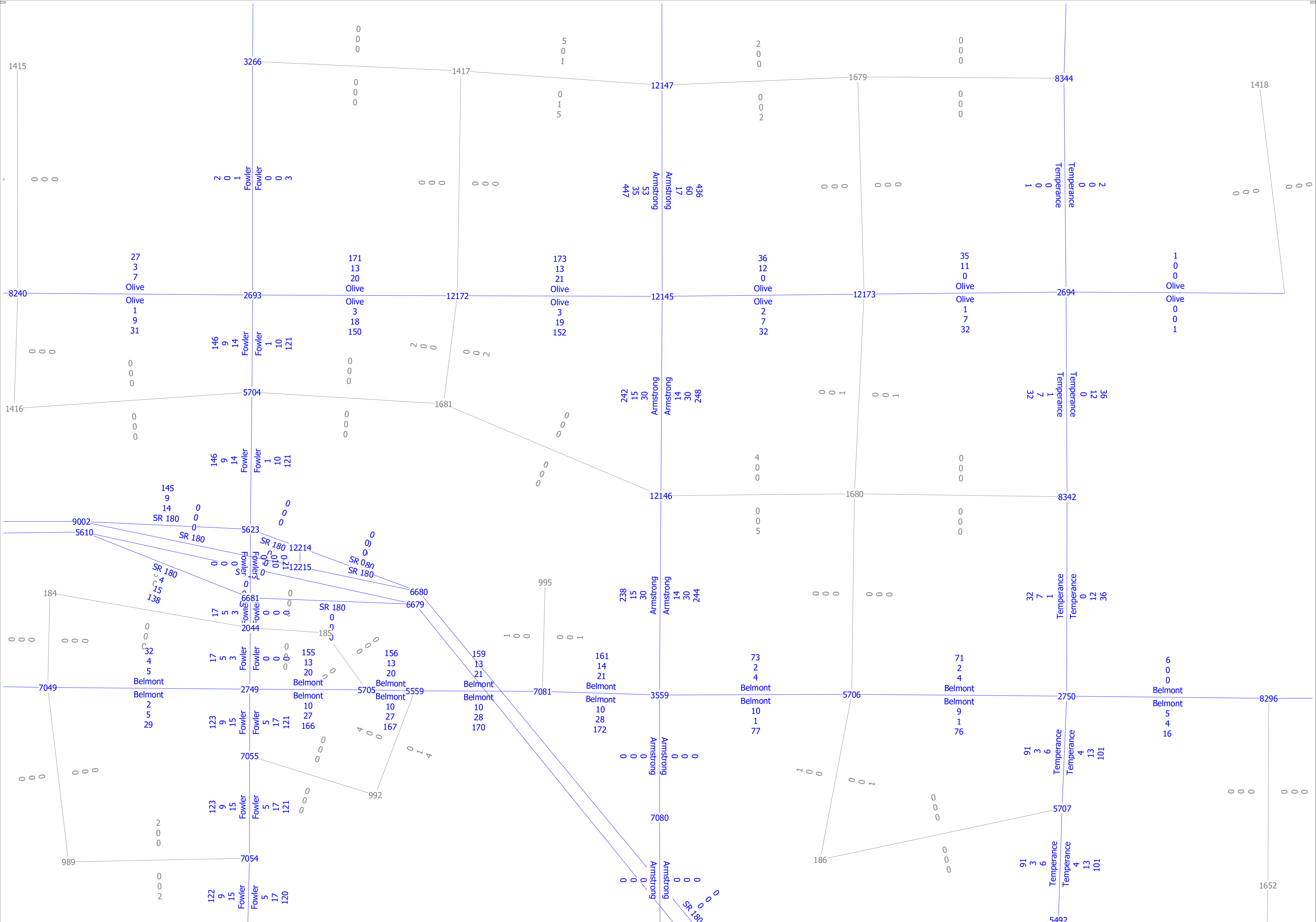
Base Year 2019

Select Zone

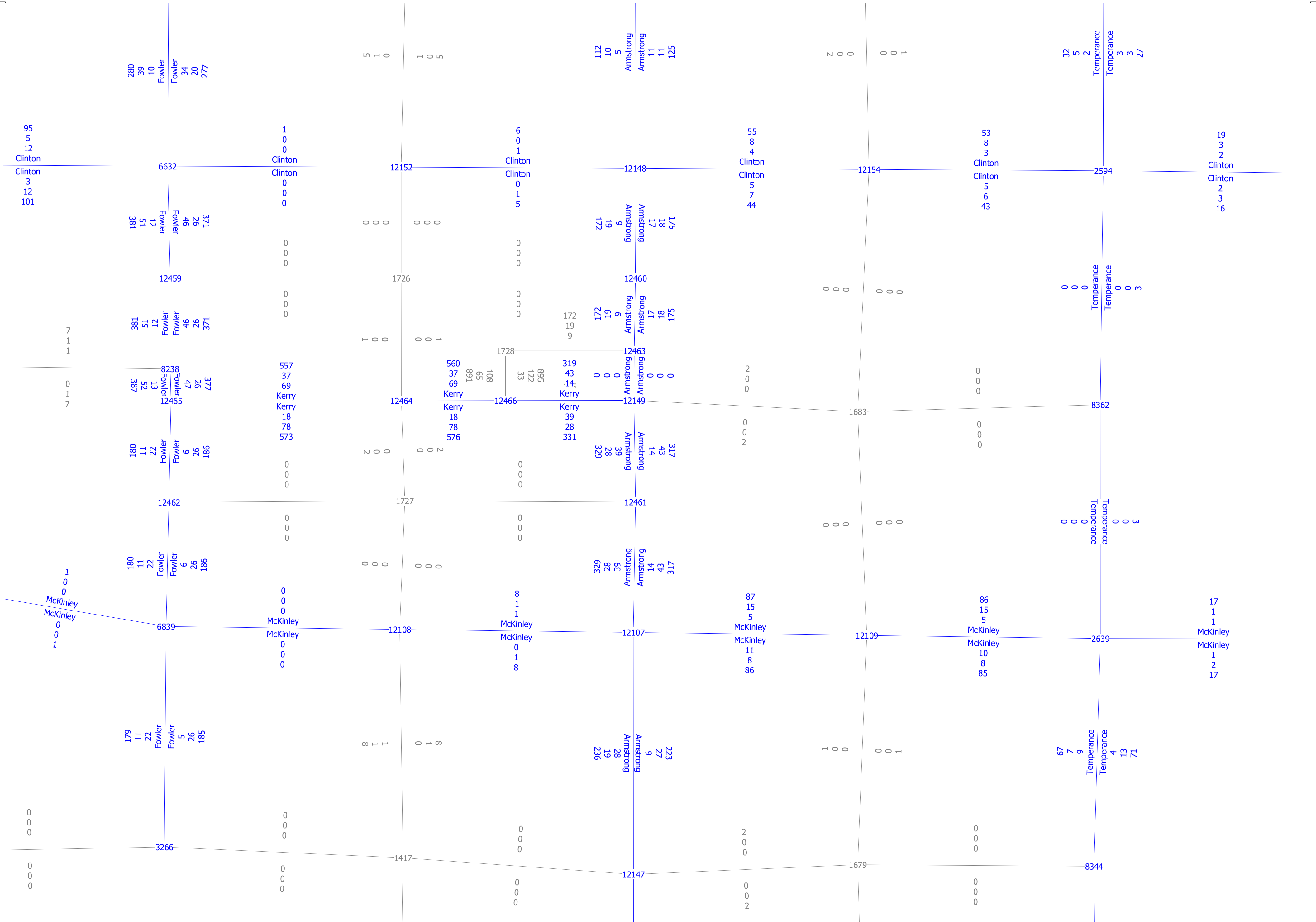
AM, PM and Daily Volumes

cube

(Licensed to JLB Traffic Engineering Inc)

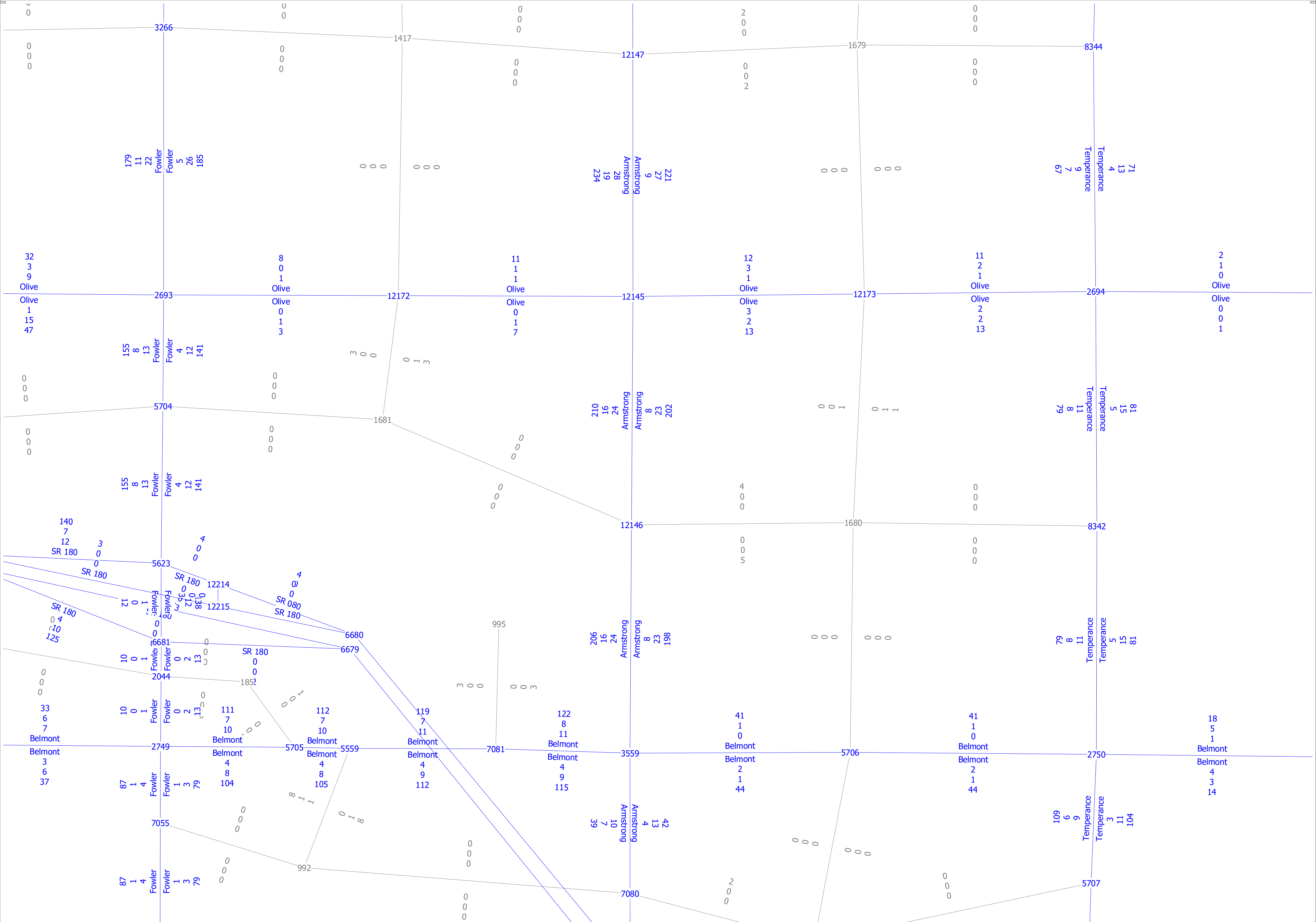


Base Year 2019
Select Zone
AM, PM and Daily Volumes

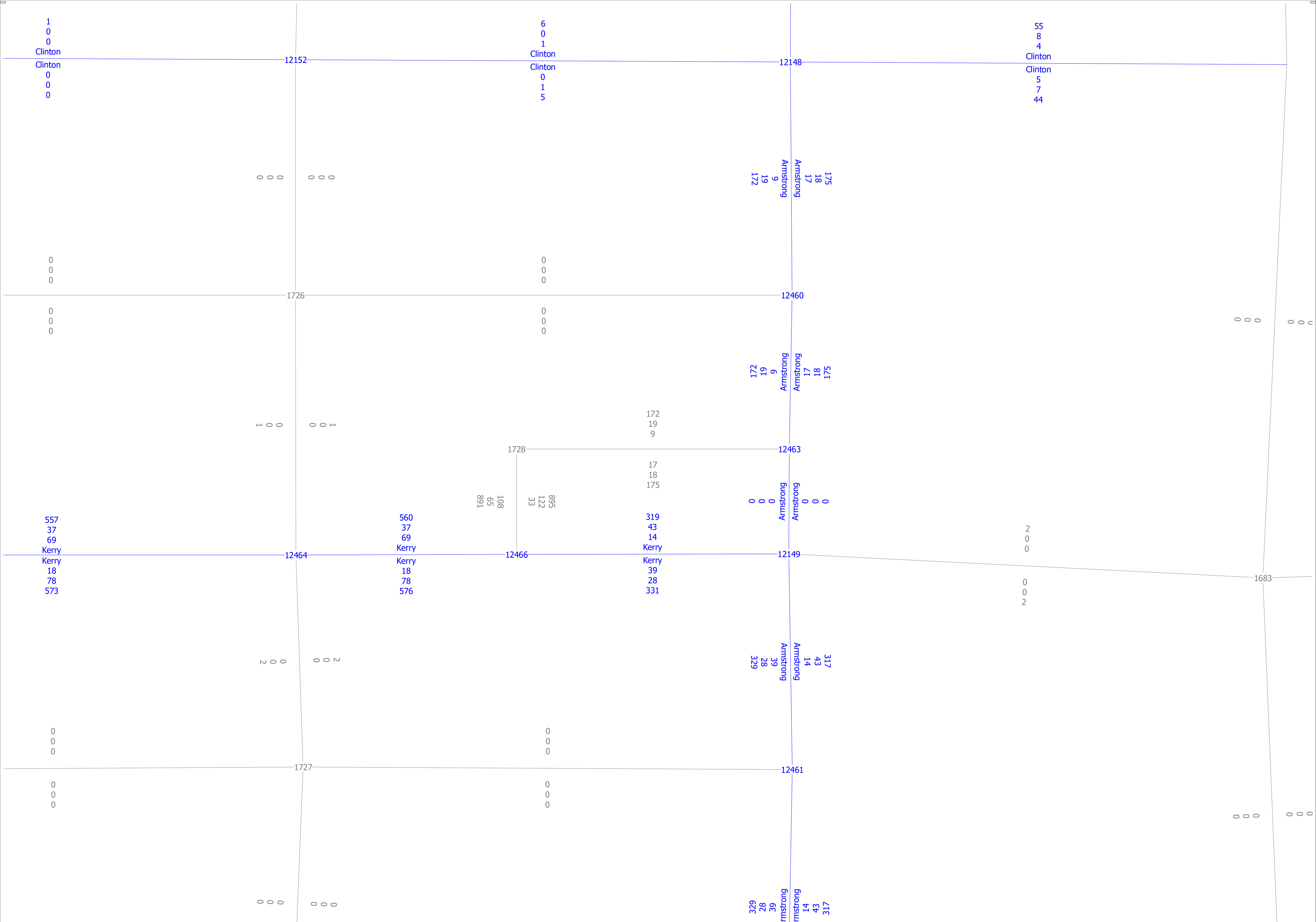


Cumulative Year 2035
Select Zone
AM, PM and Daily Volumes

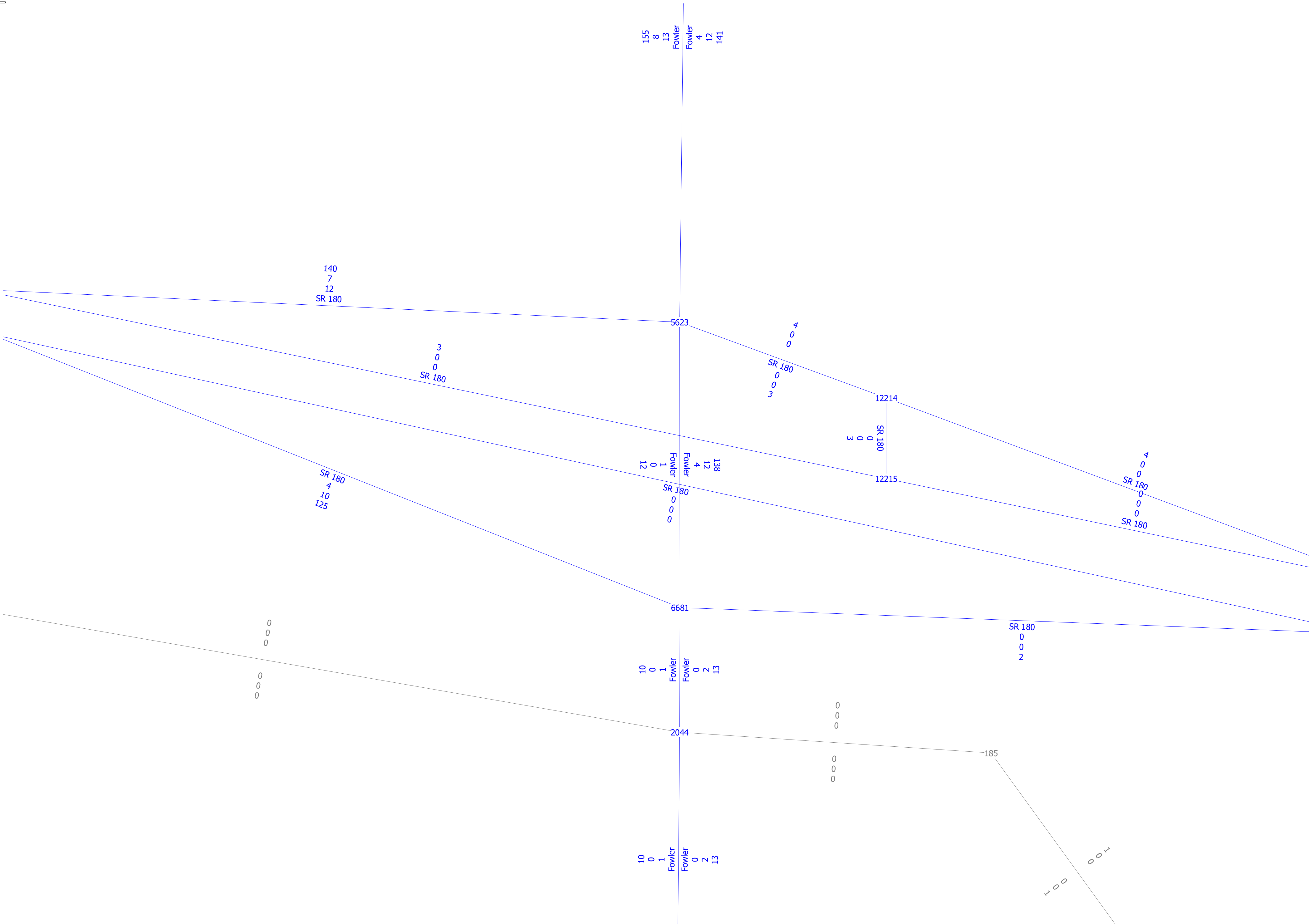
(Licensed to JLB Traffic Engineering Inc)



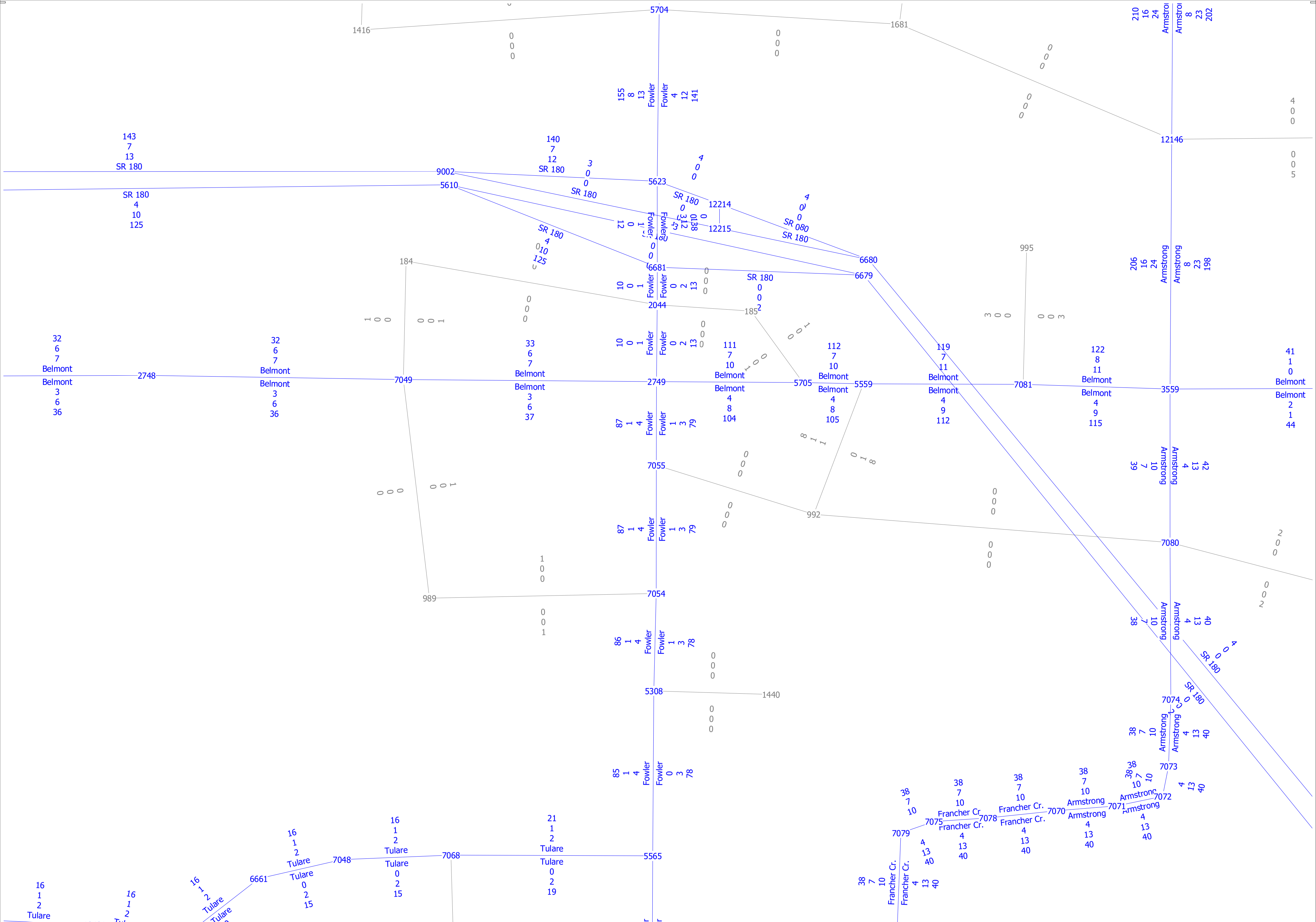
Cumulative Year 2035
Select Zone
AM, PM and Daily Volumes



Cumulative Year 2035
Select Zone
AM, PM and Daily Volumes



Cumulative Year 2035
Select Zone
AM, PM and Daily Volumes



Cumulative Year 2035
Select Zone
AM, PM and Daily Volumes

cube

Appendix D: Methodology

Levels of Service Methodology

The description and procedures for calculating capacity and level of service (LOS) are found in the Transportation Research Board, Highway Capacity Manual (HCM). The HCM 2010 represents the research on capacity and quality of service for transportation facilities.

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience.

Six levels of service are defined for each type of facility that has analysis procedures available. Letters designate each level of service (LOS), from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver's perception of these conditions. Safety is not included in the measures that establish a LOS.

Urban Streets (Automobile Mode)

The term "urban streets" refers to urban arterials and collectors, including those in downtown areas. Arterial streets are roads that primarily serve longer through trips. However, providing access to abutting commercial and residential land uses is also an important function of arterials. Collector streets provide both land access and traffic circulation within residential, commercial and industrial areas. Their access function is more important than that of arterials, and unlike arterials their operation is not always dominated by traffic signals. Downtown streets are signalized facilities that often resemble arterials. They not only move through traffic but also provide access to local businesses for passenger cars, transit buses, and trucks. Pedestrian conflicts and lane obstructions created by stopping or standing taxicabs, buses, trucks and parking vehicles that cause turbulence in the traffic flow are typical of downtown streets.

Flow Characteristics

The speed of vehicles on urban streets is influenced by three main factors, street environment, interaction among vehicles and traffic control.

The street environment includes the geometric characteristics of the facility, the character of roadside activity, and adjacent land uses. Thus, the environment reflects the number and width of lanes, type of median, driveway/access point density, spacing between signalized intersections, existence of parking, level of pedestrian and bicyclist activity and speed limit.

The interaction among vehicles is determined by traffic density, the proportion of trucks and buses, and turning movements. This interaction affects the operation of vehicles at intersections and, to a lesser extent, between signals.

Traffic controls (including signals and signs) forces a portion of all vehicles to slow or stop. The delays and speed changes caused by traffic control devices reduce vehicle speeds; however, such controls are needed to establish right-of-way.

Levels of Service (automobile Mode)

The average travel speed for through vehicles along an urban street is the determinant of the operating level of service (LOS). The travel speed along a segment, section or entire length of an urban street is dependent on the running speed between signalized intersections and the amount of control delay incurred at signalized intersections.

LOS A describes primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal. Travel speeds exceed 85 of the base free flow speed (FFS).

LOS B describes reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted and control delay at the boundary intersections is not significant. The travel speed is between 67 and 85 percent of the base FFS.

LOS C describes stable operations. The ability to maneuver and change lanes in midblock location may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50 and 67 percent of the base FFS.

LOS D indicates a less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volumes, inappropriate signal timing, at the boundary intersections. The travel speed is between 40 and 50 percent of the base FFS.

LOS E is characterized unstable operation and significant delay. Such operations may be due to some combination of adverse progression, high volume, and inappropriate signal timing at the boundary intersections. The travel speed is between 30 and 40 percent of the base FFS.

LOS F is characterized by street flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30 percent or less of the base FFS.

Table A-1: Urban Street Levels of Service (Automobile Mode)

Travel Speed as a Percentage of Base Free-Flow Speed (%)	LOS by Critical Volume-to-Capacity Ratio[a]	
	≤1.0	>1.0
>85	A	F
>67 to 85	B	F
>50 to 67	C	F
>40 to 50	D	F
>30 to 40	E	F
≤30	F	F

a = The Critical volume-to-capacity ratio is based on consideration of the through movement-to-capacity ratio at each boundary intersection in the subject direction of travel. The critical volume-to-capacity ratio is the largest ratio of those considered.
Source: Highway Capacity Manual 2010, Exhibit 16-4. Urban Street LOS Criteria (Automobile Mode)

Intersection Levels of Service

One of the more important elements limiting, and often interrupting the flow of traffic on a highway is the intersection. Flow on an interrupted facility is usually dominated by points of fixed operation such as traffic signals, stop and yield signs.

Signalized Intersections – Performance Measures

For signalized intersections the performance measures include automobile volume-to-capacity ratio, automobile delay, queue storage length, ratio of pedestrian delay, pedestrian circulation area, pedestrian perception score, bicycle delay, and bicycle perception score. LOS is also considered a performance measure. For the automobile mode average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection. A LOS designation is given to the weighted average control delay to better describe the level of operation. A description of LOS for signalized intersections is found in Table A-2.

Table A-2: Signalized Intersection Level of Service Description (Automobile Mode)

Level of Service	Description	Average Control Delay (seconds per vehicle)
A	Operations with a control delay of 10 seconds/vehicle or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when volume-to-capacity ratio is and either progression is exceptionally favorable or the cycle length is very short. If it's due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.	≤10
B	Operations with control delay between 10.1 to 20.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.	>10.0 to 20.0
C	Operations with average control delays between 20.1 to 35.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 to 35
D	Operations with control delay between 35.1 to 55.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop, and i ndividual cycle failures are noticeable.	>35 to 55
E	Operations with control delay between 55.1 to 80.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	>55 to 80
F	Operations with unacceptable control delay exceeding 80.0 seconds/vehicle and a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	>80

Source: Highway Capacity Manual 2010

Unsignalized Intersections

The HCM 2010 procedures use control delay as a measure of effectiveness to determine level of service. Delay is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, i. e., in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Control delay is the increased time of travel for a vehicle approaching and passing through an unsignalized intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection.

All-Way Stop Controlled Intersections

All-way stop controlled intersections is a form of traffic controls in which all approaches to an intersection are required to stop. Similar to signalized intersections, at all-way stop controlled intersections the average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection as a whole. In other words the delay measured for all-way stop controlled intersections is a measure of the average delay for all vehicles passing through the intersection during the peak hour. A LOS designation is given to the weighted average control delay to better describe the level of operation.

Two-Way Stop Controlled Intersections

Two-way stop controlled (TWSC) intersections in which stop signs are used to assign the right-of-way, are the most prevalent type of intersection in the United States. At TWSC intersections the stop-controlled approaches are referred as the minor street approaches and can be either public streets or private driveways. The approaches that are not controlled by stop signs are referred to as the major street approaches.

The capacity of movements subject to delay are determined using the "critical gap" method of capacity analysis. Expected average control delay based on movement volume and movement capacity is calculated. A LOS for TWSC intersection is determined by the computed or measured control delay for each minor movement. LOS is not defined for the intersection as a whole for three main reasons: (a) major-street through vehicles are assumed to experience zero delay; (b) the disproportionate number of major-street through vehicles at the typical TWSC intersection skews the weighted average of all movements, resulting in a very low overall average delay from all vehicles; and (c) the resulting low delay can mask important LOS deficiencies for minor movements. Table A-3 provides a description of LOS at unsignalized intersections.

Table A-3: Unsignalized Intersection Level of Service Description (Automobile Mode)

Control Delay (seconds per vehicle)	**LOS by Volume-to-Capacity Ratio**	
	v/c ≤ 1.0	**v/c > 1.0**
≤10	A	F
>10 to 15	B	F
>15 to 25	C	F
>25 to 35	D	F
>35 to 50	E	F
>50	F	F

Source: HCM 2010 Exhibit 19-1.

Appendix E: Collision Data

Primary Rd BELMONT AV | Distance (ft) 0 | Direction E | Secondary Rd ABBY ST | NCIC 1005 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fresno | County Fresno | Population 7 | Rpt Dist 2556 | Beat 01D | Type 0 | CalTrans | Badge P624 | Collision Date 20141007 | Time 1545 | Day TUE
Primary Collision Factor LANE CHANGE | Violation 21658A | Collision Type SIDESWIPE | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? N | Process Date 20160317
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run MSDMNR | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	998	-		HBD-UNK		CHANG LN	-	A	0100	TOYOT	2003	-	1	A		-	-	-
2	DRVR	36	F	W	HNBD		PROC ST	W	-	0000	NISSA	2009	-	3	N		-	M	G

Primary Rd BELMONT AV | Distance (ft) 2112 | Direction W | Secondary Rd ACADEMY AV | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fresno | County Fresno | Population 7 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 13780 | Collision Date 20140801 | Time 2500 | Day FRI
Primary Collision Factor IMPROP TURN | Violation 22107 | Collision Type HIT OBJECT | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? N | Process Date 20150501
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run MSDMNR | Motor Vehicle Involved With FIXED OBJ | Lighting DAYLIGHT | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	998	-		IMP UNK	IMP UNK	UNS TURN	W	-	9900	-		-	3	N		-		-

Primary Rd BELMONT AV | Distance (ft) 0 | Direction | Secondary Rd ARMSTRONG AV | NCIC 1005 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fresno | County Fresno | Population 7 | Rpt Dist 2568 | Beat 03A | Type 0 | CalTrans | Badge P874 | Collision Date 20140620 | Time 1107 | Day FRI
Primary Collision Factor R-O-W AUTO | Violation 21802A | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? Y | Process Date 20160121
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	20	F	H	HNBD		PROC ST	S	A	0100	NISSA	2011	-	3	N		-	L	G
2	DRVR	40	F	A	HNBD		PROC ST	E	D	2200	TOYOT	2007	-	3	N		-	M	G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	OTH VIS	20	F	1	0	L	G
PASS		17	M	3	0	L	G
PASS		24	M	4	0	L	G
PASS		12	M	6	0	L	G

Primary Rd BELMONT AV | Distance (ft) 300 | Direction E | Secondary Rd BELMONT CR | NCIC 1005 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fresno | County Fresno | Population 7 | Rpt Dist 2453 | Beat 01B | Type 0 | CalTrans | Badge P624 | Collision Date 20141024 | Time 0727 | Day FRI
Primary Collision Factor UNSAFE SPEED | Violation 22350 | Collision Type HIT OBJECT | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20160126
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With FIXED OBJ | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	23	M	H	HNBD		PROC ST	E	F	2700	KENW	2008	-	3	A	35250	N	-	G

Primary Rd BELMONT AV | Distance (ft) 180 | Direction W | Secondary Rd H ST | NCIC 1005 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fresno | County Fresno | Population 7 | Rpt Dist SW B | Beat 2453 | Type 0 | CalTrans | Badge P904 | Collision Date 20140617 | Time 0058 | Day TUE
Primary Collision Factor PED VIOL | Violation 21954A | Collision Type AUTO/PED | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? Y | Process Date 20160121
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With PED | Lighting DARK - ST | Ped Action IN RD, | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	PED	25	M	H	IMP UNK	IMP UNK		E	N	6000	-		-	3	N		-	-	-
2	DRVR	46	M	W	HNBD		PROC ST	E	A	0100	NISSA	2011	-	3	A	22350	-	M	G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
PED	SEVERE	25	M	9	3	-	-

Primary Rd	TEMPERANCE	*Distance (ft)*	0	*Direction*		*Secondary Rd*	DAKOTA	*NCIC*	1005	*State Hwy?*	N	*Route*		*Postmile Prefix*	
City	Fresno	*County*	Fresno	*Population*	7	*Rpt Dist*	FRESN	*Beat*		*Type*	0	*CalTrans*		*Badge*	P876
Postmile		*Side of Hwy*		*Collision Date*	20150611	*Time*	0902	*Day*	THU						
Primary Collision Factor	R-O-W AUTO	*Violation*	21802A	*Collision Type*	BROADSIDE	*Severity*	PDO	*#Killed*	0	*#Injured*	0	*Tow Away?*	Y	*Process Date*	20160211
Weather1	CLEAR	*Weather2*		*Rdwy Surface*	DRY	*Rdwy Cond1*	NO UNUSL CND	*Rdwy Cond2*		*Spec Cond*	0				
Hit and Run		*Motor Vehicle Involved With*	OTHER MV	*Lighting*	DAYLIGHT	*Ped Action*		*Cntrl Dev*	FNCTNG	*Loc Type*		*Ramp/Int*			

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	40	M	H	HNBD		ENT TRAF	E	A	0100	DODGE	2010	-	3	N		-	M	G							
2	DRVR	[illegible]	M	[illegible]	HNBD		PROC ST	N	-	0000	TOYOT	2006	-	3	N		-	[illegible]	G							

Primary Rd	TEMPERANCE AV	*Distance (ft)*	0	*Direction*		*Secondary Rd*	EAST BELMONT	*NCIC*	1005	*State Hwy?*	N	*Route*		*Postmile Prefix*	
City	Fresno	*County*	Fresno	*Population*	7	*Rpt Dist*	SE	*Beat*	2568	*Type*	0	*CalTrans*		*Badge*	P1110
Postmile		*Side of Hwy*		*Collision Date*	20150901	*Time*	1206	*Day*	TUE						
Primary Collision Factor	STOP SGN|SIG	*Violation*	22450A	*Collision Type*	BROADSIDE	*Severity*	INJURY	*#Killed*	0	*#Injured*	1	*Tow Away?*		*Process Date*	20160412
Weather1	CLEAR	*Weather2*		*Rdwy Surface*	DRY	*Rdwy Cond1*	NO UNUSL CND	*Rdwy Cond2*		*Spec Cond*	0				
Hit and Run		*Motor Vehicle Involved With*	OTHER MV	*Lighting*	DAYLIGHT	*Ped Action*		*Cntrl Dev*	FNCTNG	*Loc Type*		*Ramp/Int*			

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	77	M	H	HBD-NUI		PROC ST	E	A	0100	MITSU	2000	-	3	N		-	L	G							
2	DRVR	64	M	W	HNBD		PROC ST	S	-	0000	LEXUS	2006	-	3	N		-	L	G	DRVR	COMP PN	64	M	1	0	L	G

Primary Rd	THOMAS AV	*Distance (ft)*	0	*Direction*		*Secondary Rd*	8TH ST	*NCIC*	1005	*State Hwy?*	N	*Route*		*Postmile Prefix*	
City	Fresno	*County*	Fresno	*Population*	7	*Rpt Dist*		*Beat*		*Type*	0	*CalTrans*		*Badge*	P1123
Postmile		*Side of Hwy*		*Collision Date*	20150209	*Time*	1131	*Day*	MON						
Primary Collision Factor	UNSAFE SPEED	*Violation*	22350	*Collision Type*	HIT OBJECT	*Severity*	PDO	*#Killed*	0	*#Injured*	0	*Tow Away?*	Y	*Process Date*	20160412
Weather1	CLEAR	*Weather2*		*Rdwy Surface*	DRY	*Rdwy Cond1*	NO UNUSL CND	*Rdwy Cond2*		*Spec Cond*	0				
Hit and Run	MSDMNR	*Motor Vehicle Involved With*	FIXED OBJ	*Lighting*	DAYLIGHT	*Ped Action*		*Cntrl Dev*	FNCTNG	*Loc Type*		*Ramp/Int*			

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	27	M	H	HNBD		RAN OFF RD	W	-	0000	HYUND	2015	-	-	N		-	L	B	PASS		27	F	3	0	L	B

Primary Rd	THOMAS AV	*Distance (ft)*	0	*Direction*		*Secondary Rd*	N HARRISON	*NCIC*	1005	*State Hwy?*	N	*Route*		*Postmile Prefix*	
City	Fresno	*County*	Fresno	*Population*	7	*Rpt Dist*		*Beat*		*Type*	0	*CalTrans*		*Badge*	P978
Postmile		*Side of Hwy*		*Collision Date*	20150330	*Time*	1300	*Day*	MON						
Primary Collision Factor	STOP SGN|SIG	*Violation*	22450A	*Collision Type*	BROADSIDE	*Severity*	INJURY	*#Killed*	0	*#Injured*	1	*Tow Away?*	Y	*Process Date*	20160125
Weather1	CLEAR	*Weather2*		*Rdwy Surface*	DRY	*Rdwy Cond1*	NO UNUSL CND	*Rdwy Cond2*		*Spec Cond*	0				
Hit and Run		*Motor Vehicle Involved With*	OTHER MV	*Lighting*	DAYLIGHT	*Ped Action*		*Cntrl Dev*	FNCTNG	*Loc Type*		*Ramp/Int*			

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	25	M	H	HNBD		PROC ST	E	A	0100	OLDSM	1999	-	3	F		-	L	G	DRVR	COMP PN	25	M	1	0	L	G
2	DRVR	38	M	H	HNBD		PROC ST	N	A	0100	CHEVR	2006	-	3	N		-	L	G							

Primary Rd	THORNE AV	*Distance (ft)*	0	*Direction*		*Secondary Rd*	DUDLEY AV	*NCIC*	1005	*State Hwy?*	N	*Route*		*Postmile Prefix*	
City	Fresno	*County*	Fresno	*Population*	7	*Rpt Dist*	2453	*Beat*	01B	*Type*	0	*CalTrans*		*Badge*	624
Postmile		*Side of Hwy*		*Collision Date*	20150827	*Time*	1055	*Day*	THU						
Primary Collision Factor	R-O-W AUTO	*Violation*	21802A	*Collision Type*	BROADSIDE	*Severity*	PDO	*#Killed*	0	*#Injured*	0	*Tow Away?*	N	*Process Date*	20160204
Weather1	CLEAR	*Weather2*		*Rdwy Surface*	DRY	*Rdwy Cond1*	NO UNUSL CND	*Rdwy Cond2*		*Spec Cond*	0				
Hit and Run		*Motor Vehicle Involved With*	OTHER MV	*Lighting*	DAYLIGHT	*Ped Action*		*Cntrl Dev*	FNCTNG	*Loc Type*		*Ramp/Int*			

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	52	M	W	HNBD		PROC ST	W	D	2200	GRUM	1993	-	3	N		-	-	G							
2	DRVR	21	M	B	HNBD		PROC ST	N	A	0100	DODGE	2006	-	3	N		-	M	G							

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
2	DRVR	26	M	A	HNBD		PROC ST	S	A	0100	HONDA	2009	-	3	N		-	L	G
3F	DRVR	22	M	B	HBD-UI		PROC ST	S	A	0100	KIA	2010	-	3	A	22350	-	L	G

Primary Rd **TEAGUE AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **WILLOW AV** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NE** *Beat* *Type* **0** *CalTrans* *Badge* **P1065** *Collision Date* **20160203** *Time* **0800** *Day* **WED**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **SIDESWIPE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20160415**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **BICYCLE** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party Info / Victim Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	998	-		IMP UNK	IMP UNK	RGT TURN	E	A	0100	DODGE		-	3	N		-	-	-
2	BICY	16	M	O	HNBD		SLOWING	E	L	0400	-		-	3	N		-	-	-

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **TEMPERANCE AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **BELMONT AV** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **SOUTH** *Beat* *Type* **0** *CalTrans* *Badge* **P1131** *Collision Date* **20160119** *Time* **1545** *Day* **TUE**
Primary Collision Factor **R-O-W AUTO** *Violation* **21800B** *Collision Type* **BROADSIDE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20160824**
Weather1 **CLOUDY** *Weather2* *Rdwy Surface* **WET** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party Info / Victim Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	49	M	H	IMP UNK	IMP UNK	PROC ST	W	A	0100	TOYOT	1998	-	3	A	22450	-	M	-
2	DRVR	17	F	W	HNBD		PROC ST	S	A	0100	HYUND	2014	-	3	-		-	N	G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
PASS		53	M	3	0	M	G
PASS		5	F	6	0	M	Q
PASS		12	F	4	0	M	G

Primary Rd **TERRACE AVE** *Distance (ft)* **178** *Direction* **E** *Secondary Rd* **HUBERT AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* *Beat* **010** *Type* **3** *CalTrans* *Badge* **018823** *Collision Date* **20160426** *Time* **1600** *Day* **TUE**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20160504**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **1**
Hit and Run *Motor Vehicle Involved With* **OTHER OBJ** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party Info / Victim Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	57	M	H	HNBD		UNS TURN	E	H	1300	CROW	1990	-	3	N		-	M	G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **THESTA ST** *Distance (ft)* **200** *Direction* **S** *Secondary Rd* **BELMONT AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* *Beat* **010** *Type* **3** *CalTrans* *Badge* **018574** *Collision Date* **20160418** *Time* **0715** *Day* **MON**
Primary Collision Factor **NOT DRIVER** *Violation* *Collision Type* **OTHER** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **N** *Process Date* **20160422**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **1**
Hit and Run *Motor Vehicle Involved With* **NON-CLSN** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party Info / Victim Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1	DRVR	65	F	W	HNBD		SLOWING	N	H	1300	FORD	2006	-	3	L		-	M	G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
PASS	COMP PN	998	M	3	0	P	G

Primary Rd **THOMPSON AVE.** *Distance (ft)* **1056** *Direction* **N** *Secondary Rd* **NEES AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* *Beat* **025** *Type* **3** *CalTrans* *Badge* **015106** *Collision Date* **20161223** *Time* **0920** *Day* **FRI**
Primary Collision Factor **UNKNOWN** *Violation* *Collision Type* **BROADSIDE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20170103**
Weather1 **CLOUDY** *Weather2* *Rdwy Surface* **WET** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party Info / Victim Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1	DRVR	62	F	W	HNBD		PASSING	N	A	0700	LEXUS	2013	-	3	N		-	M	G
2	DRVR	59	F	A	HNBD		LFT TURN	N	A	0700	HONDA	2006	-	3	N		-	M	G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd BELMONT AV | Distance (ft) 0 | Direction | Secondary Rd ARMSTRONG AV | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 013780 | Collision Date 20130502 | Time 1725 | Day THU
Primary Collision Factor R-O-W AUTO | Violation 21802A | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 5 | Tow Away? Y | Process Date 20140226
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 1
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	51	F	O	HNBD		LFT TURN	S	A	0100	NISSA	2005	- 3	N		-	M	G	PASS		17	F	3	0	M	G
2	DRVR	43	F	W	HNBD		PROC ST	W	H	1300	OTHER	2012	- 3	N		-	P	G	PASS	COMP PN	13	F	9	0	P	A
																			PASS	COMP PN	14	F	9	0	P	A
																			PASS	COMP PN	14	F	9	0	P	A
																			PASS	COMP PN	17	F	9	0	P	A
																			PASS	COMP PN	14	F	9	0	P	A

Primary Rd BELMONT AV | Distance (ft) [illegible] | Direction | Secondary Rd BISHOP AV | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 010 | Type 3 | CalTrans | Badge 17686 | Collision Date 20130304 | Time 1230 | Day MON
Primary Collision Factor R-O-W AUTO | Violation 21802A | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? N | Process Date 20140205
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	43	M	W	HNBD		STOPPED	N	G	2731	STERL	2003	- 3	N		-	P	G								
2	DRVR	35	M	W	HNBD		PROC ST	W	D	2200	NISSA	1992	- 3	N		-	P	G	DRVR	SEVERE	35	M	1	0	P	G

Primary Rd BELMONT AV | Distance (ft) 100 | Direction E | Secondary Rd BLYTHE AV | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 010 | Type 3 | CalTrans | Badge 018860 | Collision Date 20130615 | Time 2130 | Day SAT
Primary Collision Factor R-O-W AUTO | Violation 21804A | Collision Type BROADSIDE | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20140911
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DARK - ST | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	88	F	W	HNBD		ENT TRAF	N	A	0100	MERCE	2010	- 3	N		-	M	G	PASS		0	F	5	0	P	Q
2	DRVR	25	M	H	HNBD		PROC ST	E	A	0100	CHEVR	2004	- 3	N		-	M	G	PASS		28	F	4	0	P	G

Primary Rd BELMONT AV | Distance (ft) 1056 | Direction W | Secondary Rd BRAWLEY AV | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 010 | Type 3 | CalTrans | Badge 18823 | Collision Date 20130520 | Time 0849 | Day MON
Primary Collision Factor R-O-W AUTO | Violation 21804A | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 3 | Tow Away? Y | Process Date 20140226
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	43	M	H	HNBD		LFT TURN	S	D	2200	FREIG	2007	- 3	E		-	M	G	DRVR	COMP PN	43	M	1	0	M	G
2	DRVR	36	F	H	HNBD		PROC ST	W	A	0800	DODGE	2012	- 3	N		-	L	G	DRVR	COMP PN	36	F	1	0	L	G
																			PASS	COMP PN	16	F	3	0	L	G

Primary Rd	OAK ST	Distance (ft)	281	Direction	E	Secondary Rd	FAIRBANKS	NCIC	1013	State Hwy?	N	Route		Postmile Prefix	Postmile	Side of Hwy
City	Sanger	County	Fresno	Population	3	Rpt Dist	1013	Beat	001	Type	0	CalTrans		Badge MSIMS	Collision Date 20130324	Time 0329 Day SUN
Primary Collision Factor	UNSAFE SPEED			Violation	22350	Collision Type	SIDESWIPE	Severity	PDO			#Killed	0	#Injured 0	Tow Away? Y	Process Date 20140808
Weather1	CLEAR	Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2						Spec Cond 0		
Hit and Run		Motor Vehicle Involved With	OTHER MV	Lighting	DARK - ST	Ped Action		Cntrl Dev	NT PRS/FCTR	Loc Type						Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	36	F	H	HNBD		PROC ST	E	A	0100	PONTI	2006	-	3	-		-	L	G							
2	PRKD	998	-				PARKED	E	A	0100	NISSA	2003	-	-	N		-	-	-							

Primary Rd	OAKLAND AV	Distance (ft)	0	Direction		Secondary Rd	RT 269	NCIC	9495	State Hwy?	Y	Route	269	Postmile Prefix -	Postmile 18.76	Side of Hwy S
City	UNINCORP.	County	Fresno	Population	9	Rpt Dist		Beat	054	Type	3	CalTrans	6	Badge 018253	Collision Date 20130903	Time 2134 Day TUE
Primary Collision Factor	R-O-W AUTO			Violation	21803B	Collision Type	BROADSIDE	Severity	INJURY			#Killed	0	#Injured 1	Tow Away? Y	Process Date 20140403
Weather1	CLEAR	Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2						Spec Cond 0		
Hit and Run		Motor Vehicle Involved With	OTHER MV	Lighting	DARK - NO	Ped Action		Cntrl Dev	FNCTNG	Loc Type	I					Ramp/Int 5

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	25	M	W	HNBD		PROC ST	E	A	0100	VOLKS	2006	-	3	J		-	L	G							
2	DRVR	37	M	W	HNBD		PROC ST	S	D	2200	CHEVR	2007	-	3	N		-	M	G	DRVR	COMP PN	37	M	1	0	M	G

Primary Rd	OLIVE AV	Distance (ft)	103	Direction	E	Secondary Rd	ADLER AV	NCIC	9435	State Hwy?	N	Route		Postmile Prefix	Postmile	Side of Hwy
City	UNINCORP.	County	Fresno	Population	9	Rpt Dist		Beat	034	Type	3	CalTrans		Badge 18934	Collision Date 20131212	Time 1840 Day THU
Primary Collision Factor	DRVR ALC|DRG			Violation	23152A	Collision Type	SIDESWIPE	Severity	PDO			#Killed	0	#Injured 0	Tow Away? Y	Process Date 20141222
Weather1	CLEAR	Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2						Spec Cond 0		
Hit and Run		Motor Vehicle Involved With	PKD MV	Lighting	DARK - ST	Ped Action		Cntrl Dev	NT PRS/FCTR	Loc Type						Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	38	M	H	HBD-UI		UNS TURN	E	D	2200	TOYOT	1978	-	3	N		-	P	G							
2	PRKD	998	-				PARKED	E	D	2200	CHEVR	[illegible]	-		N		-	-	-							

Primary Rd	OLIVE AV	Distance (ft)	0	Direction		Secondary Rd	ARMSTRONG AV	NCIC	9435	State Hwy?	N	Route		Postmile Prefix	Postmile	Side of Hwy
City	UNINCORP.	County	Fresno	Population	9	Rpt Dist		Beat	030	Type	3	CalTrans		Badge 18914	Collision Date 20130617	Time 1745 Day MON
Primary Collision Factor	R-O-W AUTO			Violation	21802B	Collision Type	BROADSIDE	Severity	PDO			#Killed	0	#Injured 0	Tow Away? N	Process Date 20140915
Weather1	CLEAR	Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2						Spec Cond 0		
Hit and Run		Motor Vehicle Involved With	OTHER MV	Lighting	DAYLIGHT	Ped Action		Cntrl Dev	NT PRS/FCTR	Loc Type						Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	54	F	A	HNBD		PROC ST	E	D	2200	TOYOT	2002	-	3	N		-	M	G							
2	DRVR	38	M	H	HNBD		LFT TURN	W	D	2200	TOYOT	2002	-	3	N		-	M	G							

Primary Rd	OLIVE AV	Distance (ft)	1581	Direction	W	Secondary Rd	DEL REY AV	NCIC	9435	State Hwy?	N	Route		Postmile Prefix	Postmile	Side of Hwy
City	UNINCORP.	County	Fresno	Population	9	Rpt Dist		Beat	030	Type	3	CalTrans		Badge 014286	Collision Date 20130619	Time 1726 Day WED
Primary Collision Factor	IMPROP TURN			Violation	22107	Collision Type	HIT OBJECT	Severity	PDO			#Killed	0	#Injured 0	Tow Away? N	Process Date 20140911
Weather1	CLEAR	Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2						Spec Cond 0		
Hit and Run		Motor Vehicle Involved With	FIXED OBJ	Lighting	DAYLIGHT	Ped Action		Cntrl Dev	NT PRS/FCTR	Loc Type						Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	25	F	O	HNBD		RAN OFF RD	W	A	0100	CADIL	1979	-	3	N		-	M	H	PASS		31	M	1	0	M	H

Primary Rd OLIVE AV Distance (ft) 528 Direction W Secondary Rd DEWOLF AV NCIC 9435 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City UNINCORP. County Fresno Population 9 Rpt Dist Beat 030 Type 3 CalTrans Badge 014547 Collision Date 20131219 Time 0630 Day THU
Primary Collision Factor IMPROP PASS Violation 21750 Collision Type OTHER Severity INJURY #Killed 0 #Injured 1 Tow Away? Y Process Date 20140516
Weather1 CLOUDY Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With BICYCLE Lighting DARK - NO Ped Action Cntrl Dev NT PRS/FCTR Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	55	F	A	HNBD		PASSING	E	A	0100	FORD	2003	- 3	N		-	M G	PASS		55	F	3	0	M	G
																		PASS		48	F	4	0	M	G
																		PASS		70	F	5	0	P	G
																		PASS		75	M	6	0	P	G
2	BICY	54	M	H	HNBD		PROC ST	E	L	0400	-		- 3	N		-	- -	BICY	COMP PN	54	M	1	2	P	W

Primary Rd OLIVE AV Distance (ft) 145 Direction E Secondary Rd LAFAYETTE AV NCIC 9435 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City UNINCORP. County Fresno Population 9 Rpt Dist Beat 010 Type 3 CalTrans Badge 014590 Collision Date 20130930 Time 0804 Day MON
Primary Collision Factor R-O-W AUTO Violation 21801A Collision Type BROADSIDE Severity INJURY #Killed 0 #Injured 1 Tow Away? Y Process Date 20140409
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev NT PRS/FCTR Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	52	M	H	HNBD		U-TURN	W	A	0700	HONDA	2011	- 3	N		-	M G								
2	DRVR	22	M	H	HNBD		PROC ST	E	C	0200	OTHER		- 3	N		-	P W	DRVR	COMP PN	22	M	1	1	P	W

Primary Rd OLIVE AV Distance (ft) 100 Direction N Secondary Rd OLIVE AV 1382 NCIC 9435 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Fresno County Fresno Population 7 Rpt Dist Beat 720 Type 1 CalTrans Badge 13780 Collision Date 20130110 Time 2225 Day THU
Primary Collision Factor UNSAFE SPEED Violation 22350 Collision Type OVERTURNED Severity INJURY #Killed 0 #Injured 1 Tow Away? N Process Date 20130212
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With NON-CLSN Lighting DARK - NO Ped Action Cntrl Dev NT PRS/FCTR Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	39	M	W	HNBD		UNS TURN	S	J	4900	BMW	2009	- 3	N		-	P W	DRVR	COMP PN	39	M	1	1	P	W

Primary Rd OLIVE AV Distance (ft) 650 Direction W Secondary Rd TEMPERANCE AV NCIC 9435 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City UNINCORP. County Fresno Population 9 Rpt Dist Beat 030 Type 3 CalTrans Badge 18935 Collision Date 20130706 Time 1439 Day SAT
Primary Collision Factor UNSAFE SPEED Violation 22350 Collision Type REAR END Severity INJURY #Killed 0 #Injured 1 Tow Away? N Process Date 20140312
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev NT PRS/FCTR Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	45	M	H	HNBD		PROC ST	W	A	0100	CHRYS	2005	- 3	N		-	M G	DRVR	COMP PN	45	M	1	0	M	G
2	DRVR	21	M	W	HNBD		STOPPED	W	A	0100	HONDA	2009	- 3	N		-	M G								

Primary Rd OLIVE AV Distance (ft) 0 Direction Secondary Rd TEMPERANCE AV NCIC 9435 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City UNINCORP. County Fresno Population 9 Rpt Dist Beat 030 Type 3 CalTrans Badge 018896 Collision Date 20130713 Time 1133 Day SAT
Primary Collision Factor IMPROP TURN Violation 22107 Collision Type SIDESWIPE Severity INJURY #Killed 0 #Injured 2 Tow Away? Y Process Date 20140321
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev FNCTNG Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	29	M	A	HNBD		LFT TURN	W	D	2200	TOYOT	2012	- 2	N		-	M G								
2	DRVR	51	M	H	HNBD		STOPPED	N	A	0800	DODGE	1997	- 2	N		-	M G	DRVR	COMP PN	51	M	1	0	M	G
																		PASS	COMP PN	18	F	3	0	M	G

Primary Rd **TEMPERANCE AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **ASHLAN AV** *NCIC* **1001** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Clovis** *County* **Fresno** *Population* **5** *Rpt Dist* **CLOVI** *Beat* **C209** *Type* **0** *CalTrans* *Badge* **5104** *Collision Date* **20130213** *Time* **1235** *Day* **WED**
Primary Collision Factor **UNKNOWN** *Violation* *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **2** *Tow Away?* **Y** *Process Date* **20140512**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1	DRVR	81	M	W	HNBD		LFT TURN	N	A	0100	HONDA	2002	- 3	N		-	L G	DRVR	COMP PN	81	M	1	0	L	G
2	DRVR	19	F	W	HNBD		PROC ST	E	D	2200	NISSA	2005	- 3	N		-	M G	DRVR	COMP PN	19	F	1	0	M	G

Primary Rd **TEMPERANCE AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **BELMONT AV** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **018914** *Collision Date* **20131129** *Time* **1835** *Day* **FRI**
Primary Collision Factor **R-O-W AUTO** *Violation* **21800A** *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20140513**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DARK - NO** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	70	F	A	HNBD		PROC ST	S	A	0100	TOYOT	2010	- 3	N		-	M G	PASS		79	M	3	0	M	G
2	DRVR	39	F	H	HNBD		PROC ST	W	A	0100	TOYOT	2003	- 3	N		-	M G	PASS	COMP PN	43	M	3	0	M	G

Primary Rd **TEMPERANCE AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **BUTLER AV** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **034** *Type* **3** *CalTrans* *Badge* **18860** *Collision Date* **20130621** *Time* **0450** *Day* **FRI**
Primary Collision Factor **R-O-W AUTO** *Violation* **21801A** *Collision Type* **HEAD-ON** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20140311**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DUSK/DAWN** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	45	M	H	HNBD		LFT TURN	S	D	2200	CHEVR	2010	- 3	N		-	M G								
2	DRVR	48	M	H	HNBD		PROC ST	N	D	2200	CHEVR	1990	- 3	N		-	M P	DRVR	COMP PN	48	M	1	0	P	G

Primary Rd **TEMPERANCE AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **CENTRAL AV** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **034** *Type* **3** *CalTrans* *Badge* **17239** *Collision Date* **20131216** *Time* **1250** *Day* **MON**
Primary Collision Factor **STOP SGN|SIG** *Violation* **22450A** *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **2** *Tow Away?* **Y** *Process Date* **20140530**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	71	M	B	HNBD		PROC ST	S	A	0100	DODGE	2013	- 3	N		-	L G	DRVR	COMP PN	71	M	1	0	L	G
2	DRVR	61	M	H	HNBD		PROC ST	E	D	2200	TOYOT	1998	- 3	N		-	M G	DRVR	OTH VIS	61	M	1	0	M	G

Primary Rd **TEMPERANCE AV** *Distance (ft)* **5** *Direction* **S** *Secondary Rd* **CLINTON AV** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **13780** *Collision Date* **20130122** *Time* **0715** *Day* **TUE**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20140623**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **FIXED OBJ** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	59	M	W	HNBD		RGT TURN	N	G	2531	FREIG	2007	- 3	N		-	P G								

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
PASS	COMP PN	63	F	3	0	M	G

Primary Rd TEMPERANCE AV Distance (ft) 539 Direction N Secondary Rd MEDICAL CENTER NCIC 1001 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Clovis County Fresno Population 5 Rpt Dist CLOVI Beat C909 Type 0 CalTrans Badge 5104 Collision Date 20131202 Time 0750 Day MON
Primary Collision Factor UNSAFE SPEED Violation 22350 Collision Type REAR END Severity PDO #Killed 0 #Injured 0 Tow Away? Y Process Date 20141229
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev FNCTNG Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	45	M	A	HNBD		PROC ST	N	D	2200	TOYOT	1989	- 3	F		-	M G								
2	DRVR	40	F	W	HNBD		STOPPED	N	A	0100	NISSA	2012	- 3	N		-	M G								
3	DRVR	63	M	W	HNBD		STOPPED	N	D	2200	CHEVR	2006	- 3	N		-	M G								

Primary Rd TEMPERANCE AV Distance (ft) 0 Direction Secondary Rd NORTH AV NCIC 9435 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City UNINCORP. County Fresno Population 9 Rpt Dist Beat 040 Type 3 CalTrans Badge 17166 Collision Date 20130131 Time 1646 Day THU
Primary Collision Factor R-O-W AUTO Violation 21802A Collision Type BROADSIDE Severity PDO #Killed 0 #Injured 0 Tow Away? N Process Date 20140626
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev NT PRS/FCTR Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	24	F	W	HNBD		PROC ST	S	A	0100	KIA	2010	- 3	N		-	P G								
2	DRVR	32	M	H	HNBD		PROC ST	W	A	0100	FORD	2005	- 3	N		-	M G								

Primary Rd TEMPERANCE AV Distance (ft) 0 Direction Secondary Rd NORTH AV NCIC 9435 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City UNINCORP. County Fresno Population 9 Rpt Dist Beat 034 Type 3 CalTrans Badge 017138 Collision Date 20131004 Time 1630 Day FRI
Primary Collision Factor STOP SGN|SIG Violation 22450A Collision Type BROADSIDE Severity INJURY #Killed 0 #Injured 2 Tow Away? Y Process Date 20140424
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev FNCTNG Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	62	F	W	HNBD		PROC ST	S	A	0100	CHRYS	2002	- 3	N		-	L G	DRVR	COMP PN	62	F	1	0	L	G
2	DRVR	67	F	W	HNBD		PROC ST	E	D	2200	CHEVR	2000	- 3	N		-	L G	DRVR	COMP PN	67	F	1	0	L	G

Primary Rd TEMPERANCE AV Distance (ft) 0 Direction Secondary Rd OLIVE AV NCIC 9435 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City UNINCORP. County Fresno Population 9 Rpt Dist Beat 030 Type 3 CalTrans Badge 18746 Collision Date 20130105 Time 1645 Day SAT
Primary Collision Factor R-O-W AUTO Violation 21800C Collision Type BROADSIDE Severity PDO #Killed 0 #Injured 0 Tow Away? Y Process Date 20140613
Weather1 CLOUDY Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With OTHER MV Lighting DARK - NO Ped Action Cntrl Dev FNCTNG Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	24	M	W	HNBD		PROC ST	N	A	0700	HONDA	2002	- 3	N		-	M G								
2	DRVR	36	F	A	HNBD		PROC ST	W	A	0800	HONDA	2006	- 3	N		-	M G								

Primary Rd TEMPERANCE AV Distance (ft) 0 Direction Secondary Rd OLIVE AV NCIC 9435 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City UNINCORP. County Fresno Population 9 Rpt Dist Beat 030 Type 3 CalTrans Badge 014547 Collision Date 20130222 Time 0620 Day FRI
Primary Collision Factor STOP SGN|SIG Violation 22450A Collision Type BROADSIDE Severity INJURY #Killed 0 #Injured 1 Tow Away? Y Process Date 20140128
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev FNCTNG Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	42	F	O	HNBD		SLOWING	S	A	0100	ACURA	2006	- 3	N		-	L G								
2	DRVR	41	M	A	HNBD		LFT TURN	N	A	0100	HONDA	1995	- 3	N		-	M G	DRVR	COMP PN	41	M	1	0	M	G
3	DRVR	47	M	H	HNBD		STOPPED	E	D	2200	FORD	2000	- 3	N		-	M G								

Primary Rd TEMPERANCE AV | Distance (ft) 0 | Direction | Secondary Rd OLIVE AV | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 18896 | Collision Date 20130715 | Time 1640 | Day MON
Primary Collision Factor R-O-W AUTO | Violation 21802B | Collision Type SIDESWIPE | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20140929
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	40	F	H	HNBD		PROC ST	S	A	0700	MITSU	2011	- 3	N		-	M G	PASS		10	F	6	0	P	M
2	DRVR	43	F	A	HNBD		PROC ST	W	A	0100	TOYOT	2012	- 3	N		-	M G	PASS		23	M	3	0	M	G

Primary Rd TEMPERANCE AV | Distance (ft) 0 | Direction | Secondary Rd RT 180 | NCIC 9435 | State Hwy? Y | Route 180 | Postmile Prefix R | Postmile 63.566 | Side of Hwy E
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 034 | Type 3 | CalTrans 6 | Badge 018331 | Collision Date 20131228 | Time 1051 | Day SAT
Primary Collision Factor STOP SGN|SIG | Violation 21453A | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? Y | Process Date 20140519
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type R | Ramp/Int 4

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	65	M	W	HNBD		PROC ST	S	A	0700	GMC	2010	- 3	N		-	L G	DRVR	COMP PN	65	M	1	0	L	G
2	DRVR	40	M	O	HNBD		PROC ST	E	A	0100	HYUND	2013	- 3	N		-	L G								

Primary Rd TEMPERANCE AV | Distance (ft) 0 | Direction | Secondary Rd SHAW AV | NCIC 1001 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Clovis | County Fresno | Population 5 | Rpt Dist | Beat | Type 0 | CalTrans | Badge 5097 | Collision Date 20130425 | Time 1119 | Day THU
Primary Collision Factor STOP SGN|SIG | Violation 21453A | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 2 | Tow Away? Y | Process Date 20140214
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	61	M		HNBD		PROC ST	N	-	- 00	LEXUS		- -	-		-	L G	DRVR	COMP PN	61	M	1	0	L	G
2	DRVR	46	F	W	HNBD		PROC ST	W	-	- 00	NISSA		- -	-		-	L G	DRVR	COMP PN	46	F	1	0	L	G

Primary Rd TEMPERANCE AV | Distance (ft) 0 | Direction | Secondary Rd SOUTH AV | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 034 | Type 3 | CalTrans | Badge 015966 | Collision Date 20130619 | Time 1337 | Day WED
Primary Collision Factor R-O-W AUTO | Violation 21802A | Collision Type BROADSIDE | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20140912
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	81	M	H	HNBD		PROC ST	S	D	2200	FORD	2010	- 2	N		-	M G								
2	DRVR	19	F	H	HNBD		PROC ST	W	A	0100	DODGE	2004	- 3	N		-	L G	PASS		23	M	3	0	L	G

Primary Rd TERRY AV | Distance (ft) 600 | Direction W | Secondary Rd MARKS AV | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 020 | Type 3 | CalTrans | Badge 18421 | Collision Date 20130312 | Time 2230 | Day TUE
Primary Collision Factor UNSAFE SPEED | Violation 22350 | Collision Type HIT OBJECT | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20140729
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With FIXED OBJ | Lighting DARK - ST | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	21	M	H	HNBD		PROC ST	E	A	0100	MITSU	2006	- 3	N		-	M G								

Primary Rd **BELMONT AV** *Distance (ft)* **0** *Direction* **E** *Secondary Rd* **ABBY ST** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **2556** *Beat* **01D** *Type* **0** *CalTrans* *Badge* **P624** *Collision Date* **20141007** *Time* **1545** *Day* **TUE**
Primary Collision Factor **LANE CHANGE** *Violation* **21658A** *Collision Type* **SIDESWIPE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20160317**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	998	-		HBD-UNK		CHANG LN	-	A	0100	TOYOT	2003	- 1	A		-	-	-
2	DRVR	36	F	W	HNBD		PROC ST	W	-	0000	NISSA	2009	- 3	N		-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **BELMONT AV** *Distance (ft)* **100** *Direction* **E** *Secondary Rd* **ACADEMY AV** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **18860** *Collision Date* **20140228** *Time* **0235** *Day* **FRI**
Primary Collision Factor **DRVR ALC|DRG** *Violation* **23152A** *Collision Type* **OVERTURNED** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20150211**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **NON-CLSN** *Lighting* **DARK - NO** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	19	M	H	HBD-UI		UNS TURN	E	A	0100	FORD	2008	- 3	A	22107	-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **BELMONT AV** *Distance (ft)* **2112** *Direction* **W** *Secondary Rd* **ACADEMY AV** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **13780** *Collision Date* **20140801** *Time* **2500** *Day* **FRI**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20150501**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **FIXED OBJ** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	998	-		IMP UNK	IMP UNK	UNS TURN	W	-	9900	-		- 3	N		-	-	-

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **BELMONT AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **ARMSTRONG AV** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **2568** *Beat* **03A** *Type* **0** *CalTrans* *Badge* **P874** *Collision Date* **20140620** *Time* **1107** *Day* **FRI**
Primary Collision Factor **R-O-W AUTO** *Violation* **21802A** *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20160121**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	20	F	H	HNBD		PROC ST	S	A	0100	NISSA	2011	- 3	N		-	L	G
2	DRVR	40	F	A	HNBD		PROC ST	E	D	2200	TOYOT	2007	- 3	N		-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	OTH VIS	20	F	1	0	L	G
PASS		17	M	3	0	L	G
PASS		24	M	4	0	L	G
PASS		12	M	6	0	L	G

Primary Rd **BELMONT AV** *Distance (ft)* **300** *Direction* **E** *Secondary Rd* **BELMONT CIR** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **2453** *Beat* **01B** *Type* **0** *CalTrans* *Badge* **P624** *Collision Date* **20141024** *Time* **0727** *Day* **FRI**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20160126**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **FIXED OBJ** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	23	M	H	HNBD		PROC ST	E	F	2700	KENW	2008	- 3	A	35250	N	-	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd: BELMONT AV | Distance (ft): 0 | Direction: | Secondary Rd: TEMPERANCE AV | NCIC: 9435 | State Hwy?: N | Route: | Postmile Prefix: | Postmile: | Side of Hwy:
City: UNINCORP. | County: Fresno | Population: 9 | Rpt Dist: | Beat: 030 | Type: 3 | CalTrans: | Badge: 014547 | Collision Date: 20140620 | Time: 1025 | Day: FRI
Primary Collision Factor: STOP SGN|SIG | Violation: 22450A | Collision Type: BROADSIDE | Severity: INJURY | #Killed: 0 | #Injured: 4 | Tow Away?: Y | Process Date: 20160416
Weather1: CLEAR | Weather2: | Rdwy Surface: DRY | Rdwy Cond1: NO UNUSL CND | Rdwy Cond2: | Spec Cond: 0
Hit and Run: | Motor Vehicle Involved With: OTHER MV | Lighting: DAYLIGHT | Ped Action: | Cntrl Dev: FNCTNG | Loc Type: | Ramp/Int:

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	18	M	W	HNBD		PROC ST	W	D	2200	DODGE	2006	-	3	N	-	M	G
2	DRVR	49	M	H	HNBD		PROC ST	N	A	0700	JEEP	2003	-	3	N	-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	COMP PN	18	M	1	0	M	G
DRVR	SEVERE	49	M	1	0	M	G
PASS	SEVERE	54	M	3	0	M	G
PASS	COMP PN	22	M	6	0	P	G

Primary Rd: BELMONT AV | Distance (ft): 0 | Direction: | Secondary Rd: TEMPERANCE AV | NCIC: 9435 | State Hwy?: N | Route: | Postmile Prefix: | Postmile: | Side of Hwy:
City: UNINCORP. | County: Fresno | Population: 9 | Rpt Dist: | Beat: 030 | Type: 3 | CalTrans: | Badge: 017310 | Collision Date: 20140816 | Time: 1355 | Day: SAT
Primary Collision Factor: R-O-W AUTO | Violation: 21801B | Collision Type: HEAD-ON | Severity: PDO | #Killed: 0 | #Injured: 0 | Tow Away?: Y | Process Date: 20150506
Weather1: CLEAR | Weather2: | Rdwy Surface: DRY | Rdwy Cond1: NO UNUSL CND | Rdwy Cond2: | Spec Cond: 0
Hit and Run: | Motor Vehicle Involved With: OTHER MV | Lighting: DAYLIGHT | Ped Action: | Cntrl Dev: FNCTNG | Loc Type: | Ramp/Int:

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	45	M	H	HNBD		PROC ST	E	A	0800	FORD	1990	-	3	N	-	M	G
2	DRVR	49	F	W	HNBD		LFT TURN	W	A	0100	CHEVR	2006	-	3	N	-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd: BELMONT AV | Distance (ft): 0 | Direction: | Secondary Rd: TEMPERANCE AV | NCIC: 9435 | State Hwy?: N | Route: | Postmile Prefix: | Postmile: | Side of Hwy:
City: UNINCORP. | County: Fresno | Population: 9 | Rpt Dist: | Beat: 030 | Type: 3 | CalTrans: | Badge: 015026 | Collision Date: 20141118 | Time: 0750 | Day: TUE
Primary Collision Factor: IMPROP TURN | Violation: 22107 | Collision Type: HIT OBJECT | Severity: PDO | #Killed: 0 | #Injured: 0 | Tow Away?: N | Process Date: 20150630
Weather1: CLEAR | Weather2: | Rdwy Surface: DRY | Rdwy Cond1: NO UNUSL CND | Rdwy Cond2: | Spec Cond: 0
Hit and Run: | Motor Vehicle Involved With: FIXED OBJ | Lighting: DAYLIGHT | Ped Action: | Cntrl Dev: FNCTNG | Loc Type: | Ramp/Int:

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	63	M	W	HNBD		LFT TURN	E	G	2531	FREIG	2012	-	3	N	-	P	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd: BELMONT AV | Distance (ft): 36 | Direction: W | Secondary Rd: VANNESS | NCIC: 1005 | State Hwy?: N | Route: | Postmile Prefix: | Postmile: | Side of Hwy:
City: Fresno | County: Fresno | Population: 7 | Rpt Dist: 2555 | Beat: 01D | Type: 0 | CalTrans: | Badge: [illegible] | Collision Date: [illegible] | Time: [illegible] | Day: WED
Primary Collision Factor: TOO CLOSE | Violation: 21703 | Collision Type: REAR END | Severity: INJURY | #Killed: 0 | #Injured: 1 | Tow Away?: N | Process Date: 20160121
Weather1: CLOUDY | Weather2: | Rdwy Surface: WET | Rdwy Cond1: NO UNUSL CND | Rdwy Cond2: | Spec Cond: 0
Hit and Run: | Motor Vehicle Involved With: OTHER MV | Lighting: DAYLIGHT | Ped Action: | Cntrl Dev: FNCTNG | Loc Type: | Ramp/Int:

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	60	M	W	HNBD		PROC ST	W	A	0100	HYUND	2009	-	3	N	-	M	G
2	DRVR	36	M	H	HNBD		STOPPED	W	A	0800	NISSA	2005	-	3	N	-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	COMP PN	36	M	1	0	M	G

Primary Rd: BELMONT AV | Distance (ft): 300 | Direction: E | Secondary Rd: VILLA AV | NCIC: 9435 | State Hwy?: N | Route: | Postmile Prefix: | Postmile: | Side of Hwy:
City: UNINCORP. | County: Fresno | Population: 9 | Rpt Dist: | Beat: 030 | Type: 3 | CalTrans: | Badge: 12846 | Collision Date: 20140521 | Time: 0655 | Day: WED
Primary Collision Factor: IMPROP TURN | Violation: 22107 | Collision Type: REAR END | Severity: PDO | #Killed: 0 | #Injured: 0 | Tow Away?: Y | Process Date: 20150327
Weather1: CLEAR | Weather2: | Rdwy Surface: DRY | Rdwy Cond1: NO UNUSL CND | Rdwy Cond2: | Spec Cond: 0
Hit and Run: | Motor Vehicle Involved With: PKD MV | Lighting: DAYLIGHT | Ped Action: | Cntrl Dev: NT PRS/FCTR | Loc Type: | Ramp/Int:

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	60	F	W	HNBD		PROC ST	W	A	0800	FORD	2005	-	3	N	-	L	G
2	PRKD	998	-				PARKED	W	A	0100	DODGE	2001	-	3	N	-	-	-

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd EAST BELMONT AV Distance (ft) 0 Direction Secondary Rd N JACKSON AV NCIC 1005 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Fresno County Fresno Population 7 Rpt Dist 2460 Beat 00C Type 0 CalTrans Badge P179 Collision Date 20140508 Time 1152 Day THU
Primary Collision Factor R-O-W AUTO Violation 21801A Collision Type BROADSIDE Severity INJURY #Killed 0 #Injured 2 Tow Away? N Process Date 20160322
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev NT PRS/FCTR Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	25	F	H			LFT TURN	N	A	0100	GMC	2002	- 3	N		-	M	G								
2	DRVR	55	F	H	HNBD		PROC ST	W	A	0100	DODGE	1999	- 3	N		-	L	G	PASS	OTH VIS	87	F	3	0	L	G
																			PASS	COMP PN	55	F	1	0	L	G

Primary Rd EAST BELMONT AV Distance (ft) 0 Direction Secondary Rd N RECREATION AV NCIC 1005 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Fresno County Fresno Population 7 Rpt Dist SE265 Beat 00D Type 0 CalTrans Badge P689 Collision Date 20140615 Time 1230 Day SUN
Primary Collision Factor R-O-W AUTO Violation 21801A Collision Type BROADSIDE Severity INJURY #Killed 0 #Injured 1 Tow Away? N Process Date 20160121
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With MV ON OTHER RD Lighting DAYLIGHT Ped Action Cntrl Dev FNCTNG Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1	DRVR	24	F	H	HNBD		PROC ST	W	A	0100	HONDA	1998	- 3	N		-	M	G	DRVR	COMP PN	24	F	1	0	M	G
2F	DRVR	65	F	A	HNBD		LFT TURN	N	D	2200	TOYOT	2001	- 3	N		-	M	G								

Primary Rd EAST BELMONT AV Distance (ft) 213 Direction W Secondary Rd N ROWELL AV NCIC 1005 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Fresno County Fresno Population 7 Rpt Dist 2560 Beat 00C Type 0 CalTrans Badge P1215 Collision Date 20140719 Time 2048 Day SAT
Primary Collision Factor PED VIOL Violation 21955 Collision Type AUTO/PED Severity INJURY #Killed 0 #Injured 1 Tow Away? N Process Date 20160120
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With PED Lighting DARK - ST Ped Action NOT IN X- Cntrl Dev NT PRS/FCTR Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	PED	29	F	B	HNBD		PROC ST	S	N	6000	-		- 3	N		-	-	-	PED	OTH VIS	29	F	9	3	-	-
2	DRVR	998	-		IMP UNK	IMP UNK	PROC ST	E	D	2200	-		- -	N		-	-	-								

Primary Rd EAST BELMONT AV Distance (ft) 12 Direction E Secondary Rd N SAN PABLO AV NCIC 1005 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Fresno County Fresno Population 7 Rpt Dist 2453 Beat 00B Type 0 CalTrans Badge P1234 Collision Date 20140308 Time 0645 Day SAT
Primary Collision Factor UNSAFE SPEED Violation 22350 Collision Type REAR END Severity INJURY #Killed 0 #Injured 1 Tow Away? N Process Date 20160201
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev FNCTNG Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	55	F	H	HNBD		PROC ST	W	A	0700	CHEVR	1997	- 3	M		-	M	G	DRVR	COMP PN	65	F	1	0	P	C
2	DRVR	65	F	H	HNBD		PROC ST	W	A	0800	FORD	1974	- 3	N		-	P	C								

Primary Rd EAST BELMONT AV Distance (ft) 0 Direction Secondary Rd N TEMPERANCE NCIC 1005 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Fresno County Fresno Population 7 Rpt Dist 2468 Beat 00A Type 0 CalTrans Badge P960 Collision Date 20140712 Time 0734 Day SAT
Primary Collision Factor NOT STATED Violation Collision Type HEAD-ON Severity PDO #Killed 0 #Injured 0 Tow Away? N Process Date 20160201
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With FIXED OBJ Lighting DAYLIGHT Ped Action Cntrl Dev NT PRS/FCTR Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	24	M	W	HNBD		RAN OFF RD	N	A	0100	FORD	2003	- 3	N		-	M	G								

Primary Rd N ST | Distance (ft) 89 | Direction S | Secondary Rd 8TH ST | NCIC 1003 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Firebaugh | County Fresno | Population 2 | Rpt Dist FRBGH | Beat 0FI | Type 0 | CalTrans | Badge F040 | Collision Date 20140330 | Time 0836 | Day SUN
Primary Collision Factor NOT STATED | Violation | Collision Type HIT OBJECT | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? Y | Process Date 20141212
Weather1 CLEAR | Weather2 | Rdwy Surface WET | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With FIXED OBJ | Lighting DAYLIGHT | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	22	F	H	HNBD		LFT TURN	S	-	0000	FORD	2001	-	3	E		K	L	G	DRVR	COMP PN	22	F	1	0	L	G

Primary Rd N ST | Distance (ft) 0 | Direction | Secondary Rd N ST 2000 BLK | NCIC 1003 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Firebaugh | County Fresno | Population 2 | Rpt Dist | Beat 0FI | Type 0 | CalTrans | Badge F030 | Collision Date 20140620 | Time 1640 | Day FRI
Primary Collision Factor OTHER HAZ | Violation 21711 | Collision Type | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? N | Process Date 20150416
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With | Lighting DAYLIGHT | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	55	M	H			RAN OFF RD	N	-	0000	CHEVR	2002	-	-	A		-	M	G								
2	DRVR	35	M	H				S	-	0000	FORD	2012	-	-	-		-	M	G								
3	DRVR	45	M	H		null		S	-	0000	NISSA	1991	-	-	-		-	M	G								

Primary Rd N STATE ST | Distance (ft) 0 | Direction | Secondary Rd W GRIFFITH WY | NCIC 1005 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fresno | County Fresno | Population 7 | Rpt Dist NW194 | Beat 00C | Type 0 | CalTrans | Badge P1002 | Collision Date 20140920 | Time 0233 | Day SAT
Primary Collision Factor DRVR ALC|DRG | Violation 23152A | Collision Type HEAD-ON | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20160125
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With FIXED OBJ | Lighting DARK - ST | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	17	M	H	HBD-UI		PROC ST	-	A	0100	NISSA	2006	-	-	A	23152	I	-	-								

Primary Rd N TEMPERANCE AV | Distance (ft) 9 | Direction | Secondary Rd EAST BELMONT | NCIC 1005 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fresno | County Fresno | Population 7 | Rpt Dist 2568 | Beat 00A | Type 0 | CalTrans | Badge P970 | Collision Date 20140503 | Time 1410 | Day SAT
Primary Collision Factor OTHER IMPROP DRV | Violation | Collision Type SIDESWIPE | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? N | Process Date 20160206
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	25	M		HBD-NUI		ENT TRAF	N	-	0000	NISSA	1999	-	3	-		-	L	G	PASS		1	F	5	0	M	Q
2	DRVR	16	F	A	HNBD		PROC ST	E	-	0000	HONDA	2007	-	3	N		-	M	G								
3	DRVR	58	M		HNBD		PROC ST	S	-	0000	TOYOT	2006	-	3	N		-	M	G								

Primary Rd N TEMPERANCE AV | Distance (ft) 24 | Direction S | Secondary Rd EAST DAKOTA AV | NCIC 1005 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fresno | County Fresno | Population 7 | Rpt Dist 2168 | Beat 00A | Type 0 | CalTrans | Badge P1308 | Collision Date 20140217 | Time 1844 | Day MON
Primary Collision Factor IMPROP TURN | Violation 22107 | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 2 | Tow Away? Y | Process Date 20160126
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DARK - ST | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	55	F	O	HNBD		LFT TURN	W	A	0100	MERCE	2001	-	3	N		-	M	G	DRVR	COMP PN	55	F	1	0	M	G
2	DRVR	42	F		HNBD		PROC ST	N	A	0100	MERCE	2014	-	3	N		-	M	G	DRVR	COMP PN	42	F	1	0	M	G

Primary Rd	TEMPERANCE AV	Distance (ft)	500	Direction	N	Secondary Rd	MUSCAT AV	NCIC	9435	State Hwy?	N	Route		Postmile Prefix		Postmile		Side of Hwy	
City	UNINCORP.	County	Fresno	Population	9	Rpt Dist		Beat	030	Type	3	CalTrans		Badge	019327	Collision Date	20141021	Time	0445 Day TUE
Primary Collision Factor	IMPROP TURN			Violation	22107	Collision Type	HIT OBJECT	Severity	PDO	#Killed	0	#Injured	0	Tow Away?	Y	Process Date	20150615		
Weather1	CLEAR	Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2		Spec Cond	0								
Hit and Run		Motor Vehicle Involved With	FIXED OBJ	Lighting	DARK - NO	Ped Action		Cntrl Dev	NT PRS/FCTR	Loc Type		Ramp/Int							

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	24	M	H	HNBD		RAN OFF RD	S	A	0100	FORD	2000	-	3	F	-	M	G

Primary Rd	TEMPERANCE AV	Distance (ft)	1320	Direction	N	Secondary Rd	NORTH AV	NCIC	9435	State Hwy?	N	Route		Postmile Prefix		Postmile		Side of Hwy	
City	UNINCORP.	County	Fresno	Population	9	Rpt Dist		Beat	034	Type	3	CalTrans		Badge	018914	Collision Date	20140326	Time	1955 Day WED
Primary Collision Factor	IMPROP TURN			Violation	22107	Collision Type	HIT OBJECT	Severity	PDO	#Killed	0	#Injured	0	Tow Away?	N	Process Date	20150720		
Weather1	CLEAR	Weather2		Rdwy Surface	WET	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2		Spec Cond	0								
Hit and Run		Motor Vehicle Involved With	FIXED OBJ	Lighting	DARK - NO	Ped Action		Cntrl Dev	NT PRS/FCTR	Loc Type		Ramp/Int							

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	51	M	H	HNBD		UNS TURN	S	A	0100	FORD	2014	-	3	N	-	M	G

Primary Rd	TEMPERANCE AV	Distance (ft)	0	Direction		Secondary Rd	NORTH AV	NCIC	9435	State Hwy?	N	Route		Postmile Prefix		Postmile		Side of Hwy	
City	UNINCORP.	County	Fresno	Population	9	Rpt Dist		Beat	034	Type	3	CalTrans		Badge	18912	Collision Date	20140809	Time	1825 Day SAT
Primary Collision Factor	R-O-W AUTO			Violation	21802A	Collision Type	BROADSIDE	Severity	PDO	#Killed	0	#Injured	0	Tow Away?	Y	Process Date	20150509		
Weather1	CLEAR	Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2		Spec Cond	0								
Hit and Run		Motor Vehicle Involved With	OTHER MV	Lighting	DAYLIGHT	Ped Action		Cntrl Dev	FNCTNG	Loc Type		Ramp/Int							

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	72	M	W	HNBD		PROC ST	S	D	2200	GMC	1998	-	3	N	-	P	G
2	DRVR	19	M	H	HNBD		PROC ST	E	A	0100	NISSA	2003	-	3	N	-	M	G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
PASS		39	F	3	0	L	G
PASS		15	M	4	0	P	G
PASS		3	M	5	0	P	G
PASS		11	F	6	0	P	G

Primary Rd	TEMPERANCE AV	Distance (ft)	0	Direction		Secondary Rd	OLIVE AV	NCIC	9435	State Hwy?	N	Route		Postmile Prefix		Postmile		Side of Hwy	
City	UNINCORP.	County	Fresno	Population	9	Rpt Dist		Beat	030	Type	3	CalTrans		Badge	18914	Collision Date	20140723	Time	1805 Day WED
Primary Collision Factor	STOP SGN|SIG			Violation	22450A	Collision Type	SIDESWIPE	Severity	PDO	#Killed	0	#Injured	0	Tow Away?	Y	Process Date	20150416		
Weather1	CLEAR	Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2		Spec Cond	0								
Hit and Run		Motor Vehicle Involved With	OTHER MV	Lighting	DAYLIGHT	Ped Action		Cntrl Dev	FNCTNG	Loc Type		Ramp/Int							

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	32	M	O	HNBD		PROC ST	N	A	0100	TOYOT	2009	-	2	N	-	M	G
2	DRVR	21	F	H	HNBD		PROC ST	W	A	0100	DODGE	2012	-	2	N	-	M	G

Primary Rd	TEMPERANCE AV	Distance (ft)	0	Direction		Secondary Rd	RT 180	NCIC	9435	State Hwy?	Y	Route	180	Postmile Prefix	R	Postmile	63.566	Side of Hwy	E
City	UNINCORP.	County	Fresno	Population	9	Rpt Dist		Beat	030	Type	3	CalTrans	6	Badge	015806	Collision Date	20140110	Time	1145 Day FRI
Primary Collision Factor	STOP SGN|SIG			Violation	21453A	Collision Type	BROADSIDE	Severity	PDO	#Killed	0	#Injured	0	Tow Away?	Y	Process Date	20160316		
Weather1	CLEAR	Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2		Spec Cond	0								
Hit and Run		Motor Vehicle Involved With	OTHER MV	Lighting	DAYLIGHT	Ped Action		Cntrl Dev	FNCTNG	Loc Type	R	Ramp/Int	4						

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	45	M	A	HNBD		PROC ST	S	C	0200	BUICK	2001	-	3	N	-	M	G
2	DRVR	32	M	W	HNBD		LFT TURN	E	A	0100	FORD	2007	-	3	N	-	L	G

Primary Rd **ARMSTRONG AV** *Distance (ft)* **350** *Direction* **N** *Secondary Rd* **ADAMS AV** *NCIC* **1004** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fowler** *County* **Fresno** *Population* **2** *Rpt Dist* **FOWLE** *Beat* **0FO** *Type* **0** *CalTrans* *Badge* **G051** *Collision Date* **20151209** *Time* **0745** *Day* **WED**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **REAR END** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20160222**
Weather1 **CLOUDY** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	58	F	W	HNBD		PROC ST	S	-	0000	BUICK	2004	- 3	F		-	M G
2	DRVR	79	M	H	HNBD		BACKING	S	-	0000	MITSU	1987	- 3	E		-	P G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **ARMSTRONG AV** *Distance (ft)* **90** *Direction* **S** *Secondary Rd* **ASHLAN AV** *NCIC* **1001** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Clovis** *County* **Fresno** *Population* **5** *Rpt Dist* *Beat* *Type* **0** *CalTrans* *Badge* **5463** *Collision Date* **20150123** *Time* **2347** *Day* **FRI**
Primary Collision Factor **DRVR ALC|DRG** *Violation* **23152A** *Collision Type* **HEAD-ON** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20150811**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **FIXED OBJ** *Lighting* **DARK - ST** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	25	M	W	HBD-UI		RGT TURN	S	-	0000	SUZUK	2002	- 3	A	22450	-	L B

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **ARMSTRONG AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **ASHLAN AV** *NCIC* **1001** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Clovis** *County* **Fresno** *Population* **5** *Rpt Dist* *Beat* **003** *Type* **0** *CalTrans* *Badge* **5145** *Collision Date* **20150216** *Time* **1218** *Day* **MON**
Primary Collision Factor **R-O-W AUTO** *Violation* **21800C** *Collision Type* **BROADSIDE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20150827**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **MV ON OTHER RD** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	48	F	W	HNBD		PROC ST	W	A	0100	AUDI	2014	- 3	F		-	M G
2	DRVR	41	M	O	HNBD		PROC ST	N	A	0100	MERCE	2002	- 3	N		-	L G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **ARMSTRONG AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **BELMONT AV** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **017310** *Collision Date* **20150427** *Time* **0940** *Day* **MON**
Primary Collision Factor **R-O-W AUTO** *Violation* **21802A** *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20150519**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	29	M	A	HNBD		PROC ST	S	D	2200	CHEVR	2007	- 3	N		-	M G
2	DRVR	70	M	W	HNBD		PROC ST	E	E	2235	DODGE	2002	- 3	N		-	M G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	COMP PN	29	M	1	0	M	G

Primary Rd **ARMSTRONG AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **CHURCH AV** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **034** *Type* **3** *CalTrans* *Badge* **19610** *Collision Date* **20150523** *Time* **1803** *Day* **SAT**
Primary Collision Factor **R-O-W AUTO** *Violation* **21801A** *Collision Type* **SIDESWIPE** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20150616**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	35	F	H	HNBD		LFT TURN	N	A	0100	PONTI	2004	- 3	N		-	M G
2	DRVR	33	F	H	HNBD		PROC ST	S	A	0700	CHEVR	2007	- 3	N		-	M G
3	DRVR	45	M	A	HNBD		STOPPED	E	A	0100	TOYOT	2011	- 3	N		-	M G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
PASS	OTH VIS	2	F	4	0	M	Q

Primary Rd **ARMSTRONG AVE** *Distance (ft)* **0** *Direction* *Secondary Rd* **FLORADORA AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **014479** *Collision Date* **20150905** *Time* **1048** *Day* **SAT**
Primary Collision Factor **NOT DRIVER** *Violation* *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **4** *Tow Away?* **Y** *Process Date* **20151019**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1	DRVR	68	M	H	HNBD	PHYS	PROC ST	E	D	2200	TOYT	1999	- 3	N		-	L	G
2	DRVR	61	F	W	HNBD		PROC ST	S	A	0700	HOND	2013	- 3	N		-	L	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	COMP PN	68	M	1	0	L	G
DRVR	SEVERE	61	F	1	0	L	G
PASS	SEVERE	38	F	3	0	L	G
PASS	SEVERE	3	F	6	0	P	Q

Primary Rd **ARMSTRONG AVE** *Distance (ft)* **400** *Direction* **N** *Secondary Rd* **OLIVE AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **012846** *Collision Date* **20151022** *Time* **0740** *Day* **THU**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **REAR END** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20151030**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	25	F	H	HNBD		PROC ST	S	A	0100	KIA	2008	- 3	N		-	M	G
2	DRVR	44	M	A	HNBD		STOPPED	S	A	0700	TOYO	2008	- 3	N		-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
PASS		40	F	3	0	M	G
PASS		15	F	4	0	M	G

Primary Rd **ARMSTRONG AVE.** *Distance (ft)* **0** *Direction* *Secondary Rd* **JENSEN AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **034** *Type* **3** *CalTrans* *Badge* **018609** *Collision Date* **20151102** *Time* **2033** *Day* **MON**
Primary Collision Factor **R-O-W AUTO** *Violation* **21802A** *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **2** *Tow Away?* **Y** *Process Date* **20151111**
Weather1 **CLOUDY** *Weather2* **RAINING** *Rdwy Surface* **WET** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DARK - NO** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	22	F	H	HNBD		LFT TURN	S	A	0100	MITS	2006	- 3	N		-	M	G
2	DRVR	57	M	W	HNBD		PROC ST	W	D	2200	FORD	1996	- 3	N		-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
PASS	COMP PN	16	F	6	0	P	G
PASS		22	M	3	0	M	G
DRVR	COMP PN	57	M	1	0	M	G

Primary Rd **ARMSTRONG AVE.** *Distance (ft)* **1584** *Direction* **S** *Secondary Rd* **LINCOLN AVE.** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **034** *Type* **3** *CalTrans* *Badge* **015806** *Collision Date* **20150902** *Time* **0643** *Day* **WED**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20151019**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER OBJ** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	22	M	H	HNBD		UNS TURN	S	A	0800	DODGE	2000	- 3	N		-	M	A

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **ARRANTS ST** *Distance (ft)* **0** *Direction* *Secondary Rd* **C ST** *NCIC* **1015** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Selma** *County* **Fresno** *Population* **3** *Rpt Dist* **FRESN** *Beat* **003** *Type* **0** *CalTrans* *Badge* **N072** *Collision Date* **20151113** *Time* **2107** *Day* **FRI**
Primary Collision Factor **OTHER IMPROP DRV** *Violation* *Collision Type* **SIDESWIPE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20160208**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **PKD MV** *Lighting* **DARK - ST** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	998	M	H	IMP UNK	IMP UNK	BACKING	W	-	0000	HONDA		- 3	N		-	M	B
2	PRKD	998	-				PARKED	W	-	0000	TOYOT	2010	- 3	N		-	-	-

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd FISHER ST | Distance (ft) 210 | Direction S | Secondary Rd THOMAS AV | NCIC 1005 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fresno | County Fresno | Population 7 | Rpt Dist FRESN | Beat | Type 0 | CalTrans | Badge P876 | Collision Date 20150723 | Time 1239 | Day THU
Primary Collision Factor OTHER IMPROP DRV | Violation | Collision Type BROADSIDE | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? | Process Date 20160203
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With PKD MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	45	M	W	HNBD		STOPPED	S	I	1100	OTHER	2008	-	3	-		-	M	G							
2	PRKD	998	-				PARKED	S	A	0100	TOYOT	1994	-	-	-		-	-	-							

Primary Rd FLORA AV | Distance (ft) 0 | Direction | Secondary Rd MCCALL AV | NCIC 1015 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Selma | County Fresno | Population 3 | Rpt Dist | Beat 002 | Type 0 | CalTrans | Badge N096 | Collision Date 20150205 | Time 0340 | Day THU
Primary Collision Factor STOP SGN|SIG | Violation 21453A | Collision Type REAR END | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? N | Process Date 20150820
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DARK - ST | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	47	M	H	HNBD		PROC ST	W	-	0000	DODGE	1998	-	3	A	14601	-	M	G							
2	DRVR	23	M	H	HNBD		PROC ST	N	-	0000	HONDA	1996	-	3	N		-	M	G							

Primary Rd FLORADORA AV | Distance (ft) 85 | Direction W | Secondary Rd ANGUS ST | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fresno | County Fresno | Population 7 | Rpt Dist | Beat 901 | Type 4 | CalTrans | Badge 17630 | Collision Date 20150122 | Time 1430 | Day THU
Primary Collision Factor UNSAFE SPEED | Violation 22350 | Collision Type REAR END | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? N | Process Date 20150811
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 1
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	18	M	W	HNBD		PROC ST	E	A	0100	AUDI	2008	-	3	N		-	M	G							
2	DRVR	35	F	H	HNBD		STOPPED	E	H	1300	INTER	2013	-	3	N		-	F	G							

Primary Rd FLORADORA AV | Distance (ft) 0 | Direction | Secondary Rd ARMSTRONG AV | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 015106 | Collision Date 20150210 | Time 1530 | Day TUE
Primary Collision Factor R-O-W AUTO | Violation 21802A | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 2 | Tow Away? N | Process Date 20150318
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	49	M	A	HNBD		PROC ST	E	A	0700	TOYOT	2000	-	3	N		-	M	G	PASS	COMP PN	43	F	3	0	M	G
																				PASS	COMP PN	74	F	4	0	M	G
2	DRVR	41	F	W	HNBD		PROC ST	N	D	2200	CHEVR	2005	-	3	N		-	M	G							

Primary Rd FLORADORA AV | Distance (ft) 0 | Direction | Secondary Rd COLLEGE AV | NCIC 1005 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fresno | County Fresno | Population 7 | Rpt Dist 1B | Beat 2355 | Type 0 | CalTrans | Badge P1109 | Collision Date 20150306 | Time 1340 | Day FRI
Primary Collision Factor STOP SGN|SIG | Violation 22450A | Collision Type BROADSIDE | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20160202
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run MSDMNR | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	998	M	H	IMP UNK	IMP UNK	ENT TRAF	E	-	0000	-		-	-	N		-	-	-							
2	DRVR	35	F	W	HNBD		PROC ST	S	A	0100	TOYOT	2004	-	3	N		-	M	G							

Primary Rd **FLORADORA AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **GLENN AV** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **SW** *Beat* **00C** *Type* **0** *CalTrans* *Badge* **P978** *Collision Date* **20150521** *Time* **1538** *Day* **THU**
Primary Collision Factor **STOP SGN|SIG** *Violation* **22450A** *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* *Process Date* **20160125**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info		OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	22	M	W	HNBD		PROC ST	E	-	0000	CHEVR	2009	-	3	F		-	M	G								
2	DRVR	35	F	H	HNBD		PROC ST	-	A	0100	NISSA	2007	-	3	N		-	M	G	DRVR	COMP PN	35	F	1	0	M	G

Primary Rd **FLORADORA AVE** *Distance (ft)* **0** *Direction* *Secondary Rd* **ARMSTRONG AVE** *NCIC* **9435** *State Hwy?* **Y** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **020205** *Collision Date* **20151221** *Time* **1915** *Day* **MON**
Primary Collision Factor **R-O-W AUTO** *Violation* **21802A** *Collision Type* **BROADSIDE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20160114**
Weather1 **RAINING** *Weather2* *Rdwy Surface* **WET** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DARK - NO** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info		OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	54	F	O	HNBD		ENT TRAF	E	A	0700	MERB	2015	-	3	N		-	M	G								
2	DRVR	18	M	W	HNBD		PROC ST	N	A	0100	NISS	2007	-	3	N		-	M	G								

Primary Rd **FLORAL** *Distance (ft)* **0** *Direction* *Secondary Rd* **FLORAL 3200** *NCIC* **1015** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Selma** *County* **Fresno** *Population* **3** *Rpt Dist* **SELMA** *Beat* **001** *Type* **0** *CalTrans* *Badge* **N044** *Collision Date* **20150528** *Time* **1645** *Day* **THU**
Primary Collision Factor **STRTNG|BCKNG** *Violation* **22106** *Collision Type* **REAR END** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20151022**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **OTHER MV** *Lighting* *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info		OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	998	-				BACKING	-	-	0000	-		-	-	-		-	-	-								
2	PRKD	998	-			null		-	-	0000	CHEVR	2005	-	-	-		-	-	-								

Primary Rd **FLORAL** *Distance (ft)* **0** *Direction* *Secondary Rd* **MCCALL** *NCIC* **1015** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Selma** *County* **Fresno** *Population* **3** *Rpt Dist* **SELMA** *Beat* **002** *Type* **0** *CalTrans* *Badge* **N044** *Collision Date* **20150304** *Time* **1645** *Day* **WED**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20150918**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **FIXED OBJ** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info		OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	998	-			null		N	-	9900	-		-	-	-		-	-	-								

Primary Rd **FLORAL** *Distance (ft)* **0** *Direction* *Secondary Rd* **THOMPSON** *NCIC* **1015** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Selma** *County* **Fresno** *Population* **3** *Rpt Dist* **SELMA** *Beat* **001** *Type* **0** *CalTrans* *Badge* **N075** *Collision Date* **20150823** *Time* **1840** *Day* **SUN**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **REAR END** *Severity* **INJURY** *#Killed* **0** *#Injured* **2** *Tow Away?* **Y** *Process Date* **20150909**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info		OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	31	F	W	HNBD		PROC ST	W	-	0000	KIA	2006	-	-	A		-	M	G	DRVR	COMP PN	31	F	1	0	M	G
2	DRVR	36	M	H	HNBD			W	-	0000	KIA	2005	-	-	-		-	M	G	PASS	COMP PN	24	F	3	0	M	G
																				PASS		19	F	4	0	P	G

Primary Rd TEMPERANCE AV | Distance (ft) 2112 | Direction N | Secondary Rd CHURCH AV | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 019032 | Collision Date 20150723 | Time 1955 | Day THU
Primary Collision Factor IMPROP TURN | Violation 22107 | Collision Type OTHER | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? N | Process Date 20150826
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With BICYCLE | Lighting DAYLIGHT | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	BICY	13	M	W	HNBD		OPPOS LN	W	L	0400	-		-	3	N		-	-	-	BICY	SEVERE	13	M	1	1	P	V
2	DRVR	19	F	H	HNBD		PROC ST	S	A	0800	TOYOT	2006	-	3	N		-	M	G								

Primary Rd TEMPERANCE AV | Distance (ft) 0 | Direction | Secondary Rd CLINTON AV | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 013780 | Collision Date 20150707 | Time 0655 | Day TUE
Primary Collision Factor STOP SGN|SIG | Violation 22450A | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 4 | Tow Away? Y | Process Date 20150729
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	66	F	H	HNBD		PROC ST	W	A	0100	CHEVR	2002	-	3	N		-	M	G	DRVR	OTH VIS	66	F	1	0	M	G
2	DRVR	19	F	W	HNBD		PROC ST	N	A	0100	HONDA	1998	-	3	N		-	L	G	DRVR	OTH VIS	19	F	1	0	L	G
3	DRVR	38	M	H	HNBD		PROC ST	S	A	0100	CHEVR	2011	-	3	N		-	L	G	DRVR	COMP PN	38	M	1	0	L	G
																		PASS	COMP PN	21	M	3	0	L	G

Primary Rd TEMPERANCE AV | Distance (ft) 0 | Direction | Secondary Rd EAST BELMONT | NCIC 1005 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fresno | County Fresno | Population 7 | Rpt Dist SE | Beat 2568 | Type 0 | CalTrans | Badge P1110 | Collision Date 20150901 | Time 1206 | Day TUE
Primary Collision Factor STOP SGN|SIG | Violation 22450A | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? | Process Date 20160412
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	77	M	H	HBD-NUI		PROC ST	E	A	0100	MITSU	2000	-	3	N		-	L	G								
2	DRVR	64	M	W	HNBD		PROC ST	S	-	0000	LEXUS	2006	-	3	N		-	L	G	DRVR	COMP PN	64	M	1	0	L	G

Primary Rd TEMPERANCE AV | Distance (ft) 424 | Direction N | Secondary Rd GETTYSBURG AV | NCIC 1001 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Clovis | County Fresno | Population 5 | Rpt Dist | Beat 003 | Type 0 | CalTrans | Badge 5272 | Collision Date 20150526 | Time 0429 | Day TUE
Primary Collision Factor IMPROP TURN | Violation 22107 | Collision Type HIT OBJECT | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? Y | Process Date 20160602
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With FIXED OBJ | Lighting DARK - ST | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	26	M	H	HNBD		PROC ST	S	A	0100	CADIL	2002	-	3	A	22107	-	L	G	PASS		22	F	3	0	L	G
																		PASS		1	F	4	0	M	G
																		PASS		0	M	5	0	M	G
																		PASS	COMP PN	7	F	6	0	M	G

Primary Rd TEMPERANCE AV | Distance (ft) 88 | Direction E | Secondary Rd GOLDEN STATE | NCIC 1004 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Fowler | County Fresno | Population 2 | Rpt Dist FOWLE | Beat 0FO | Type 0 | CalTrans | Badge G041 | Collision Date 20150221 | Time 2247 | Day SAT
Primary Collision Factor IMPROP TURN | Violation 22107 | Collision Type HIT OBJECT | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20150922
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With FIXED OBJ | Lighting DARK - NO | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	26	M		HNBD		RGT TURN	N	-	0000	DODGE	2011	-	3	A		J	M	G								

Primary Rd **BELMONT AVE** *Distance (ft)* **53** *Direction* **E** *Secondary Rd* **TEMPERANCE AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **025** *Type* **3** *CalTrans* *Badge* **020193** *Collision Date* **20161224** *Time* **2020** *Day* **SAT**
Primary Collision Factor **DRVR ALC|DRG** *Violation* **23152A** *Collision Type* **HIT OBJECT** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20170106**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **CONS ZONE** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **FIXED OBJ** *Lighting* **DARK - NO** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	25	F	H	HBD-UI		PROC ST	E	A	0100	HOND	2003	- 3	A	22350	-	L	G	DRVR	COMP PN	25	F	1	0	L	G

Primary Rd **BELMONT AVE** *Distance (ft)* **0** *Direction* *Secondary Rd* **TRINITY AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **015** *Type* **3** *CalTrans* *Badge* **019369** *Collision Date* **20161212** *Time* **1525** *Day* **MON**
Primary Collision Factor **R-O-W AUTO** *Violation* **21802A** *Collision Type* **BROADSIDE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20161220**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	998	-		IMP UNK	IMP UNK	PROC ST	S	-	9900	-		- 3	N		-	B	B								
2	DRVR	39	F	H	HNBD		PROC ST	E	A	0700	CHEV	2002	- 3	N		-	M	G	PASS		18	F	3	0	P	G

Primary Rd **BELMONT AVE** *Distance (ft)* **120** *Direction* **W** *Secondary Rd* **VALENTINE AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **010** *Type* **3** *CalTrans* *Badge* **018226** *Collision Date* **20160203** *Time* **0730** *Day* **WED**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **REAR END** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20160216**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	37	M	H	HNBD		PROC ST	E	A	0100	FORD	2001	- 3	N		-	L	G								
2	DRVR	45	M	H	HNBD		STOPPED	E	A	0100	NISS	2003	- 3	N		-	M	G								

Primary Rd **BELMONT AVE** *Distance (ft)* **700** *Direction* **E** *Secondary Rd* **WASHOE AVE** *NCIC* **9461** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **060** *Type* **3** *CalTrans* *Badge* **018928** *Collision Date* **20160409** *Time* **1119** *Day* **SAT**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **OVERTURNED** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20160503**
Weather1 **CLOUDY** *Weather2* **RAINING** *Rdwy Surface* **WET** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **NON-CLSN** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	998	-		HBD-UNK		RAN OFF RD	W	A	0100	HONDA	1998	- 3	N		-	-	-								

Primary Rd **BELMONT AVE** *Distance (ft)* **0** *Direction* *Secondary Rd* **WILLOW AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **020062** *Collision Date* **20160401** *Time* **2149** *Day* **FRI**
Primary Collision Factor **STOP SGN|SIG** *Violation* **21453A** *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **N** *Process Date* **20160412**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **BICYCLE** *Lighting* **DARK - ST** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	BICY	52	M	B	HNBD		PROC ST	W	L	0400	MURRA		- 3	N		-	-	V	BICY	OTH VIS	52	M	1	1	-	V
2	DRVR	20	F	B	HNBD		PROC ST	N	A	0100	TOYO	1997	- 3	N		-	M	G	PASS		998	M	6	0	P	Q

Primary Rd	**BELMONT AVE**	Distance (ft)	**20**	Direction	**E**	Secondary Rd	**WINERY AVE**	NCIC	**9435**	State Hwy?	**N**	Route		Postmile Prefix	Postmile	Side of Hwy
City	**UNINCORP.**	County	**Fresno**	Population	**9**	Rpt Dist		Beat	**030**	Type	**3**	CalTrans	Badge **020193**	Collision Date **20160814**	Time **0345**	Day **SUN**
Primary Collision Factor	**IMPROP TURN**	Violation	**22107**	Collision Type	**HIT OBJECT**	Severity	**PDO**	#Killed	**0**	#Injured	**0**	Tow Away?	**Y**	Process Date **20160829**		
Weather1	**CLEAR**	Weather2		Rdwy Surface	**DRY**	Rdwy Cond1	**NO UNUSL CND**	Rdwy Cond2		Spec Cond	**0**					
Hit and Run	**MSDMNR**	Motor Vehicle Involved With	**FIXED OBJ**	Lighting	**DARK - ST**	Ped Action		Cntrl Dev	**NT PRS/FCTR**	Loc Type		Ramp/Int				

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	998	-		IMP UNK	IMP UNK	UNS TURN	E	A	0100	NISS	2014	-	3	N		- B B								

Primary Rd	**BELMONT AVE**	Distance (ft)	**800**	Direction	**W**	Secondary Rd	**TEMPERANCE AVE**	NCIC	**9435**	State Hwy?	**N**	Route		Postmile Prefix	Postmile	Side of Hwy
City	**UNINCORP.**	County	**Fresno**	Population	**9**	Rpt Dist		Beat	**030**	Type	**3**	CalTrans	Badge **020205**	Collision Date **20160426**	Time **1800**	Day **TUE**
Primary Collision Factor	**IMPROP TURN**	Violation	**22107**	Collision Type	**HIT OBJECT**	Severity	**PDO**	#Killed	**0**	#Injured	**0**	Tow Away?	**Y**	Process Date **20160506**		
Weather1	**CLEAR**	Weather2		Rdwy Surface	**DRY**	Rdwy Cond1	**NO UNUSL CND**	Rdwy Cond2		Spec Cond	**0**					
Hit and Run	**MSDMNR**	Motor Vehicle Involved With	**FIXED OBJ**	Lighting	**DAYLIGHT**	Ped Action		Cntrl Dev	**NT PRS/FCTR**	Loc Type		Ramp/Int				

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	72	M	H	HNBD		UNS TURN	E	A	0100	HOND	2000	-	3	N		- M G								

Primary Rd	**BELMONT AVE.**	Distance (ft)	**10**	Direction	**W**	Secondary Rd	**BIOLA AVE**	NCIC	**9435**	State Hwy?	**N**	Route		Postmile Prefix	Postmile	Side of Hwy
City	**UNINCORP.**	County	**Fresno**	Population	**9**	Rpt Dist		Beat	**010**	Type	**3**	CalTrans	Badge **019473**	Collision Date **20160811**	Time **2500**	Day **THU**
Primary Collision Factor	**IMPROP TURN**	Violation	**22107**	Collision Type	**HIT OBJECT**	Severity	**PDO**	#Killed	**0**	#Injured	**0**	Tow Away?	**Y**	Process Date **20160817**		
Weather1	**CLEAR**	Weather2		Rdwy Surface	**DRY**	Rdwy Cond1	**NO UNUSL CND**	Rdwy Cond2		Spec Cond	**0**					
Hit and Run	**MSDMNR**	Motor Vehicle Involved With	**FIXED OBJ**	Lighting	**DARK - NO**	Ped Action		Cntrl Dev	**NT PRS/FCTR**	Loc Type		Ramp/Int				

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	998	-		IMP UNK	IMP UNK	UNS TURN	W	A	0100	CHEV	2006	-	3	N		- B B								

Primary Rd	**BELMONT AVE.**	Distance (ft)	**528**	Direction	**E**	Secondary Rd	**LYON AVE.**	NCIC	**9461**	State Hwy?	**N**	Route		Postmile Prefix	Postmile	Side of Hwy
City	**UNINCORP.**	County	**Fresno**	Population	**9**	Rpt Dist		Beat	**625**	Type	**2**	CalTrans	Badge **018354**	Collision Date **20161230**	Time **2120**	Day **FRI**
Primary Collision Factor	**UNSAFE SPEED**	Violation	**22350**	Collision Type	**REAR END**	Severity	**PDO**	#Killed	**0**	#Injured	**0**	Tow Away?	**N**	Process Date **20170104**		
Weather1	**RAINING**	Weather2		Rdwy Surface	**DRY**	Rdwy Cond1	**NO UNUSL CND**	Rdwy Cond2		Spec Cond	**0**					
Hit and Run	**MSDMNR**	Motor Vehicle Involved With	**OTHER MV**	Lighting	**DARK - NO**	Ped Action		Cntrl Dev	**NT PRS/FCTR**	Loc Type		Ramp/Int				

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	998	-		IMP UNK	IMP UNK	PROC ST	W	D	2200	-		-	3	N		- B B								
2	DRVR	51	F	H	HNBD		PROC ST	W	A	0100	HONDA	2000	-	3	N		- M G								

Primary Rd	**BELMONT AVE.**	Distance (ft)	**75**	Direction	**E**	Secondary Rd	**MANILA AVE**	NCIC	**9435**	State Hwy?	**N**	Route		Postmile Prefix	Postmile	Side of Hwy
City	**UNINCORP.**	County	**Fresno**	Population	**9**	Rpt Dist		Beat	**030**	Type	**3**	CalTrans	Badge **018944**	Collision Date **20160115**	Time **0053**	Day **FRI**
Primary Collision Factor	**DRVR ALC|DRG**	Violation	**23152A**	Collision Type	**HIT OBJECT**	Severity	**PDO**	#Killed	**0**	#Injured	**0**	Tow Away?	**N**	Process Date **20160204**		
Weather1	**CLOUDY**	Weather2		Rdwy Surface	**DRY**	Rdwy Cond1	**NO UNUSL CND**	Rdwy Cond2		Spec Cond	**0**					
Hit and Run	**MSDMNR**	Motor Vehicle Involved With	**FIXED OBJ**	Lighting	**DARK - NO**	Ped Action		Cntrl Dev	**FNCTNG**	Loc Type		Ramp/Int				

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	30	M	O	HBD-UI		PROC ST	W	D	2200	FORD	2011	-	3	A	21651	- M G								

Primary Rd FOWLER AVE | Distance (ft) 60 | Direction S | Secondary Rd DE WOODY ST | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 410 | Type 1 | CalTrans | Badge 013660 | Collision Date 20160827 | Time 0231 | Day SAT
Primary Collision Factor DRVR ALC|DRG | Violation 23152A | Collision Type HIT OBJECT | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20160912
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With FIXED OBJ | Lighting DARK - ST | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	24	M	H	HBD-UI		UNS TURN	N	C	0200	DUCA	2008	- 3	A	22350	-	- W								

Primary Rd FOWLER AVE | Distance (ft) 395 | Direction N | Secondary Rd ELKHORN AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 040 | Type 3 | CalTrans | Badge 019523 | Collision Date 20160115 | Time 0640 | Day FRI
Primary Collision Factor UNSAFE SPEED | Violation 22350 | Collision Type REAR END | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? Y | Process Date 20160203
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	29	M	H	HNBD		PROC ST	S	D	2200	TOYT	1986	- 3	N		-	M G								
2	DRVR	25	F	W	HNBD		STOPPED	S	A	0100	CHEV	2014	- 3	N		-	M G	PASS	COMP PN	30	F	6	0	M	H
																		PASS		27	F	3	0	M	G
3	DRVR	62	M	H	HNBD		LFT TURN	S	D	2200	TOYT	1989	- 3	N		-	M G								

Primary Rd FOWLER AVE | Distance (ft) 200 | Direction N | Secondary Rd ELKHORN AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Selma | County Fresno | Population 3 | Rpt Dist | Beat 040 | Type 3 | CalTrans | Badge 019895 | Collision Date 20160527 | Time 2010 | Day FRI
Primary Collision Factor IMPROP TURN | Violation 22107 | Collision Type HIT OBJECT | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20160610
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run MSDMNR | Motor Vehicle Involved With FIXED OBJ | Lighting DARK - NO | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	998	-		IMP UNK	IMP UNK	UNS TURN	N	D	2200	FORD	2005	- 3	N		-	B								

Primary Rd FOWLER AVE | Distance (ft) 250 | Direction S | Secondary Rd FLORADORA AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 016570 | Collision Date 20160830 | Time 0725 | Day TUE
Primary Collision Factor UNSAFE SPEED | Violation 22350 | Collision Type REAR END | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? Y | Process Date 20160907
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	24	M	H	HNBD		PROC ST	N	F	2600	INTL	2012	- 3	N		-	M G								
2	DRVR	31	M	A	HNBD		STOPPED	N	A	0100	ACUR	2000	- 3	N		-	L G	DRVR	COMP PN	31	M	1	0	L	G
3	DRVR	36	M	H	HNBD		STOPPED	N	D	2200	GMC	1989	- 3	N		-	M G								
4	DRVR	35	M	O	HNBD		PROC ST	S	A	0100	HONDA	2016	- 3	N		-	M G								
5	DRVR	39	M	W	HNBD		STOPPED	S	D	2200	CHEV	2015	- 3	N		-	M G								

Primary Rd FOWLER AVE | Distance (ft) 340 | Direction N | Secondary Rd FLORADORA AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 018823 | Collision Date 20160913 | Time 0815 | Day TUE
Primary Collision Factor UNSAFE SPEED | Violation 22350 | Collision Type REAR END | Severity INJURY | #Killed 0 | #Injured 2 | Tow Away? N | Process Date 20160914
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev OBSCR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	38	M	W	HNBD		PROC ST	S	D	2200	CHEV	2014	- 3	N		-	M G								
2	DRVR	34	M	A	HNBD		STOPPED	S	A	0700	HOND	2015	- 3	N		-	M G	DRVR	COMP PN	34	M	1	0	M	G

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
3	DRVR	29	F	O	HNBD		STOPPED	S	A	0100	HOND	2009	-	3	N	-	M	G	DRVR	COMP PN	29	F	1	0	M	G

Primary Rd FOWLER AVE | Distance (ft) 0 | Direction | Secondary Rd FLORADORA AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 019210 | Collision Date 20161021 | Time 1245 | Day FRI
Primary Collision Factor STOP SGN|SIG | Violation 22450A | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? Y | Process Date 20161028
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	20	F	W	HNBD		PROC ST	N	D	2200	CHEV	1991	-	3	N	-	M	G								
2	DRVR	28	M	H	HNBD		LFT TURN	W	D	2200	GMC	2005	-	3	N	-	M	G	DRVR	COMP PN	28	M	1	0	M	G

Primary Rd FOWLER AVE | Distance (ft) 0 | Direction | Secondary Rd FLORADORA AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 020078 | Collision Date 20161106 | Time 0809 | Day SUN
Primary Collision Factor STOP SGN|SIG | Violation 22450A | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? Y | Process Date 20161114
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	22	F	W	HNBD		PROC ST	N	A	0100	CHEV	2016	-	3	N	-	M	G	PASS		18	F	3	0	M	G
																			PASS		3	F	5	0	M	Q
2	DRVR	22	F	H	HNBD		LFT TURN	W	A	0100	NISS	2014	-	3	N	-	L	G	DRVR	COMP PN	22	F	1	0	L	G

Primary Rd FOWLER AVE | Distance (ft) 2640 | Direction S | Secondary Rd FLORAL AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 040 | Type 3 | CalTrans | Badge 014650 | Collision Date 20160416 | Time 1150 | Day SAT
Primary Collision Factor NOT DRIVER | Violation | Collision Type HIT OBJECT | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20160425
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With FIXED OBJ | Lighting DAYLIGHT | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1	DRVR	39	F	H	HNBD		UNS TURN	N	A	0700	CADI	2008	-	3	N	-	L	G								

Primary Rd FOWLER AVE | Distance (ft) 0 | Direction | Secondary Rd JENSEN AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 034 | Type 3 | CalTrans | Badge 016570 | Collision Date 20160818 | Time 0852 | Day THU
Primary Collision Factor R-O-W AUTO | Violation 21801A | Collision Type HEAD-ON | Severity INJURY | #Killed 0 | #Injured 2 | Tow Away? Y | Process Date 20160826
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	36	M	H	HNBD		LFT TURN	S	A	0100	HYUN	2014	-	3	N	-	L	G	DRVR	COMP PN	36	M	1	0	L	G
																			PASS		22	F	3	0	L	G
2	DRVR	57	F	W	HNBD		PROC ST	N	A	0100	HOND	2010	-	3	N	-	L	G	DRVR	COMP PN	57	F	1	0	L	G

Primary Rd FOWLER AVE | Distance (ft) 105 | Direction S | Secondary Rd LATONIA AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 040 | Type 3 | CalTrans | Badge 013112 | Collision Date 20160908 | Time 1320 | Day THU
Primary Collision Factor UNSAFE SPEED | Violation 22350 | Collision Type OVERTURNED | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? N | Process Date 20160912
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With NON-CLSN | Lighting DAYLIGHT | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	39	M	W	HNBD		RGT TURN	S	G	2635	FRHT	2009	-	3	N	-	M	G								

Primary Rd **FOWLER AVE** *Distance (ft)* **42** *Direction* **N** *Secondary Rd* **SHEPHERD AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **025** *Type* **3** *CalTrans* *Badge* **020019** *Collision Date* **20160201** *Time* **0310** *Day* **MON**
Primary Collision Factor **DRVR ALC|DRG** *Violation* **23152A** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20160226**
Weather1 **CLOUDY** *Weather2* *Rdwy Surface* **WET** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **FIXED OBJ** *Lighting* **DARK - ST** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	22	M	W	HBD-UI		RGT TURN	N	A	0100	CHEV	2010	- 3	A	22350	-	L	G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **FOWLER AVE** *Distance (ft)* **0** *Direction* *Secondary Rd* **SR-180 E/B** *NCIC* **9435** *State Hwy?* **Y** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **018926** *Collision Date* **20161231** *Time* **1840** *Day* **SAT**
Primary Collision Factor **STOP SGN|SIG** *Violation* **21453A** *Collision Type* **BROADSIDE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20170110**
Weather1 **CLOUDY** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DARK - ST** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	88	M	W	HNBD		PROC ST	S	D	2200	FORD	2009	- 3	N		-	M	G
2	DRVR	20	F	W	HNBD		LFT TURN	E	A	0100	DODG	2013	- 3	N		-	M	G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **FOWLER AVE.** *Distance (ft)* **0** *Direction* *Secondary Rd* **FLORADORA AVE.** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **020297** *Collision Date* **20160823** *Time* **1605** *Day* **TUE**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **HIT OBJECT** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20160902**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **FIXED OBJ** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	17	M	B	HNBD		PROC ST	N	A	0100	INFI	1996	- 3	N		-	L	G

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	COMP PN	17	M	1	0	L	G
PASS		18	M	3	0	L	G
PASS		19	M	6	0	L	G

Primary Rd **FOWLER AVE.** *Distance (ft)* **60** *Direction* **S** *Secondary Rd* **JENSEN AVE.** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **034** *Type* **3** *CalTrans* *Badge* **018609** *Collision Date* **20161031** *Time* **1421** *Day* **MON**
Primary Collision Factor **STRTNG|BCKNG** *Violation* **22106** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20161103**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **WET** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **FIXED OBJ** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	998	-		IMP UNK	IMP UNK	BACKING	S	-	9900	-		- 3	N		-	B	B

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **FOWLER AVE.** *Distance (ft)* **500** *Direction* **N** *Secondary Rd* **TEAGUE AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **025** *Type* **3** *CalTrans* *Badge* **018860** *Collision Date* **20160328** *Time* **0020** *Day* **MON**
Primary Collision Factor **DRVR ALC|DRG** *Violation* **23152A** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20160406**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **OTHER OBJ** *Lighting* **DARK - NO** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	24	M	W	HBD-UI		UNS TURN	N	A	0800	CHEV	2004	- 3	A	22107	-	M	B

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd	OLIVE AV	Distance (ft)	0	Direction		Secondary Rd	PALM AV	NCIC	1005
State Hwy?	N	Route		Postmile Prefix		Postmile		Side of Hwy	
City	Fresno	County	Fresno	Population	7	Rpt Dist	SW	Beat	
Type	0	CalTrans		Badge	P1066	Collision Date	20160219	Time	1120
Day	FRI	Primary Collision Factor	R-O-W AUTO	Violation	21801A	Collision Type	BROADSIDE	Severity	INJURY
#Killed	0	#Injured	1	Tow Away?	Y	Process Date	20160321	Weather1	CLEAR
Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2		Spec Cond	0
Hit and Run		Motor Vehicle Involved With	OTHER MV	Lighting	DAYLIGHT	Ped Action		Cntrl Dev	FNCTNG
Loc Type		Ramp/Int							

Party Info / Victim Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	20	F	W	HNBD		LFT TURN	W	D	2200	FORD	2004	-	1	A	23123	-	M	G						
2	DRVR	46	M	W	HNBD		PROC ST	E	J	4800	DODGE	2008	-	3	N		-	M	G	DRVR	COMP PN	46	M	1	0	M	G

Primary Rd	OLIVE AV	Distance (ft)	0	Direction		Secondary Rd	RT 99	NCIC	1005
State Hwy?	Y	Route	99	Postmile Prefix	-	Postmile	23.168	Side of Hwy	S
City	Fresno	County	Fresno	Population	7	Rpt Dist	1A	Beat	2351
Type	0	CalTrans	6	Badge	P959	Collision Date	20160112	Time	1432
Day	TUE	Primary Collision Factor	UNSAFE SPEED	Violation	22350	Collision Type	REAR END	Severity	INJURY
#Killed	0	#Injured	1	Tow Away?	N	Process Date	20180501	Weather1	CLOUDY
Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2		Spec Cond	0
Hit and Run	FELONY	Motor Vehicle Involved With	OTHER MV	Lighting	DAYLIGHT	Ped Action		Cntrl Dev	FNCTNG
Loc Type	R	Ramp/Int	4						

Party Info / Victim Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	998	-		IMP UNK	IMP UNK	PROC ST	E	A	0100	KIA	2015	-	3	N		-	-	-						
2	DRVR	28	M	H	HNBD		STOPPED	E	A	0100	CHEVR	2004	-	3	N		-	M	G	PASS	COMP PN	29	F	3	0	M	G
																				PASS		5	M	4	0	P	Q
																				PASS		2	M	6	0	P	Q

Primary Rd	OLIVE AVE	Distance (ft)	0	Direction		Secondary Rd	HUGHES AVE	NCIC	9435
State Hwy?	N	Route		Postmile Prefix		Postmile		Side of Hwy	
City	UNINCORP.	County	Fresno	Population	9	Rpt Dist		Beat	010
Type	3	CalTrans		Badge	016833	Collision Date	20161024	Time	0752
Day	MON	Primary Collision Factor	R-O-W AUTO	Violation	21800A	Collision Type	BROADSIDE	Severity	INJURY
#Killed	0	#Injured	1	Tow Away?	Y	Process Date	20161026	Weather1	CLOUDY
Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2		Spec Cond	0
Hit and Run		Motor Vehicle Involved With	OTHER MV	Lighting	DAYLIGHT	Ped Action		Cntrl Dev	FNCTNG
Loc Type		Ramp/Int							

Party Info / Victim Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	38	F	H	HNBD		PROC ST	E	A	0100	CHEV	2012	-	3	N		-	M	G						
2	DRVR	44	M	H	HNBD		PROC ST	S	A	0100	FORD	1994	-	3	N		-	M	J	DRVR	OTH VIS	44	M	1	0	M	J

Primary Rd	OLIVE AVE	Distance (ft)	80	Direction	E	Secondary Rd	POLK AVE	NCIC	9435
State Hwy?	N	Route		Postmile Prefix		Postmile		Side of Hwy	
City	UNINCORP.	County	Fresno	Population	9	Rpt Dist		Beat	010
Type	3	CalTrans		Badge	016911	Collision Date	20161222	Time	0410
Day	THU	Primary Collision Factor	DRVR ALC|DRG	Violation	23152A	Collision Type	HIT OBJECT	Severity	PDO
#Killed	0	#Injured	0	Tow Away?	Y	Process Date	20170104	Weather1	FOG
Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2		Spec Cond	0
Hit and Run		Motor Vehicle Involved With	FIXED OBJ	Lighting	DARK - NO	Ped Action		Cntrl Dev	NT PRS/FCTR
Loc Type		Ramp/Int							

Party Info / Victim Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	24	M	H	HBD UI		UNS TURN	E	A	0100	HOND	2007	-	3	A	22107	-	L	G						

Primary Rd	OLIVE AVE	Distance (ft)	0	Direction		Secondary Rd	TEMPERANCE AVE	NCIC	9435
State Hwy?	Y	Route		Postmile Prefix		Postmile		Side of Hwy	
City	UNINCORP.	County	Fresno	Population	9	Rpt Dist		Beat	025
Type	3	CalTrans		Badge	017310	Collision Date	20161204	Time	0650
Day	SUN	Primary Collision Factor	IMPROP TURN	Violation	22107	Collision Type	HEAD-ON	Severity	PDO
#Killed	0	#Injured	0	Tow Away?	Y	Process Date	20161212	Weather1	CLEAR
Weather2		Rdwy Surface	DRY	Rdwy Cond1	NO UNUSL CND	Rdwy Cond2		Spec Cond	0
Hit and Run		Motor Vehicle Involved With	OTHER MV	Lighting	DAYLIGHT	Ped Action		Cntrl Dev	FNCTNG
Loc Type		Ramp/Int							

Party Info / Victim Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	29	F	A	HNBD		UNS TURN	W	D	2200	TOYT	2016	-	3	N		-	M	G						
2	DRVR	27	M	H	HNBD		STOPPED	N	A	0100	CHEV	2014	-	3	N		-	M	G	PASS		22	M	3	0	M	G
																				PASS		22	M	4	0	M	G

Primary Rd **TAKAHASHI AV** *Distance (ft)* **88** *Direction* **S** *Secondary Rd* **FREMONT AV** *NCIC* **1001** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Clovis** *County* **Fresno** *Population* **5** *Rpt Dist* *Beat* **006** *Type* **0** *CalTrans* *Badge* **5277** *Collision Date* **20160418** *Time* **1341** *Day* **MON**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **REAR END** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20160428**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **PKD MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	32	M	H	HNBD		UNS TURN	S	A	0100	MERCU	2003	- -	F		-	M	G								
2	PRKD	998	-				PARKED	S	-	0000	CHEVR	2012	- -	N		-	-	-								

Primary Rd **TEAGUE AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **NORTH CLOVIS AV** *NCIC* **1001** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Clovis** *County* **Fresno** *Population* **5** *Rpt Dist* *Beat* **006** *Type* **0** *CalTrans* *Badge* **5650** *Collision Date* **20160307** *Time* **1536** *Day* **MON**
Primary Collision Factor **PED VIOL** *Violation* **21954A** *Collision Type* **AUTO/PED** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20160407**
Weather1 **CLOUDY** *Weather2* **RAINING** *Rdwy Surface* **WET** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **PED** *Lighting* **DAYLIGHT** *Ped Action* **NOT IN X-** *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	PED	14	F	B	HNBD		ENT TRAF	-	N	6000	-		- 3	A	21954	-	-	-								
2	DRVR	31	F	W	HNBD		PROC ST	S	A	0100	BMW	2007	- 3	N		-	M	C								

Primary Rd **TEAGUE AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **WILLOW AV** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NE** *Beat* *Type* **0** *CalTrans* *Badge* **P1065** *Collision Date* **20160203** *Time* **0800** *Day* **WED**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **SIDESWIPE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20160415**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **BICYCLE** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	998	-		IMP UNK	IMP UNK	RGT TURN	E	A	0100	DODGE		- 3	N		-	-	-								
2	BICY	16	M	O	HNBD		SLOWING	E	L	0400	-		- 3	N		-	-	-								

Primary Rd **TEMPERANCE AV** *Distance (ft)* **1265** *Direction* **S** *Secondary Rd* **BARSTOW AV** *NCIC* **1001** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Clovis** *County* **Fresno** *Population* **5** *Rpt Dist* *Beat* **003** *Type* **0** *CalTrans* *Badge* **5104** *Collision Date* **20160817** *Time* **0838** *Day* **WED**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **HIT OBJECT** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20160901**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **FIXED OBJ** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	32	M	[illegible]	HNBD		PROC ST	N	D	2200	CHEVR	[illegible]	- 3	N		-	L	G	DRVR	COMP PN	32	M	1	0	L	G

Primary Rd **TEMPERANCE AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **BELMONT AV** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **SOUTH** *Beat* *Type* **0** *CalTrans* *Badge* **P1131** *Collision Date* **20160119** *Time* **1545** *Day* **TUE**
Primary Collision Factor **R-O-W AUTO** *Violation* **21800B** *Collision Type* **BROADSIDE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20160824**
Weather1 **CLOUDY** *Weather2* *Rdwy Surface* **WET** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run **MSDMNR** *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	49	M	H	IMP UNK	IMP UNK	PROC ST	W	A	0100	TOYOT	1998	- 3	A	22450	-	M	-	PASS		53	M	3	0	M	G
2	DRVR	17	F	W	HNBD		PROC ST	S	A	0100	HYUND	2014	- 3	-		-	N	G	PASS		5	F	6	0	M	Q
																			PASS		12	F	4	0	M	G

Primary Rd **ARMSTRONG AV** *Distance (ft)* **0** *Direction* *Secondary Rd* **ROBERTS AV** *NCIC* **1001** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Clovis** *County* **Fresno** *Population* **5** *Rpt Dist* *Beat* **003** *Type* **0** *CalTrans* *Badge* **5605** *Collision Date* **20170706** *Time* **1409** *Day* **THU**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **REAR END** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20170807**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	36	F	W	HNBD		PROC ST	S	A	0700	JEEP	2015	- 3	N		-	M G								
2	DRVR	40	F	O	HNBD		STOPPED	S	A	0100	SUBAR	2011	- 3	N		-	M G	DRVR	COMP PN	40	F	1	0	M	G
3	DRVR	34	F	W	HNBD		PROC ST	N	A	0800	HONDA	2013	- 2	N		-	M G								

Primary Rd **ARMSTRONG AVE** *Distance (ft)* **528** *Direction* **N** *Secondary Rd* **CHURCH AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **034** *Type* **3** *CalTrans* *Badge* **016833** *Collision Date* **20170118** *Time* **0827** *Day* **WED**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **SIDESWIPE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20170124**
Weather1 **CLOUDY** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1	DRVR	24	M	H	HNBD		STOPPED	S	D	2200	FORD	2013	- 3	N		-	M G								
2F	DRVR	16	M	H	HNBD		PROC ST	S	D	2200	CHEV	1995	- 3	N		-	M G								

Primary Rd **ARMSTRONG AVE** *Distance (ft)* **0** *Direction* *Secondary Rd* **CLINTON AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **020490** *Collision Date* **20170519** *Time* **1507** *Day* **FRI**
Primary Collision Factor **R-O-W AUTO** *Violation* **21802A** *Collision Type* **BROADSIDE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20170526**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	33	F	H	HNBD		PROC ST	S	A	0100	FORD	2014	- 3	N		-	M G								
2	DRVR	47	F	H	HNBD		PROC ST	W	A	0100	KIA	2015	- 3	N		-	M G								

Primary Rd **ARMSTRONG** *Distance (ft)* **0** *Direction* *Secondary Rd* **BELMONT** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP. AVENUE** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **019369** *Collision Date* **20170526** *Time* **1755** *Day* **FRI**
Primary Collision Factor **R-O-W AUTO** *Violation* **21802A** *Collision Type* **BROADSIDE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20170606**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	21	M	H	HNBD		LFT TURN	S	A	0100	SUBA	2015	- 3	N		-	M G								
2	DRVR	43	M	A	HNBD		PROC ST	W	A	0800	HONDA	2008	- 3	N		-	M G								

Primary Rd **ARMSTRONG** *Distance (ft)* **15** *Direction* **S** *Secondary Rd* **BUTLER AVENUE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP. AVENUE** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **034** *Type* **3** *CalTrans* *Badge* **016833** *Collision Date* **20170320** *Time* **0635** *Day* **MON**
Primary Collision Factor **PED VIOL** *Violation* **21954A** *Collision Type* **AUTO/PED** *Severity* **FATAL** *#Killed* **1** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20170424**
Weather1 **CLOUDY** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **PED** *Lighting* **DARK - NO** *Ped Action* **NOT IN X-** *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	PED	12	F	A	IMP UNK	IMP UNK		W	N	6000	-		- 3	N		-	- -	PED	KILLED	12	F	9	0	-	P
2	DRVR	34	M	A	HNBD		PROC ST	S	D	2200	TOYOT	2011	- 3	N		-	M G								

Primary Rd ARMSTRONG **Distance (ft)** 50 **Direction** N **Secondary Rd** FLORADORA AVE **NCIC** 9435 **State Hwy?** N **Route** **Postmile Prefix** **Postmile** **Side of Hwy**
City UNINCOAVENUE **County** Fresno **Population** 9 **Rpt Dist** **Beat** 030 **Type** 3 **CalTrans** **Badge** 020205 **Collision Date** 20171218 **Time** 1355 **Day** MON
Primary Collision Factor R-O-W AUTO **Violation** 21802A **Collision Type** HIT OBJECT **Severity** PDO **#Killed** 0 **#Injured** 0 **Tow Away?** Y **Process Date** 20171222
Weather1 CLEAR **Weather2** **Rdwy Surface** DRY **Rdwy Cond1** NO UNUSL CND **Rdwy Cond2** **Spec Cond** 0
Hit and Run MSDMNR **Motor Vehicle Involved With** NON-CLSN **Lighting** DAYLIGHT **Ped Action** **Cntrl Dev** FNCTNG **Loc Type** **Ramp/Int**

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	998	-		IMP UNK	IMP UNK	PROC ST	W	A	0100	SCION		- 3	N		-	B	B
2	DRVR	58	M	H	HNBD		PROC ST	S	C	0200	HARL	2016	- 3	N		-	-	W

Victim Info: ROLE | Ext Of Inj | AGE | Sex | Seat Pos | Safety | EQUIP | Ejected

Primary Rd ASH AV **Distance (ft)** 0 **Direction** **Secondary Rd** COUGAR LN **NCIC** 1001 **State Hwy?** N **Route** **Postmile Prefix** **Postmile** **Side of Hwy**
City Clovis **County** Fresno **Population** 5 **Rpt Dist** **Beat** 003 **Type** 0 **CalTrans** **Badge** 5686 **Collision Date** 20170513 **Time** 0253 **Day** SAT
Primary Collision Factor IMPROP TURN **Violation** 22107 **Collision Type** HIT OBJECT **Severity** PDO **#Killed** 0 **#Injured** 0 **Tow Away?** Y **Process Date** 20170531
Weather1 CLEAR **Weather2** **Rdwy Surface** DRY **Rdwy Cond1** NO UNUSL CND **Rdwy Cond2** **Spec Cond** 0
Hit and Run **Motor Vehicle Involved With** FIXED OBJ **Lighting** DARK - ST **Ped Action** **Cntrl Dev** NT PRS/FCTR **Loc Type** **Ramp/Int**

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	19	M	H	HNBD		PROC ST	N	A	0100	VOLKS	2003	- -	M		-	L	G

Victim Info: ROLE | Ext Of Inj | AGE | Sex | Seat Pos | Safety | EQUIP | Ejected

Primary Rd ASH AV **Distance (ft)** 0 **Direction** **Secondary Rd** SUNSET AV **NCIC** 1011 **State Hwy?** N **Route** **Postmile Prefix** **Postmile** **Side of Hwy**
City Parlier **County** Fresno **Population** 3 **Rpt Dist** PARLI **Beat** 0PA **Type** 0 **CalTrans** **Badge** K038 **Collision Date** 20170416 **Time** 0706 **Day** SUN
Primary Collision Factor UNSAFE SPEED **Violation** 22350 **Collision Type** SIDESWIPE **Severity** PDO **#Killed** 0 **#Injured** 0 **Tow Away?** N **Process Date** 20170605
Weather1 CLEAR **Weather2** **Rdwy Surface** DRY **Rdwy Cond1** NO UNUSL CND **Rdwy Cond2** **Spec Cond** 0
Hit and Run MSDMNR **Motor Vehicle Involved With** PKD MV **Lighting** DAYLIGHT **Ped Action** **Cntrl Dev** NT PRS/FCTR **Loc Type** **Ramp/Int**

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	998	M					S	-	0000	-		- -	A	20002	-	-	-
2	PRKD	998	-				PARKED	-	-	0000	CHEVR	2004	- -	A	20002	-	-	-

Victim Info: ROLE | Ext Of Inj | AGE | Sex | Seat Pos | Safety | EQUIP | Ejected

Primary Rd ASHLAN AV **Distance (ft)** 0 **Direction** **Secondary Rd** ARMSTRONG AV **NCIC** 1001 **State Hwy?** N **Route** **Postmile Prefix** **Postmile** **Side of Hwy**
City Clovis **County** Fresno **Population** 5 **Rpt Dist** **Beat** 003 **Type** 0 **CalTrans** **Badge** 5465 **Collision Date** 20171209 **Time** 1734 **Day** SAT
Primary Collision Factor STOP SGN|SIG **Violation** 21453A **Collision Type** BROADSIDE **Severity** PDO **#Killed** 0 **#Injured** 0 **Tow Away?** Y **Process Date** 20180205
Weather1 CLEAR **Weather2** **Rdwy Surface** DRY **Rdwy Cond1** NO UNUSL CND **Rdwy Cond2** **Spec Cond** 0
Hit and Run MSDMNR **Motor Vehicle Involved With** OTHER MV **Lighting** DARK - ST **Ped Action** **Cntrl Dev** FNCTNG **Loc Type** **Ramp/Int**

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	998	-				PROC ST	W	A	0700	JEEP		- -	N		-	-	-
2	DRVR	23	M	O	HNBD		LFT TURN	N	A	0100	TOYOT	2010	- 3	N		-	M	G

Victim Info: ROLE | Ext Of Inj | AGE | Sex | Seat Pos | Safety | EQUIP | Ejected

Primary Rd ASHLAN AV **Distance (ft)** 0 **Direction** **Secondary Rd** ASHLAN AV 1794 **NCIC** 1001 **State Hwy?** N **Route** **Postmile Prefix** **Postmile** **Side of Hwy**
City Clovis **County** Fresno **Population** 5 **Rpt Dist** **Beat** 002 **Type** 0 **CalTrans** **Badge** 5700 **Collision Date** 20170803 **Time** 2500 **Day** THU
Primary Collision Factor UNKNOWN **Violation** 20002A **Collision Type** SIDESWIPE **Severity** PDO **#Killed** 0 **#Injured** 0 **Tow Away?** N **Process Date** 20170821
Weather1 CLEAR **Weather2** **Rdwy Surface** DRY **Rdwy Cond1** NO UNUSL CND **Rdwy Cond2** **Spec Cond** 0
Hit and Run MSDMNR **Motor Vehicle Involved With** PKD MV **Lighting** DAYLIGHT **Ped Action** **Cntrl Dev** NT PRS/FCTR **Loc Type** **Ramp/Int**

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety	Equip
1F	DRVR	998	-				PARKING	-	-	9900	-		- 3	-		-	-	-
2	DRVR	27	F	H			PARKED	N	A	0100	NISSA	2015	- -	-		-	M	P

Victim Info: ROLE | Ext Of Inj | AGE | Sex | Seat Pos | Safety | EQUIP | Ejected

Primary Rd BELMONT AVE | Distance (ft) 0 | Direction | Secondary Rd TEMPERANCE AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 020273 | Collision Date 20170217 | Time 1900 | Day FRI
Primary Collision Factor R-O-W AUTO | Violation 21802B | Collision Type HEAD-ON | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? N | Process Date 20170227
Weather1 RAINING | Weather2 | Rdwy Surface WET | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run MSDMNR | Motor Vehicle Involved With OTHER MV | Lighting DARK - NO | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	998	-		IMP UNK	IMP UNK	LFT TURN	E	-	9900	-		- 3	N		-	- -								
2	DRVR	45	F		HNBD		PROC ST	W	A	0100	DOD	2011	- 3	N		-	M G								

Primary Rd BELMONT AVE | Distance (ft) 0 | Direction | Secondary Rd TEMPERANCE AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 017310 | Collision Date 20171112 | Time 1240 | Day SUN
Primary Collision Factor STOP SGN|SIG | Violation 22450A | Collision Type BROADSIDE | Severity INJURY | #Killed 0 | #Injured 2 | Tow Away? Y | Process Date 20171122
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	62	F	W	HNBD		PROC ST	E	A	0100	CHRY	2006	- 3	N		-	M G								
2	DRVR	72	M	W	HNBD		PROC ST	N	A	0700	TOYT	2011	- 3	N		-	M G	DRVR	POSSIBL	72	M	1	0	M	G
																		PASS	POSSIBL	72	F	3	0	M	G

Primary Rd BELMONT AVE | Distance (ft) 0 | Direction | Secondary Rd TEMPERANCE AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 034 | Type 3 | CalTrans | Badge 016911 | Collision Date 20171227 | Time 2339 | Day WED
Primary Collision Factor DRVR ALC|DRG | Violation 23152A | Collision Type HIT OBJECT | Severity INJURY | #Killed 0 | #Injured 2 | Tow Away? Y | Process Date 20180102
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run FELONY | Motor Vehicle Involved With FIXED OBJ | Lighting DARK - NO | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	24	F	W	HBD-UI		RAN OFF RD	E	A	0100	CHEV	2014	- 3	A	22350	-	L G	DRVR	POSSIBL	24	F	1	0	L	G
																		PASS	POSSIBL	22	M	3	0	L	G

Primary Rd BELMONT AVE | Distance (ft) 36 | Direction N | Secondary Rd WILLOW AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 019523 | Collision Date 20170129 | Time 0315 | Day SUN
Primary Collision Factor DRVR ALC|DRG | Violation 23152A | Collision Type HIT OBJECT | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20170131
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run MSDMNR | Motor Vehicle Involved With FIXED OBJ | Lighting DARK - ST | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	21	M	A	HBD-UI		RGT TURN	W	A	0100	TOYOT	2012	- 3	A	22107	-	M G								

Primary Rd BELMONT AVE | Distance (ft) 0 | Direction | Secondary Rd ZEDIKER AVE | NCIC 9435 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City UNINCORP. | County Fresno | Population 9 | Rpt Dist | Beat 030 | Type 3 | CalTrans | Badge 020019 | Collision Date 20170411 | Time 2008 | Day TUE
Primary Collision Factor WRONG SIDE | Violation 21752D | Collision Type SIDESWIPE | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20170419
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run MSDMNR | Motor Vehicle Involved With OTHER MV | Lighting DARK - NO | Ped Action | Cntrl Dev NT PRS/FCTR | Loc Type | Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	61	M	H	HNBD		PASSING	W	F	2500	FRHT	2015	- 3	N		-	M G								
2	DRVR	32	M	H	HNBD		LFT TURN	W	D	2200	FORD	1993	- 3	N		-	M G								

Primary Rd **TEMPERANCE AV** *Distance (ft)* **1832** *Direction* **S** *Secondary Rd* **SOUTH AV** *NCIC* **1004** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fowler** *County* **Fresno** *Population* **2** *Rpt Dist* **FOWL3** *Beat* **0FO** *Type* **0** *CalTrans* *Badge* **G050** *Collision Date* **20170224** *Time* **0205** *Day* **FRI**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20170612**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **FIXED OBJ** *Lighting* **DARK - NO** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	18	F	H	HNBD		RAN OFF RD	S	-	0000	HONDA	2000	- 3	N		-	M	G								

Primary Rd **TEMPERANCE AVE** *Distance (ft)* **413** *Direction* **N** *Secondary Rd* **BELMONT AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **016570** *Collision Date* **20170327** *Time* **0745** *Day* **MON**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **REAR END** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20170329**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	35	F	H	HNBD		PROC ST	S	D	2200	CHEV	2005	- 3	N		-	L	G								
2	DRVR	59	F	H	HNBD		STOPPED	S	D	2200	CHEV	2000	- 3	N		-	M	G	DRVR	COMP PN	59	F	1	0	M	G

Primary Rd **TEMPERANCE AVE** *Distance (ft)* **500** *Direction* **S** *Secondary Rd* **BELMONT AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **019895** *Collision Date* **20170417** *Time* **1905** *Day* **MON**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20170420**
Weather1 **CLOUDY** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **FIXED OBJ** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **NT PRS/FCTR** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	37	M	H	HNBD		UNS TURN	S	A	0100	HONDA	2006	- 3	N		-	M	G								

Primary Rd **TEMPERANCE AVE** *Distance (ft)* **20** *Direction* **N** *Secondary Rd* **BELMONT AVE** *NCIC* **9435** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **025** *Type* **3** *CalTrans* *Badge* **019210** *Collision Date* **20170916** *Time* **2045** *Day* **SAT**
Primary Collision Factor **DRVR ALC|DRG** *Violation* **23152A** *Collision Type* **REAR END** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20170925**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DARK - NO** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	24	M	W	HBD-UI		PROC ST	S	A	0100	FORD	2012	- 3	A	22350	-	L	G								
2	DRVR	28	F	H	HNBD		STOPPED	S	A	0100	HONDA	2009	- 3	N		-	M	G								

Primary Rd **TEMPERANCE AVE** *Distance (ft)* **0** *Direction* *Secondary Rd* **HARVEY AVE** *NCIC* **9435** *State Hwy?* **Y** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* *Beat* **030** *Type* **3** *CalTrans* *Badge* **012846** *Collision Date* **20170613** *Time* **0810** *Day* **TUE**
Primary Collision Factor **R-O-W AUTO** *Violation* **21802A** *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20170620**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **OTHER MV** *Lighting* **DAYLIGHT** *Ped Action* *Cntrl Dev* **FNCTNG** *Loc Type* *Ramp/Int*

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip		ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F	DRVR	30	F	O	HNBD		LFT TURN	E	A	0100	JAGU	2013	- 3	N		-	M	G								
2	DRVR	31	M	H	HNBD		PROC ST	N	A	0100	MINI	2006	- 3	N		-	L	G								
3	DRVR	47	F	W	HNBD		STOPPED	S	A	0700	CHEVY	2014	- 3	N		-	M	G	DRVR	COMP PN	47	F	1	0	M	G

Appendix F: Existing Traffic Conditions

Intersection	
Intersection Delay, s/veh	20.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	26	49	21	85	133	18	21	135	5	30	433	38
Future Vol, veh/h	26	49	21	85	133	18	21	135	5	30	433	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	28	53	23	92	145	20	23	147	5	33	471	41
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.1	14.1	11.6	27.7
HCM LOS	B	B	B	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	27%	36%	6%
Vol Thru, %	84%	51%	56%	86%
Vol Right, %	3%	22%	8%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	161	96	236	501
LT Vol	21	26	85	30
Through Vol	135	49	133	433
RT Vol	5	21	18	38
Lane Flow Rate	175	104	257	545
Geometry Grp	1	1	1	1
Degree of Util (X)	0.292	0.19	0.441	0.813
Departure Headway (Hd)	6.008	6.555	6.186	5.374
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	592	551	577	670
Service Time	4.105	4.555	4.274	3.444
HCM Lane V/C Ratio	0.296	0.189	0.445	0.813
HCM Control Delay	11.6	11.1	14.1	27.7
HCM Lane LOS	B	B	B	D
HCM 95th-tile Q	1.2	0.7	2.2	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	64	13	70	153	125	39	259	80	166	387	65
Future Volume (veh/h)	12	64	13	70	153	125	39	259	80	166	387	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	14	74	15	81	178	145	45	301	93	193	450	76
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	31	187	38	249	253	206	79	428	358	243	530	89
Arrive On Green	0.02	0.13	0.13	0.14	0.27	0.27	0.04	0.23	0.23	0.14	0.34	0.34
Sat Flow, veh/h	1767	1490	302	1767	944	769	1767	1856	1552	1767	1545	261
Grp Volume(v), veh/h	14	0	89	81	0	323	45	301	93	193	0	526
Grp Sat Flow(s),veh/h/ln	1767	0	1792	1767	0	1714	1767	1856	1552	1767	0	1806
Q Serve(g_s), s	0.4	0.0	2.6	2.3	0.0	9.7	1.4	8.5	2.8	6.0	0.0	15.4
Cycle Q Clear(g_c), s	0.4	0.0	2.6	2.3	0.0	9.7	1.4	8.5	2.8	6.0	0.0	15.4
Prop In Lane	1.00		0.17	1.00		0.45	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	31	0	225	249	0	460	79	428	358	243	0	619
V/C Ratio(X)	0.45	0.00	0.40	0.32	0.00	0.70	0.57	0.70	0.26	0.79	0.00	0.85
Avail Cap(c_a), veh/h	155	0	1228	249	0	1204	155	782	654	243	0	761
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.7	0.0	22.9	22.0	0.0	18.8	26.7	20.1	17.9	23.8	0.0	17.3
Incr Delay (d2), s/veh	10.1	0.0	1.1	0.7	0.0	2.0	6.3	2.1	0.4	16.4	0.0	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.0	0.9	0.0	3.5	0.7	3.3	0.9	3.3	0.0	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.8	0.0	24.1	22.8	0.0	20.8	33.0	22.2	18.3	40.2	0.0	25.0
LnGrp LOS	D	A	C	C	A	C	C	C	B	D	A	C
Approach Vol, veh/h		103			404			439			719	
Approach Delay, s/veh		25.9			21.2			22.5			29.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	18.4	12.9	12.4	6.7	24.8	5.2	20.2
Change Period (Y+Rc), s	5.3	* 5.3	4.9	* 5.3	* 4.2	5.3	* 4.2	4.9
Max Green Setting (Gmax), s	5.0	* 24	5.0	* 39	* 5	24.0	* 5	40.0
Max Q Clear Time (g_c+I1), s	8.0	10.5	4.3	4.6	3.4	17.4	2.4	11.7
Green Ext Time (p_c), s	0.0	1.5	0.0	0.4	0.0	1.7	0.0	2.0

Intersection Summary	
HCM 6th Ctrl Delay	25.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	0.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	360	6	9	426
Future Vol, veh/h	0	3	360	6	9	426
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	3	404	7	10	479

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	907	408	0	0	411	0
Stage 1	408	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	305	641	-	-	1142	-
Stage 1	669	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	301	641	-	-	1142	-
Mov Cap-2 Maneuver	301	-	-	-	-	-
Stage 1	669	-	-	-	-	-
Stage 2	601	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	641	1142	-
HCM Lane V/C Ratio	-	-	0.005	0.009	-
HCM Control Delay (s)	-	-	10.6	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	5	12	42	6	9	3	187	6	0	546	2
Future Vol, veh/h	3	5	12	42	6	9	3	187	6	0	546	2
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	170	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	5	13	46	7	10	3	205	7	0	600	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	825	820	602	825	818	209	603	0	0	212	0	0
Stage 1	602	602	-	215	215	-	-	-	-	-	-	-
Stage 2	223	218	-	610	603	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	290	309	498	290	309	829	970	-	-	1352	-	-
Stage 1	485	487	-	785	723	-	-	-	-	-	-	-
Stage 2	777	721	-	480	487	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	281	308	498	278	308	829	969	-	-	1352	-	-
Mov Cap-2 Maneuver	281	308	-	278	308	-	-	-	-	-	-	-
Stage 1	483	487	-	783	721	-	-	-	-	-	-	-
Stage 2	758	719	-	462	487	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.4	19.3	0.1	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	969	-	-	297	498	314	1352	-	-
HCM Lane V/C Ratio	0.003	-	-	0.03	0.026	0.199	-	-	-
HCM Control Delay (s)	8.7	-	-	17.5	12.4	19.3	0	-	-
HCM Lane LOS	A	-	-	C	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.7	0	-	-

Intersection	
Intersection Delay, s/veh	18.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	80	12	87	238	31	46	134	89	22	205	364
Future Vol, veh/h	40	80	12	87	238	31	46	134	89	22	205	364
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	42	84	13	92	251	33	48	141	94	23	216	383
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	12.9	18.5	19.7	19.2
HCM LOS	B	C	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	17%	100%	0%	100%	0%	10%	0%
Vol Thru, %	50%	0%	87%	0%	88%	90%	0%
Vol Right, %	33%	0%	13%	0%	12%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	269	40	92	87	269	227	364
LT Vol	46	40	0	87	0	22	0
Through Vol	134	0	80	0	238	205	0
RT Vol	89	0	12	0	31	0	364
Lane Flow Rate	283	42	97	92	283	239	383
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.573	0.101	0.217	0.205	0.587	0.47	0.673
Departure Headway (Hd)	7.284	8.669	8.056	8.056	7.459	7.086	6.322
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	496	413	445	445	484	509	571
Service Time	5.338	6.432	5.819	5.807	5.209	4.835	4.07
HCM Lane V/C Ratio	0.571	0.102	0.218	0.207	0.585	0.47	0.671
HCM Control Delay	19.7	12.4	13.1	12.9	20.3	16	21.2
HCM Lane LOS	C	B	B	B	C	C	C
HCM 95th-tile Q	3.5	0.3	0.8	0.8	3.7	2.5	5.1

Intersection	
Intersection Delay, s/veh	93.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	64	92	35	146	208	22	14	298	60	5	351	124
Future Vol, veh/h	64	92	35	146	208	22	14	298	60	5	351	124
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	72	103	39	164	234	25	16	335	67	6	394	139
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	25.8	73.9	68.4	156.2
HCM LOS	D	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	34%	39%	1%
Vol Thru, %	80%	48%	55%	73%
Vol Right, %	16%	18%	6%	26%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	372	191	376	480
LT Vol	14	64	146	5
Through Vol	298	92	208	351
RT Vol	60	35	22	124
Lane Flow Rate	418	215	422	539
Geometry Grp	1	1	1	1
Degree of Util (X)	0.969	0.562	0.99	1.249
Departure Headway (Hd)	9.069	10.348	9.172	8.337
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	401	352	397	437
Service Time	7.069	8.348	7.172	6.431
HCM Lane V/C Ratio	1.042	0.611	1.063	1.233
HCM Control Delay	68.4	25.8	73.9	156.2
HCM Lane LOS	F	D	F	F
HCM 95th-tile Q	11.3	3.3	11.8	22.3

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	300	192	1	3	150	46	4	4	2	43	3	271
Future Vol, veh/h	300	192	1	3	150	46	4	4	2	43	3	271
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	0	250	-	-	300	-	130	250	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	349	223	1	3	174	53	5	5	2	50	3	315

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	227	0	0	224	0	0	1287	1154	223	1132	1129	201
Stage 1	-	-	-	-	-	-	921	921	-	207	207	-
Stage 2	-	-	-	-	-	-	366	233	-	925	922	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1335	-	-	1339	-	-	140	196	814	179	203	837
Stage 1	-	-	-	-	-	-	323	348	-	793	729	-
Stage 2	-	-	-	-	-	-	651	710	-	321	348	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1335	-	-	1339	-	-	68	145	814	139	150	837
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	145	-	139	150	-
Stage 1	-	-	-	-	-	-	239	257	-	586	728	-
Stage 2	-	-	-	-	-	-	403	709	-	232	257	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.3	0.1	38.8	16.5
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	68	145	814	1335	-	-	1339	-	-	139	150	837
HCM Lane V/C Ratio	0.068	0.032	0.003	0.261	-	-	0.003	-	-	0.36	0.023	0.376
HCM Control Delay (s)	61.8	30.6	9.4	8.6	-	-	7.7	-	-	44.8	29.6	11.9
HCM Lane LOS	F	D	A	A	-	-	A	-	-	E	D	B
HCM 95th %tile Q(veh)	0.2	0.1	0	1.1	-	-	0	-	-	1.5	0.1	1.8

Intersection	
Intersection Delay, s/veh	49.6
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	101	68	59	126	100	38	23	274	34	27	460	29
Future Vol, veh/h	101	68	59	126	100	38	23	274	34	27	460	29
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	109	73	63	135	108	41	25	295	37	29	495	31
Number of Lanes	0	1	1	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	17.1	21.3	28.6	92
HCM LOS	C	C	D	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	7%	60%	0%	56%	0%	5%
Vol Thru, %	83%	40%	0%	44%	0%	89%
Vol Right, %	10%	0%	100%	0%	100%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	331	169	59	226	38	516
LT Vol	23	101	0	126	0	27
Through Vol	274	68	0	100	0	460
RT Vol	34	0	59	0	38	29
Lane Flow Rate	356	182	63	243	41	555
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.729	0.437	0.136	0.573	0.086	1.088
Departure Headway (Hd)	7.653	9.151	8.107	8.935	7.914	7.058
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	477	396	445	406	456	516
Service Time	5.653	6.851	5.807	6.635	5.614	5.086
HCM Lane V/C Ratio	0.746	0.46	0.142	0.599	0.09	1.076
HCM Control Delay	28.6	18.8	12.1	23	11.4	92
HCM Lane LOS	D	C	B	C	B	F
HCM 95th-tile Q	5.9	2.2	0.5	3.5	0.3	17.5

Intersection	
Intersection Delay, s/veh	12.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	128	11	12	34	13	9	356	20	28	162	13
Future Vol, veh/h	57	128	11	12	34	13	9	356	20	28	162	13
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	59	133	11	13	35	14	9	371	21	29	169	14
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.4	9.5	14.3	10.7
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	29%	20%	14%
Vol Thru, %	92%	65%	58%	80%
Vol Right, %	5%	6%	22%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	385	196	59	203
LT Vol	9	57	12	28
Through Vol	356	128	34	162
RT Vol	20	11	13	13
Lane Flow Rate	401	204	61	211
Geometry Grp	1	1	1	1
Degree of Util (X)	0.56	0.321	0.1	0.311
Departure Headway (Hd)	5.026	5.666	5.844	5.297
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	718	635	612	679
Service Time	3.053	3.702	3.889	3.33
HCM Lane V/C Ratio	0.558	0.321	0.1	0.311
HCM Control Delay	14.3	11.4	9.5	10.7
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	3.5	1.4	0.3	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	51	32	24	25	43	18	434	66	41	285	14
Future Volume (veh/h)	46	51	32	24	25	43	18	434	66	41	285	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	49	54	34	26	27	46	19	462	70	44	303	15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	90	170	107	55	86	147	42	618	519	83	625	31
Arrive On Green	0.05	0.16	0.16	0.03	0.14	0.14	0.02	0.33	0.33	0.05	0.36	0.36
Sat Flow, veh/h	1767	1056	665	1767	613	1045	1767	1856	1558	1767	1752	87
Grp Volume(v), veh/h	49	0	88	26	0	73	19	462	70	44	0	318
Grp Sat Flow(s),veh/h/ln	1767	0	1721	1767	0	1659	1767	1856	1558	1767	0	1839
Q Serve(g_s), s	1.2	0.0	2.0	0.6	0.0	1.8	0.5	9.8	1.4	1.1	0.0	6.0
Cycle Q Clear(g_c), s	1.2	0.0	2.0	0.6	0.0	1.8	0.5	9.8	1.4	1.1	0.0	6.0
Prop In Lane	1.00		0.39	1.00		0.63	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	90	0	277	55	0	233	42	618	519	83	0	656
V/C Ratio(X)	0.54	0.00	0.32	0.48	0.00	0.31	0.46	0.75	0.13	0.53	0.00	0.48
Avail Cap(c_a), veh/h	199	0	1512	199	0	1494	199	1003	842	199	0	994
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.6	0.0	16.5	21.2	0.0	17.1	21.4	13.1	10.3	20.7	0.0	11.1
Incr Delay (d2), s/veh	5.0	0.0	0.7	6.3	0.0	0.8	7.6	1.8	0.1	5.1	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.7	0.3	0.0	0.6	0.3	3.2	0.4	0.5	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.6	0.0	17.1	27.5	0.0	17.9	29.0	15.0	10.5	25.8	0.0	11.7
LnGrp LOS	C	A	B	C	A	B	C	B	B	C	A	B
Approach Vol, veh/h		137			99			551			362	
Approach Delay, s/veh		20.1			20.4			14.9			13.4	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	20.1	5.6	12.4	5.2	21.1	6.5	11.5
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	5.3	* 4.2	5.3	* 4.2	* 5.3
Max Green Setting (Gmax), s	* 5	24.0	* 5	39.0	* 5	24.0	* 5	* 40
Max Q Clear Time (g_c+I1), s	3.1	11.8	2.6	4.0	2.5	8.0	3.2	3.8
Green Ext Time (p_c), s	0.0	2.3	0.0	0.4	0.0	1.5	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	15.5
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	6	491	4	1	433
Future Vol, veh/h	1	6	491	4	1	433
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1	6	528	4	1	466

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	998	530	0	0	532	0
Stage 1	530	-	-	-	-	-
Stage 2	468	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	269	547	-	-	1030	-
Stage 1	588	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	269	547	-	-	1030	-
Mov Cap-2 Maneuver	269	-	-	-	-	-
Stage 1	588	-	-	-	-	-
Stage 2	627	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	477	1030	-
HCM Lane V/C Ratio	-	-	0.016	0.001	-
HCM Control Delay (s)	-	-	12.7	8.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	3	1	3	2	4	1	372	8	3	197	1
Future Vol, veh/h	3	3	1	3	2	4	1	372	8	3	197	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	170	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	3	1	3	2	4	1	400	9	3	212	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	629	630	213	628	626	405	213	0	0	409	0	0
Stage 1	219	219	-	407	407	-	-	-	-	-	-	-
Stage 2	410	411	-	221	219	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	393	397	825	394	399	644	1351	-	-	1144	-	-
Stage 1	781	720	-	619	596	-	-	-	-	-	-	-
Stage 2	617	593	-	779	720	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	388	395	825	390	397	644	1351	-	-	1144	-	-
Mov Cap-2 Maneuver	388	395	-	390	397	-	-	-	-	-	-	-
Stage 1	780	718	-	618	595	-	-	-	-	-	-	-
Stage 2	610	592	-	772	718	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.7	12.7	0	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1351	-	-	391	825	475	1144	-	-
HCM Lane V/C Ratio	0.001	-	-	0.017	0.001	0.02	0.003	-	-
HCM Control Delay (s)	7.7	-	-	14.4	9.4	12.7	8.2	-	-
HCM Lane LOS	A	-	-	B	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.1	0	-	-

Intersection	
Intersection Delay, s/veh	13.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	133	151	11	15	92	8	12	238	61	19	87	102
Future Vol, veh/h	133	151	11	15	92	8	12	238	61	19	87	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	145	164	12	16	100	9	13	259	66	21	95	111
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	12.3	11.2	17.5	10.5
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	4%	100%	0%	100%	0%	18%	0%
Vol Thru, %	77%	0%	93%	0%	92%	82%	0%
Vol Right, %	20%	0%	7%	0%	8%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	311	133	162	15	100	106	102
LT Vol	12	133	0	15	0	19	0
Through Vol	238	0	151	0	92	87	0
RT Vol	61	0	11	0	8	0	102
Lane Flow Rate	338	145	176	16	109	115	111
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.581	0.281	0.315	0.033	0.205	0.211	0.179
Departure Headway (Hd)	6.183	6.996	6.438	7.368	6.8	6.603	5.8
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	581	512	556	483	525	542	614
Service Time	4.243	4.764	4.206	5.152	4.582	4.375	3.572
HCM Lane V/C Ratio	0.582	0.283	0.317	0.033	0.208	0.212	0.181
HCM Control Delay	17.5	12.5	12.2	10.4	11.3	11.2	9.8
HCM Lane LOS	C	B	B	B	B	B	A
HCM 95th-tile Q	3.7	1.1	1.3	0.1	0.8	0.8	0.6

Intersection	
Intersection Delay, s/veh	22.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	95	107	12	43	59	11	11	437	67	8	266	47
Future Vol, veh/h	95	107	12	43	59	11	11	437	67	8	266	47
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	98	110	12	44	61	11	11	451	69	8	274	48
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.7	12.3	31.9	16.4
HCM LOS	B	B	D	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	44%	38%	2%
Vol Thru, %	85%	50%	52%	83%
Vol Right, %	13%	6%	10%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	515	214	113	321
LT Vol	11	95	43	8
Through Vol	437	107	59	266
RT Vol	67	12	11	47
Lane Flow Rate	531	221	116	331
Geometry Grp	1	1	1	1
Degree of Util (X)	0.842	0.417	0.23	0.555
Departure Headway (Hd)	5.707	6.804	7.109	6.037
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	632	527	503	596
Service Time	3.749	4.859	5.174	4.086
HCM Lane V/C Ratio	0.84	0.419	0.231	0.555
HCM Control Delay	31.9	14.7	12.3	16.4
HCM Lane LOS	D	B	B	C
HCM 95th-tile Q	9.2	2	0.9	3.4

Intersection	
Int Delay, s/veh	2.7

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	1	313	207	7	1	118	29	3	3	12	34	5	89
Future Vol, veh/h	1	313	207	7	1	118	29	3	3	12	34	5	89
Conflicting Peds, #/hr	0	0	0	4	4	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	250	-	0	250	-	-	300	-	130	250	-	0
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	333	220	7	1	126	31	3	3	13	36	5	95

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	-	157	0	0	231	0	0	1084	1051	225	1043	1043	142
Stage 1	-	-	-	-	-	-	-	890	892	-	144	144	-
Stage 2	-	-	-	-	-	-	-	194	159	-	899	899	-
Critical Hdwy	-	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	-	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	-	1417	-	-	1331	-	-	194	226	812	207	228	903
Stage 1	-	-	-	-	-	-	-	336	359	-	856	776	-
Stage 2	-	-	-	-	-	-	-	805	764	-	332	356	-
Platoon blocked, %			-	-		-	-						
Mov Cap-1 Maneuver	~ -403	~ -403	-	-	1326	-	-	170	225	808	201	227	903
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	170	225	-	201	227	-
Stage 1	-	-	-	-	-	-	-	336	358	-	856	775	-
Stage 2	-	-	-	-	-	-	-	715	763	-	324	355	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	14.3	14.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	170	225	808	+	-	-	1326	-	-	201	227	903
HCM Lane V/C Ratio	0.019	0.014	0.016	-	-	-	0.001	-	-	0.18	0.023	0.105
HCM Control Delay (s)	26.6	21.2	9.5	0.1	-	-	7.7	-	-	26.8	21.2	9.5
HCM Lane LOS	D	C	A	A	-	-	A	-	-	D	C	A
HCM 95th %tile Q(veh)	0.1	0	0	-	-	-	0	-	-	0.6	0.1	0.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	22
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱		✥			✥	
Traffic Vol, veh/h	77	131	14	58	73	36	13	405	37	34	255	28
Future Vol, veh/h	77	131	14	58	73	36	13	405	37	34	255	28
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	80	136	15	60	76	38	14	422	39	35	266	29
Number of Lanes	0	1	1	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	16.5	13.3	30.4	18.5
HCM LOS	C	B	D	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	3%	37%	0%	44%	0%	11%
Vol Thru, %	89%	63%	0%	56%	0%	80%
Vol Right, %	8%	0%	100%	0%	100%	9%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	455	208	14	131	36	317
LT Vol	13	77	0	58	0	34
Through Vol	405	131	0	73	0	255
RT Vol	37	0	14	0	36	28
Lane Flow Rate	474	217	15	136	38	330
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.81	0.464	0.028	0.301	0.073	0.592
Departure Headway (Hd)	6.149	7.705	6.792	7.944	6.992	6.453
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	588	466	525	450	510	558
Service Time	4.209	5.479	4.565	5.727	4.773	4.521
HCM Lane V/C Ratio	0.806	0.466	0.029	0.302	0.075	0.591
HCM Control Delay	30.4	17	9.8	14.1	10.3	18.5
HCM Lane LOS	D	C	A	B	B	C
HCM 95th-tile Q	8.1	2.4	0.1	1.3	0.2	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	92	35	146	208	22	14	298	60	5	351	124
Future Volume (veh/h)	64	92	35	146	208	22	14	298	60	5	351	124
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	72	103	39	164	234	25	16	335	67	6	394	139
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	107	156	59	209	328	35	35	581	116	14	465	164
Arrive On Green	0.06	0.12	0.12	0.12	0.20	0.20	0.02	0.39	0.39	0.01	0.35	0.35
Sat Flow, veh/h	1767	1283	486	1767	1648	176	1767	1501	300	1767	1310	462
Grp Volume(v), veh/h	72	0	142	164	0	259	16	0	402	6	0	533
Grp Sat Flow(s),veh/h/ln	1767	0	1768	1767	0	1824	1767	0	1801	1767	0	1772
Q Serve(g_s), s	2.2	0.0	4.2	5.0	0.0	7.3	0.5	0.0	9.7	0.2	0.0	15.3
Cycle Q Clear(g_c), s	2.2	0.0	4.2	5.0	0.0	7.3	0.5	0.0	9.7	0.2	0.0	15.3
Prop In Lane	1.00		0.27	1.00		0.10	1.00		0.17	1.00		0.26
Lane Grp Cap(c), veh/h	107	0	215	209	0	363	35	0	697	14	0	629
V/C Ratio(X)	0.67	0.00	0.66	0.79	0.00	0.71	0.46	0.00	0.58	0.43	0.00	0.85
Avail Cap(c_a), veh/h	244	0	611	315	0	703	161	0	891	161	0	877
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.3	0.0	23.1	23.6	0.0	20.6	26.7	0.0	13.3	27.1	0.0	16.4
Incr Delay (d2), s/veh	7.1	0.0	3.4	7.3	0.0	2.6	9.1	0.0	0.8	19.1	0.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	1.7	2.2	0.0	2.9	0.3	0.0	3.2	0.1	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.4	0.0	26.5	30.9	0.0	23.2	35.8	0.0	14.1	46.3	0.0	22.0
LnGrp LOS	C	A	C	C	A	C	D	A	B	D	A	C
Approach Vol, veh/h		214			423			418			539	
Approach Delay, s/veh		28.5			26.2			14.9			22.3	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.6	26.6	11.8	12.0	6.4	24.8	7.5	16.2
Change Period (Y+Rc), s	* 4.2	5.3	5.3	* 5.3	5.3	* 5.3	* 4.2	5.3
Max Green Setting (Gmax), s	* 5	27.2	9.8	* 19	5.0	* 27	* 7.6	21.2
Max Q Clear Time (g_c+I1), s	2.2	11.7	7.0	6.2	2.5	17.3	4.2	9.3
Green Ext Time (p_c), s	0.0	2.0	0.1	0.5	0.0	2.3	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	22.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	68	59	126	100	38	23	274	34	27	460	29
Future Volume (veh/h)	101	68	59	126	100	38	23	274	34	27	460	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	109	73	63	135	108	41	25	295	37	29	495	31
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	163	115	99	174	168	64	52	390	49	234	608	38
Arrive On Green	0.09	0.12	0.12	0.10	0.13	0.13	0.03	0.24	0.24	0.13	0.35	0.35
Sat Flow, veh/h	1767	919	793	1767	1281	486	1767	1616	203	1767	1728	108
Grp Volume(v), veh/h	109	0	136	135	0	149	25	0	332	29	0	526
Grp Sat Flow(s),veh/h/ln	1767	0	1713	1767	0	1768	1767	0	1819	1767	0	1836
Q Serve(g_s), s	2.9	0.0	3.7	3.7	0.0	3.9	0.7	0.0	8.3	0.7	0.0	12.8
Cycle Q Clear(g_c), s	2.9	0.0	3.7	3.7	0.0	3.9	0.7	0.0	8.3	0.7	0.0	12.8
Prop In Lane	1.00		0.46	1.00		0.28	1.00		0.11	1.00		0.06
Lane Grp Cap(c), veh/h	163	0	214	174	0	232	52	0	438	234	0	646
V/C Ratio(X)	0.67	0.00	0.64	0.78	0.00	0.64	0.48	0.00	0.76	0.12	0.00	0.81
Avail Cap(c_a), veh/h	281	0	666	317	0	724	180	0	989	234	0	1036
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.5	0.0	20.4	21.6	0.0	20.2	23.5	0.0	17.3	18.8	0.0	14.4
Incr Delay (d2), s/veh	4.6	0.0	3.1	7.2	0.0	3.0	6.7	0.0	2.7	0.2	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	1.4	1.6	0.0	1.5	0.3	0.0	3.0	0.3	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.2	0.0	23.5	28.8	0.0	23.2	30.2	0.0	20.0	19.0	0.0	17.1
LnGrp LOS	C	A	C	C	A	C	C	A	B	B	A	B
Approach Vol, veh/h		245			284			357			555	
Approach Delay, s/veh		24.7			25.9			20.7			17.2	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	17.5	9.0	11.8	5.6	22.6	8.7	12.1
Change Period (Y+Rc), s	4.2	* 5.7	4.2	* 5.7	4.2	* 5.3	4.2	* 5.7
Max Green Setting (Gmax), s	5.6	* 27	8.8	* 19	5.0	* 28	7.8	* 20
Max Q Clear Time (g_c+I1), s	2.7	10.3	5.7	5.7	2.7	14.8	4.9	5.9
Green Ext Time (p_c), s	0.0	1.5	0.1	0.5	0.0	2.5	0.1	0.5

Intersection Summary	
HCM 6th Ctrl Delay	21.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	107	12	43	59	11	11	437	67	8	266	47
Future Volume (veh/h)	95	107	12	43	59	11	11	437	67	8	266	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	98	110	12	44	61	11	11	451	69	8	274	48
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	141	233	25	84	167	30	25	568	87	19	550	96
Arrive On Green	0.08	0.14	0.14	0.05	0.11	0.11	0.01	0.36	0.36	0.01	0.36	0.36
Sat Flow, veh/h	1767	1644	179	1767	1530	276	1767	1572	240	1767	1538	269
Grp Volume(v), veh/h	98	0	122	44	0	72	11	0	520	8	0	322
Grp Sat Flow(s),veh/h/ln	1767	0	1823	1767	0	1806	1767	0	1812	1767	0	1807
Q Serve(g_s), s	2.3	0.0	2.7	1.1	0.0	1.6	0.3	0.0	11.1	0.2	0.0	6.0
Cycle Q Clear(g_c), s	2.3	0.0	2.7	1.1	0.0	1.6	0.3	0.0	11.1	0.2	0.0	6.0
Prop In Lane	1.00		0.10	1.00		0.15	1.00		0.13	1.00		0.15
Lane Grp Cap(c), veh/h	141	0	258	84	0	197	25	0	655	19	0	646
V/C Ratio(X)	0.69	0.00	0.47	0.52	0.00	0.37	0.43	0.00	0.79	0.43	0.00	0.50
Avail Cap(c_a), veh/h	237	0	830	208	0	793	204	0	1098	204	0	1095
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	17.1	20.1	0.0	17.9	21.1	0.0	12.4	21.3	0.0	10.9
Incr Delay (d2), s/veh	6.0	0.0	1.3	5.0	0.0	1.1	11.3	0.0	2.2	14.7	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	1.0	0.5	0.0	0.6	0.2	0.0	3.4	0.1	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.3	0.0	18.4	25.1	0.0	19.0	32.5	0.0	14.6	35.9	0.0	11.5
LnGrp LOS	C	A	B	C	A	B	C	A	B	D	A	B
Approach Vol, veh/h		220			116			531			330	
Approach Delay, s/veh		21.5			21.3			15.0			12.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.7	20.9	6.3	11.4	4.8	20.8	7.7	10.0
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	5.3	* 4.2	5.3	* 4.2	5.3
Max Green Setting (Gmax), s	* 5	26.2	* 5.1	19.7	* 5	26.2	* 5.8	19.0
Max Q Clear Time (g_c+I1), s	2.2	13.1	3.1	4.7	2.3	8.0	4.3	3.6
Green Ext Time (p_c), s	0.0	2.5	0.0	0.4	0.0	1.6	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	16.0
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	131	14	58	73	36	13	405	37	34	255	28
Future Volume (veh/h)	77	131	14	58	73	36	13	405	37	34	255	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	80	136	15	60	76	38	14	422	39	35	266	29
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	126	219	24	105	142	71	32	527	49	70	554	60
Arrive On Green	0.07	0.13	0.13	0.06	0.12	0.12	0.02	0.32	0.32	0.04	0.34	0.34
Sat Flow, veh/h	1767	1642	181	1767	1167	584	1767	1673	155	1767	1644	179
Grp Volume(v), veh/h	80	0	151	60	0	114	14	0	461	35	0	295
Grp Sat Flow(s),veh/h/ln	1767	0	1823	1767	0	1751	1767	0	1828	1767	0	1823
Q Serve(g_s), s	1.9	0.0	3.4	1.4	0.0	2.7	0.3	0.0	10.1	0.8	0.0	5.6
Cycle Q Clear(g_c), s	1.9	0.0	3.4	1.4	0.0	2.7	0.3	0.0	10.1	0.8	0.0	5.6
Prop In Lane	1.00		0.10	1.00		0.33	1.00		0.08	1.00		0.10
Lane Grp Cap(c), veh/h	126	0	243	105	0	213	32	0	576	70	0	614
V/C Ratio(X)	0.64	0.00	0.62	0.57	0.00	0.54	0.44	0.00	0.80	0.50	0.00	0.48
Avail Cap(c_a), veh/h	206	0	796	206	0	764	202	0	877	202	0	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.8	0.0	17.9	20.0	0.0	18.0	21.3	0.0	13.7	20.6	0.0	11.5
Incr Delay (d2), s/veh	5.3	0.0	2.6	4.9	0.0	2.1	9.4	0.0	3.1	5.4	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	1.3	0.6	0.0	1.0	0.2	0.0	3.3	0.4	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.0	0.0	20.5	24.9	0.0	20.1	30.7	0.0	16.8	26.0	0.0	12.1
LnGrp LOS	C	A	C	C	A	C	C	A	B	C	A	B
Approach Vol, veh/h		231			174			475			330	
Approach Delay, s/veh		22.1			21.8			17.2			13.5	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	19.5	6.8	11.5	5.0	20.4	7.3	11.0
Change Period (Y+Rc), s	* 4.2	5.7	* 4.2	5.7	* 4.2	* 5.7	* 4.2	5.7
Max Green Setting (Gmax), s	* 5	21.0	* 5.1	19.1	* 5	* 21	* 5.1	19.1
Max Q Clear Time (g_c+I1), s	2.8	12.1	3.4	5.4	2.3	7.6	3.9	4.7
Green Ext Time (p_c), s	0.0	1.7	0.0	0.5	0.0	1.3	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: Armstrong Ave & Clinton Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	76	100	74	363
Average Queue (ft)	35	52	39	100
95th Queue (ft)	59	83	59	227
Link Distance (ft)	1236	2621	1268	1262
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Temperance Ave & Clinton Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	30	93	108	189	74	215	75	165	403
Average Queue (ft)	6	34	39	71	28	96	28	83	167
95th Queue (ft)	25	72	79	145	63	178	57	145	299
Link Distance (ft)		2621		1097		1294	1294		1268
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	60		200		250			150	
Storage Blk Time (%)		2		0				1	10
Queuing Penalty (veh)		0		0				5	17

Intersection: 6: Fowler Ave & Floradora Ave

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	25	26
Average Queue (ft)	2	1
95th Queue (ft)	14	8
Link Distance (ft)	2558	1371
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Armstrong Ave & Floradora Ave

Movement	EB	EB	WB	NB
Directions Served	LT	R	LTR	L
Maximum Queue (ft)	47	23	52	18
Average Queue (ft)	6	9	24	1
95th Queue (ft)	24	26	42	6
Link Distance (ft)	2558		2565	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100		170
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Armstrong Ave & Olive Ave

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	46	44	78	118	99	87	76
Average Queue (ft)	16	20	35	62	60	37	50
95th Queue (ft)	33	36	64	104	92	65	67
Link Distance (ft)		1329		2579	1249	1246	1246
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	150		130				
Storage Blk Time (%)				0			
Queuing Penalty (veh)				0			

Intersection: 9: Temperance Ave & Olive Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	74	100	118	140	53	310	30	355
Average Queue (ft)	33	58	65	82	13	108	5	163
95th Queue (ft)	64	95	104	139	39	204	22	279
Link Distance (ft)		2579		2576		2551		3927
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250		250		250		250	
Storage Blk Time (%)						1		1
Queuing Penalty (veh)						0		0

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	EB	WB	NB	NB	SB	SB
Directions Served	UL	TR	T	R	L	R
Maximum Queue (ft)	126	47	21	12	51	97
Average Queue (ft)	36	2	3	1	21	42
95th Queue (ft)	83	17	15	7	43	67
Link Distance (ft)		2562	1883			578
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	250			130	250	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 11: Temperance Ave & Belmont Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	118	96	138	163	53	204	51	338
Average Queue (ft)	61	50	59	56	18	89	22	149
95th Queue (ft)	110	89	105	109	47	162	49	282
Link Distance (ft)		2562		2595		2244		2551
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250		250		250		250	
Storage Blk Time (%)								3
Queuing Penalty (veh)								1

Zone Summary

Zone wide Queuing Penalty: 24

Intersection: 1: Armstrong Ave & Clinton Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	75	78	116	71
Average Queue (ft)	45	29	65	42
95th Queue (ft)	69	54	99	63
Link Distance (ft)	1236	2621	1268	1262
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Temperance Ave & Clinton Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	64	70	46	127	77	430	71	95	184
Average Queue (ft)	32	27	10	34	12	164	21	27	92
95th Queue (ft)	64	59	33	80	43	344	53	67	171
Link Distance (ft)		2621		1097		1294	1294		1268
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	60		200		250			150	
Storage Blk Time (%)	1	1				7			2
Queuing Penalty (veh)	1	0				1			1

Intersection: 6: Fowler Ave & Floradora Ave

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	25	26
Average Queue (ft)	5	1
95th Queue (ft)	21	9
Link Distance (ft)	2558	1371
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Armstrong Ave & Floradora Ave

Movement	EB	EB	WB	SB
Directions Served	LT	R	LTR	L
Maximum Queue (ft)	24	22	27	26
Average Queue (ft)	4	1	6	1
95th Queue (ft)	18	10	23	8
Link Distance (ft)	2558		2565	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100		100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Armstrong Ave & Olive Ave

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	69	58	52	90	227	65	66
Average Queue (ft)	29	29	13	36	56	26	26
95th Queue (ft)	50	49	37	69	118	48	44
Link Distance (ft)		1329		2579	1249	1246	1246
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	150		130				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 9: Temperance Ave & Olive Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	116	96	73	122	31	222	31	166
Average Queue (ft)	56	49	27	34	9	112	8	70
95th Queue (ft)	97	83	52	73	32	216	29	156
Link Distance (ft)		2579		2576		2551		3927
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250		250		250		250	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	UL	TR	L	T	R	L	T	R
Maximum Queue (ft)	72	8	18	21	19	50	47	52
Average Queue (ft)	35	0	1	3	2	11	5	30
95th Queue (ft)	67	3	9	14	11	32	24	42
Link Distance (ft)		2562		1883			578	578
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250		300		130	250		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 11: Temperance Ave & Belmont Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	96	118	96	98	31	223	73	191
Average Queue (ft)	45	49	36	51	11	125	22	79
95th Queue (ft)	91	92	74	86	33	219	53	164
Link Distance (ft)		2562		2595		2244		2551
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250		250		250		250	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Zone Summary

Zone wide Queuing Penalty: 3

Appendix G: Existing plus Project Traffic Conditions

Intersection	
Intersection Delay, s/veh	26.2
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	26	49	28	89	133	18	74	149	9	30	447	38
Future Vol, veh/h	26	49	28	89	133	18	74	149	9	30	447	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	28	53	30	97	145	20	80	162	10	33	486	41
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12	15.8	14.4	39.1
HCM LOS	B	C	B	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	32%	25%	37%	6%
Vol Thru, %	64%	48%	55%	87%
Vol Right, %	4%	27%	7%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	232	103	240	515
LT Vol	74	26	89	30
Through Vol	149	49	133	447
RT Vol	9	28	18	38
Lane Flow Rate	252	112	261	560
Geometry Grp	1	1	1	1
Degree of Util (X)	0.444	0.217	0.483	0.897
Departure Headway (Hd)	6.345	6.982	6.664	5.768
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	565	512	540	633
Service Time	4.404	5.059	4.726	3.768
HCM Lane V/C Ratio	0.446	0.219	0.483	0.885
HCM Control Delay	14.4	12	15.8	39.1
HCM Lane LOS	B	B	C	E
HCM 95th-tile Q	2.3	0.8	2.6	11

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	65	14	70	155	125	40	259	80	166	387	66
Future Volume (veh/h)	14	65	14	70	155	125	40	259	80	166	387	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	16	76	16	81	180	145	47	301	93	193	450	77
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	35	187	39	252	255	205	81	426	356	253	534	91
Arrive On Green	0.02	0.13	0.13	0.14	0.27	0.27	0.05	0.23	0.23	0.14	0.35	0.35
Sat Flow, veh/h	1767	1479	311	1767	950	765	1767	1856	1552	1767	1542	264
Grp Volume(v), veh/h	16	0	92	81	0	325	47	301	93	193	0	527
Grp Sat Flow(s),veh/h/ln	1767	0	1791	1767	0	1714	1767	1856	1552	1767	0	1805
Q Serve(g_s), s	0.5	0.0	2.7	2.4	0.0	9.9	1.5	8.7	2.9	6.1	0.0	15.6
Cycle Q Clear(g_c), s	0.5	0.0	2.7	2.4	0.0	9.9	1.5	8.7	2.9	6.1	0.0	15.6
Prop In Lane	1.00		0.17	1.00		0.45	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	35	0	226	252	0	460	81	426	356	253	0	625
V/C Ratio(X)	0.46	0.00	0.41	0.32	0.00	0.71	0.58	0.71	0.26	0.76	0.00	0.84
Avail Cap(c_a), veh/h	152	0	1209	252	0	1181	152	786	658	253	0	821
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	23.4	22.4	0.0	19.2	27.2	20.6	18.3	23.9	0.0	17.5
Incr Delay (d2), s/veh	9.3	0.0	1.2	0.7	0.0	2.0	6.5	2.2	0.4	12.8	0.0	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.1	0.9	0.0	3.6	0.7	3.4	0.9	3.1	0.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.5	0.0	24.5	23.1	0.0	21.2	33.6	22.7	18.7	36.7	0.0	23.8
LnGrp LOS	D	A	C	C	A	C	C	C	B	D	A	C
Approach Vol, veh/h		108			406			441			720	
Approach Delay, s/veh		26.4			21.6			23.0			27.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.6	18.6	13.2	12.6	6.9	25.4	5.3	20.5
Change Period (Y+Rc), s	5.3	* 5.3	4.9	* 5.3	* 4.2	5.3	* 4.2	4.9
Max Green Setting (Gmax), s	6.8	* 25	5.4	* 39	* 5	26.4	* 5	40.0
Max Q Clear Time (g_c+I1), s	8.1	10.7	4.4	4.7	3.5	17.6	2.5	11.9
Green Ext Time (p_c), s	0.0	1.6	0.0	0.4	0.0	2.0	0.0	2.0

Intersection Summary	
HCM 6th Ctrl Delay	24.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	0.9					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	19	0	191	583	0
Future Vol, veh/h	25	19	0	191	583	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	29	22	0	222	678	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	900	678	678	0	-	0
Stage 1	678	-	-	-	-	-
Stage 2	222	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	308	450	909	-	-	-
Stage 1	502	-	-	-	-	-
Stage 2	813	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	308	450	909	-	-	-
Mov Cap-2 Maneuver	308	-	-	-	-	-
Stage 1	502	-	-	-	-	-
Stage 2	813	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	909	-	357	-	-
HCM Lane V/C Ratio	-	-	0.143	-	-
HCM Control Delay (s)	0	-	16.8	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Intersection						
Int Delay, s/veh	0.1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	360	6	9	426
Future Vol, veh/h	0	3	360	6	9	426
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	3	404	7	10	479

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	907	408	0	0	411	0
Stage 1	408	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	305	641	-	-	1142	-
Stage 1	669	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	301	641	-	-	1142	-
Mov Cap-2 Maneuver	301	-	-	-	-	-
Stage 1	669	-	-	-	-	-
Stage 2	601	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	641	1142	-
HCM Lane V/C Ratio	-	-	0.005	0.009	-
HCM Control Delay (s)	-	-	10.6	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	5	12	42	6	9	3	204	6	0	600	2
Future Vol, veh/h	3	5	12	42	6	9	3	204	6	0	600	2
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	170	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	5	13	46	7	10	3	224	7	0	659	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	903	898	661	903	896	228	662	0	0	231	0	0
Stage 1	661	661	-	234	234	-	-	-	-	-	-	-
Stage 2	242	237	-	669	662	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	257	278	461	257	279	809	922	-	-	1331	-	-
Stage 1	450	458	-	767	709	-	-	-	-	-	-	-
Stage 2	759	707	-	445	458	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	249	277	461	245	278	809	921	-	-	1331	-	-
Mov Cap-2 Maneuver	249	277	-	245	278	-	-	-	-	-	-	-
Stage 1	448	458	-	765	707	-	-	-	-	-	-	-
Stage 2	740	705	-	427	458	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.4	21.6	0.1	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	921	-	-	266	461	279	1331	-	-
HCM Lane V/C Ratio	0.004	-	-	0.033	0.029	0.225	-	-	-
HCM Control Delay (s)	8.9	-	-	19	13	21.6	0	-	-
HCM Lane LOS	A	-	-	C	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.8	0	-	-

Intersection	
Intersection Delay, s/veh	20.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	43	80	12	87	238	31	46	148	89	24	236	385
Future Vol, veh/h	43	80	12	87	238	31	46	148	89	24	236	385
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	45	84	13	92	251	33	48	156	94	25	248	405
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	13.2	19.4	21.7	21.9
HCM LOS	B	C	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	16%	100%	0%	100%	0%	9%	0%
Vol Thru, %	52%	0%	87%	0%	88%	91%	0%
Vol Right, %	31%	0%	13%	0%	12%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	283	43	92	87	269	260	385
LT Vol	46	43	0	87	0	24	0
Through Vol	148	0	80	0	238	236	0
RT Vol	89	0	12	0	31	0	385
Lane Flow Rate	298	45	97	92	283	274	405
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.615	0.112	0.223	0.21	0.602	0.547	0.724
Departure Headway (Hd)	7.427	8.886	8.272	8.252	7.653	7.192	6.429
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	486	403	433	435	470	501	563
Service Time	5.485	6.656	6.041	6.008	5.409	4.947	4.184
HCM Lane V/C Ratio	0.613	0.112	0.224	0.211	0.602	0.547	0.719
HCM Control Delay	21.7	12.8	13.4	13.2	21.4	18.4	24.3
HCM Lane LOS	C	B	B	B	C	C	C
HCM 95th-tile Q	4.1	0.4	0.8	0.8	3.9	3.2	6

Intersection	
Intersection Delay, s/veh	94.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	64	92	37	146	208	22	14	298	60	5	351	124
Future Vol, veh/h	64	92	37	146	208	22	14	298	60	5	351	124
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	72	103	42	164	234	25	16	335	67	6	394	139
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	26.2	74.8	69.2	157.9
HCM LOS	D	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	33%	39%	1%
Vol Thru, %	80%	48%	55%	73%
Vol Right, %	16%	19%	6%	26%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	372	193	376	480
LT Vol	14	64	146	5
Through Vol	298	92	208	351
RT Vol	60	37	22	124
Lane Flow Rate	418	217	422	539
Geometry Grp	1	1	1	1
Degree of Util (X)	0.972	0.568	0.993	1.253
Departure Headway (Hd)	9.103	10.37	9.204	8.362
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	401	351	397	431
Service Time	7.103	8.37	7.204	6.46
HCM Lane V/C Ratio	1.042	0.618	1.063	1.251
HCM Control Delay	69.2	26.2	74.8	157.9
HCM Lane LOS	F	D	F	F
HCM 95th-tile Q	11.3	3.3	11.9	22.4

Intersection												
Int Delay, s/veh	9.1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	310	192	1	3	150	50	4	4	2	53	3	292
Future Vol, veh/h	310	192	1	3	150	50	4	4	2	53	3	292
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	0	250	-	-	300	-	130	250	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	360	223	1	3	174	58	5	5	2	62	3	340

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	232	0	0	224	0	0	1324	1181	223	1156	1153	203
Stage 1	-	-	-	-	-	-	943	943	-	209	209	-
Stage 2	-	-	-	-	-	-	381	238	-	947	944	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1330	-	-	1339	-	-	132	189	814	173	197	835
Stage 1	-	-	-	-	-	-	314	340	-	791	727	-
Stage 2	-	-	-	-	-	-	639	706	-	312	340	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1330	-	-	1339	-	-	61	138	814	133	143	835
Mov Cap-2 Maneuver	-	-	-	-	-	-	61	138	-	133	143	-
Stage 1	-	-	-	-	-	-	229	248	-	577	726	-
Stage 2	-	-	-	-	-	-	376	705	-	223	248	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	5.4			0.1			42.2			18.7		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	61	138	814	1330	-	-	1339	-	-	133	143	835
HCM Lane V/C Ratio	0.076	0.034	0.003	0.271	-	-	0.003	-	-	0.463	0.024	0.407
HCM Control Delay (s)	68.8	32	9.4	8.7	-	-	7.7	-	-	53.5	30.8	12.2
HCM Lane LOS	F	D	A	A	-	-	A	-	-	F	D	B
HCM 95th %tile Q(veh)	0.2	0.1	0	1.1	-	-	0	-	-	2.1	0.1	2

Intersection	
Intersection Delay, s/veh	52.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	101	71	66	126	100	38	27	274	34	29	460	29
Future Vol, veh/h	101	71	66	126	100	38	27	274	34	29	460	29
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	109	76	71	135	108	41	29	295	37	31	495	31
Number of Lanes	0	1	1	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	17.3	21.7	30	98
HCM LOS	C	C	D	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	8%	59%	0%	56%	0%	6%
Vol Thru, %	82%	41%	0%	44%	0%	89%
Vol Right, %	10%	0%	100%	0%	100%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	335	172	66	226	38	518
LT Vol	27	101	0	126	0	29
Through Vol	274	71	0	100	0	460
RT Vol	34	0	66	0	38	29
Lane Flow Rate	360	185	71	243	41	557
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.744	0.448	0.154	0.578	0.086	1.105
Departure Headway (Hd)	7.748	9.216	8.176	9.033	8.011	7.14
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	468	394	441	403	450	512
Service Time	5.748	6.916	5.876	6.733	5.711	5.167
HCM Lane V/C Ratio	0.769	0.47	0.161	0.603	0.091	1.088
HCM Control Delay	30	19.2	12.4	23.4	11.5	98
HCM Lane LOS	D	C	B	C	B	F
HCM 95th-tile Q	6.2	2.2	0.5	3.5	0.3	18.1

Intersection	
Intersection Delay, s/veh	15
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	128	73	17	34	13	29	377	27	28	175	13
Future Vol, veh/h	57	128	73	17	34	13	29	377	27	28	175	13
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	59	133	76	18	35	14	30	393	28	29	182	14
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.2	10.2	18.3	11.8
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	22%	27%	13%
Vol Thru, %	87%	50%	53%	81%
Vol Right, %	6%	28%	20%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	433	258	64	216
LT Vol	29	57	17	28
Through Vol	377	128	34	175
RT Vol	27	73	13	13
Lane Flow Rate	451	269	67	225
Geometry Grp	1	1	1	1
Degree of Util (X)	0.665	0.431	0.116	0.354
Departure Headway (Hd)	5.311	5.773	6.281	5.662
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	677	621	567	632
Service Time	3.361	3.833	4.364	3.724
HCM Lane V/C Ratio	0.666	0.433	0.118	0.356
HCM Control Delay	18.3	13.2	10.2	11.8
HCM Lane LOS	C	B	B	B
HCM 95th-tile Q	5	2.2	0.4	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	55	33	24	26	43	20	434	66	41	285	16
Future Volume (veh/h)	48	55	33	24	26	43	20	434	66	41	285	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	51	59	35	26	28	46	21	462	70	44	303	17
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	93	176	104	55	89	145	45	622	523	83	621	35
Arrive On Green	0.05	0.16	0.16	0.03	0.14	0.14	0.03	0.34	0.34	0.05	0.36	0.36
Sat Flow, veh/h	1767	1083	643	1767	628	1032	1767	1856	1558	1767	1739	98
Grp Volume(v), veh/h	51	0	94	26	0	74	21	462	70	44	0	320
Grp Sat Flow(s),veh/h/ln	1767	0	1726	1767	0	1661	1767	1856	1558	1767	0	1837
Q Serve(g_s), s	1.3	0.0	2.2	0.6	0.0	1.8	0.5	9.9	1.4	1.1	0.0	6.1
Cycle Q Clear(g_c), s	1.3	0.0	2.2	0.6	0.0	1.8	0.5	9.9	1.4	1.1	0.0	6.1
Prop In Lane	1.00		0.37	1.00		0.62	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	93	0	280	55	0	234	45	622	523	83	0	655
V/C Ratio(X)	0.55	0.00	0.34	0.48	0.00	0.32	0.46	0.74	0.13	0.53	0.00	0.49
Avail Cap(c_a), veh/h	197	0	1526	197	0	1484	197	1094	919	197	0	1083
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.7	0.0	16.6	21.3	0.0	17.3	21.5	13.2	10.4	20.9	0.0	11.2
Incr Delay (d2), s/veh	5.0	0.0	0.7	6.3	0.0	0.8	7.2	1.8	0.1	5.1	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.7	0.3	0.0	0.6	0.3	3.2	0.4	0.5	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.7	0.0	17.3	27.7	0.0	18.1	28.7	14.9	10.5	26.0	0.0	11.8
LnGrp LOS	C	A	B	C	A	B	C	B	B	C	A	B
Approach Vol, veh/h		145			100			553			364	
Approach Delay, s/veh		20.3			20.6			14.9			13.5	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	20.3	5.6	12.6	5.3	21.3	6.5	11.6
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	5.3	* 4.2	5.3	* 4.2	* 5.3
Max Green Setting (Gmax), s	* 5	26.4	* 5	39.6	* 5	26.4	* 5	* 40
Max Q Clear Time (g_c+I1), s	3.1	11.9	2.6	4.2	2.5	8.1	3.3	3.8
Green Ext Time (p_c), s	0.0	2.4	0.0	0.5	0.0	1.6	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	15.6
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	0.5					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	12	0	444	213	0
Future Vol, veh/h	17	12	0	444	213	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	19	13	0	493	237	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	730	237	237	0	-	0
Stage 1	237	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	388	800	1324	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	612	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	388	800	1324	-	-	-
Mov Cap-2 Maneuver	388	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	612	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1324	-	493	-	-
HCM Lane V/C Ratio	-	-	0.065	-	-
HCM Control Delay (s)	0	-	12.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	6	491	6	1	433
Future Vol, veh/h	1	6	491	6	1	433
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1	6	528	6	1	466

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	999	531	0	0	534	0
Stage 1	531	-	-	-	-	-
Stage 2	468	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	269	546	-	-	1029	-
Stage 1	588	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	269	546	-	-	1029	-
Mov Cap-2 Maneuver	269	-	-	-	-	-
Stage 1	588	-	-	-	-	-
Stage 2	627	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	12.7		0		0	
HCM LOS	B					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	476	1029	-
HCM Lane V/C Ratio	-	-	0.016	0.001	-
HCM Control Delay (s)	-	-	12.7	8.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	3	1	3	2	4	1	431	8	3	232	1
Future Vol, veh/h	5	3	1	3	2	4	1	431	8	3	232	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	170	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	3	1	3	2	4	1	463	9	3	249	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	729	730	250	728	726	468	250	0	0	472	0	0
Stage 1	256	256	-	470	470	-	-	-	-	-	-	-
Stage 2	473	474	-	258	256	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	337	348	786	338	350	593	1310	-	-	1085	-	-
Stage 1	746	694	-	572	558	-	-	-	-	-	-	-
Stage 2	570	556	-	744	694	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	332	347	786	334	349	593	1310	-	-	1085	-	-
Mov Cap-2 Maneuver	332	347	-	334	349	-	-	-	-	-	-	-
Stage 1	745	692	-	571	557	-	-	-	-	-	-	-
Stage 2	563	555	-	737	692	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.3	13.8	0	0.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1310	-	-	337	786	419	1085	-	-
HCM Lane V/C Ratio	0.001	-	-	0.026	0.001	0.023	0.003	-	-
HCM Control Delay (s)	7.8	-	-	16	9.6	13.8	8.3	-	-
HCM Lane LOS	A	-	-	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.1	0	-	-

Intersection	
Intersection Delay, s/veh	15.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	150	151	11	15	92	20	12	268	61	26	102	115
Future Vol, veh/h	150	151	11	15	92	20	12	268	61	26	102	115
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	163	164	12	16	100	22	13	291	66	28	111	125
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	13.3	12	21.2	11.4
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	4%	100%	0%	100%	0%	20%	0%
Vol Thru, %	79%	0%	93%	0%	82%	80%	0%
Vol Right, %	18%	0%	7%	0%	18%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	341	150	162	15	112	128	115
LT Vol	12	150	0	15	0	26	0
Through Vol	268	0	151	0	92	102	0
RT Vol	61	0	11	0	20	0	115
Lane Flow Rate	371	163	176	16	122	139	125
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.66	0.33	0.329	0.035	0.243	0.269	0.213
Departure Headway (Hd)	6.413	7.4	6.84	7.817	7.175	6.96	6.142
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	560	489	528	460	503	519	588
Service Time	4.511	5.1	4.54	5.528	4.886	4.66	3.842
HCM Lane V/C Ratio	0.662	0.333	0.333	0.035	0.243	0.268	0.213
HCM Control Delay	21.2	13.7	12.9	10.8	12.2	12.2	10.5
HCM Lane LOS	C	B	B	B	B	B	B
HCM 95th-tile Q	4.8	1.4	1.4	0.1	0.9	1.1	0.8

Intersection	
Intersection Delay, s/veh	24.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	95	107	19	43	59	11	23	437	67	8	266	47
Future Vol, veh/h	95	107	19	43	59	11	23	437	67	8	266	47
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	98	110	20	44	61	11	24	451	69	8	274	48
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15.1	12.5	35.3	16.7
HCM LOS	C	B	E	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	43%	38%	2%
Vol Thru, %	83%	48%	52%	83%
Vol Right, %	13%	9%	10%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	527	221	113	321
LT Vol	23	95	43	8
Through Vol	437	107	59	266
RT Vol	67	19	11	47
Lane Flow Rate	543	228	116	331
Geometry Grp	1	1	1	1
Degree of Util (X)	0.869	0.433	0.233	0.561
Departure Headway (Hd)	5.758	6.844	7.2	6.108
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	630	524	497	589
Service Time	3.803	4.902	5.27	4.163
HCM Lane V/C Ratio	0.862	0.435	0.233	0.562
HCM Control Delay	35.3	15.1	12.5	16.7
HCM Lane LOS	E	C	B	C
HCM 95th-tile Q	10	2.2	0.9	3.5

Intersection	
Int Delay, s/veh	3

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	1	341	207	7	1	118	31	3	3	12	35	5	103
Future Vol, veh/h	1	341	207	7	1	118	31	3	3	12	35	5	103
Conflicting Peds, #/hr	0	0	0	4	4	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	250	-	0	250	-	-	300	-	130	250	-	0
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	363	220	7	1	126	33	3	3	13	37	5	110

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	-	159	0	0	231	0	0	1152	1113	225	1104	1104	143
Stage 1	-	-	-	-	-	-	-	950	952	-	145	145	-
Stage 2	-	-	-	-	-	-	-	202	161	-	959	959	-
Critical Hdwy	-	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	-	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	-	1414	-	-	1331	-	-	174	208	812	188	210	902
Stage 1	-	-	-	-	-	-	-	311	337	-	855	775	-
Stage 2	-	-	-	-	-	-	-	798	763	-	308	334	-
Platoon blocked, %			-	-		-	-						
Mov Cap-1 Maneuver	~ -451	~ -451	-	-	1326	-	-	149	207	808	183	209	902
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	149	207	-	183	209	-
Stage 1	-	-	-	-	-	-	-	311	336	-	855	774	-
Stage 2	-	-	-	-	-	-	-	696	762	-	300	333	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	15.1	14.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	149	207	808	+	-	-	1326	-	-	183	209	902
HCM Lane V/C Ratio	0.021	0.015	0.016	-	-	-	0.001	-	-	0.203	0.025	0.121
HCM Control Delay (s)	29.7	22.7	9.5	0.6	-	-	7.7	-	-	29.6	22.7	9.5
HCM Lane LOS	D	C	A	A	-	-	A	-	-	D	C	A
HCM 95th %tile Q(veh)	0.1	0	0	-	-	-	0	-	-	0.7	0.1	0.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	23.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	132	14	58	73	36	15	417	37	37	259	28
Future Vol, veh/h	77	132	14	58	73	36	15	417	37	37	259	28
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	80	138	15	60	76	38	16	434	39	39	270	29
Number of Lanes	0	1	1	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	16.9	13.6	34	19.4
HCM LOS	C	B	D	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	3%	37%	0%	44%	0%	11%
Vol Thru, %	89%	63%	0%	56%	0%	80%
Vol Right, %	8%	0%	100%	0%	100%	9%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	469	209	14	131	36	324
LT Vol	15	77	0	58	0	37
Through Vol	417	132	0	73	0	259
RT Vol	37	0	14	0	36	28
Lane Flow Rate	489	218	15	136	38	338
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.842	0.472	0.028	0.305	0.074	0.612
Departure Headway (Hd)	6.202	7.8	6.887	8.05	7.096	6.523
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	581	459	517	445	502	550
Service Time	4.265	5.58	4.666	5.84	4.885	4.597
HCM Lane V/C Ratio	0.842	0.475	0.029	0.306	0.076	0.615
HCM Control Delay	34	17.4	9.9	14.4	10.5	19.4
HCM Lane LOS	D	C	A	B	B	C
HCM 95th-tile Q	8.9	2.5	0.1	1.3	0.2	4.1

Intersection: 1: Armstrong Ave & Clinton Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	67	125	96	188
Average Queue (ft)	32	59	50	88
95th Queue (ft)	54	97	78	150
Link Distance (ft)	1236	2621	1268	1262
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Temperance Ave & Clinton Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	30	92	112	179	74	200	70	236	320
Average Queue (ft)	9	31	47	90	31	105	32	107	147
95th Queue (ft)	29	74	86	156	69	177	62	185	261
Link Distance (ft)		2621		1097		1294	1294		1268
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	60		200		250			150	
Storage Blk Time (%)		2						7	8
Queuing Penalty (veh)		0						32	14

Intersection: 4: Armstrong Ave & Kerry Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	55
Average Queue (ft)	22
95th Queue (ft)	50
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Fowler Ave & Floradora Ave

Movement	WB
Directions Served	LR
Maximum Queue (ft)	24
Average Queue (ft)	2
95th Queue (ft)	12
Link Distance (ft)	2558
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: Armstrong Ave & Floradora Ave

Movement	EB	EB	WB	NB
Directions Served	LT	R	LTR	L
Maximum Queue (ft)	24	30	53	18
Average Queue (ft)	4	10	23	1
95th Queue (ft)	17	29	46	8
Link Distance (ft)	2558		2565	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100		170
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Armstrong Ave & Olive Ave

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	48	64	102	119	78	69	98
Average Queue (ft)	18	25	39	58	49	46	55
95th Queue (ft)	39	46	66	90	77	72	82
Link Distance (ft)		1329		2585	1249	1246	1246
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	150		130				
Storage Blk Time (%)				0			
Queuing Penalty (veh)				0			

Intersection: 9: Temperance Ave & Olive Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	119	358	209	439
Average Queue (ft)	46	107	77	196
95th Queue (ft)	76	225	129	351
Link Distance (ft)	2585	2582	2549	3933
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	EB	WB	NB	NB	SB	SB	SB
Directions Served	UL	TR	L	R	L	T	R
Maximum Queue (ft)	70	10	19	12	51	29	76
Average Queue (ft)	33	0	1	1	28	4	48
95th Queue (ft)	59	3	9	6	50	18	74
Link Distance (ft)		2568				578	578
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	250		300	130	250		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 11: Temperance Ave & Belmont Ave

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	LT	R	LTR	LTR
Maximum Queue (ft)	89	54	142	97	134	528
Average Queue (ft)	46	32	67	29	71	228
95th Queue (ft)	73	58	108	64	112	490
Link Distance (ft)	2568		2601		2236	2549
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		35		30		
Storage Blk Time (%)	21	11	43	6		
Queuing Penalty (veh)	14	19	16	15		

Zone Summary

Zone wide Queuing Penalty: 110

Intersection: 1: Armstrong Ave & Clinton Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	98	55	97	79
Average Queue (ft)	52	35	63	45
95th Queue (ft)	82	52	90	70
Link Distance (ft)	1236	2621	1268	1262
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Temperance Ave & Clinton Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	80	88	46	84	54	242	55	93	256
Average Queue (ft)	34	35	15	23	19	117	19	35	101
95th Queue (ft)	63	65	34	56	53	216	43	71	211
Link Distance (ft)		2621		1097		1294	1294		1268
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	60		200		250			150	
Storage Blk Time (%)	1	1				0			3
Queuing Penalty (veh)	1	0				0			1

Intersection: 4: Armstrong Ave & Kerry Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	54
Average Queue (ft)	16
95th Queue (ft)	43
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Fowler Ave & Floradora Ave

Movement	WB
Directions Served	LR
Maximum Queue (ft)	25
Average Queue (ft)	2
95th Queue (ft)	14
Link Distance (ft)	2558
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: Armstrong Ave & Floradora Ave

Movement	EB	EB	WB
Directions Served	LT	R	LTR
Maximum Queue (ft)	20	22	24
Average Queue (ft)	2	1	3
95th Queue (ft)	13	10	16
Link Distance (ft)	2558		2565
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Armstrong Ave & Olive Ave

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	R
Maximum Queue (ft)	66	68	31	55	119	48	71
Average Queue (ft)	32	30	12	38	64	28	30
95th Queue (ft)	55	51	36	56	99	46	48
Link Distance (ft)		1329		2585	1249	1246	1246
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	150		130				
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 9: Temperance Ave & Olive Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	110	71	168	241
Average Queue (ft)	51	36	91	86
95th Queue (ft)	79	58	142	153
Link Distance (ft)	2585	2582	2549	3933
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	EB	NB	NB	SB	SB	SB
Directions Served	UL	L	R	L	T	R
Maximum Queue (ft)	70	19	19	71	46	54
Average Queue (ft)	31	2	7	19	4	27
95th Queue (ft)	65	11	17	45	22	46
Link Distance (ft)					578	578
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	250	300	130	250		
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 11: Temperance Ave & Belmont Ave

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	LT	R	LTR	LTR
Maximum Queue (ft)	94	31	74	54	239	94
Average Queue (ft)	53	15	43	23	111	60
95th Queue (ft)	83	39	65	51	190	92
Link Distance (ft)	2568		2601		2236	2549
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		35		30		
Storage Blk Time (%)	27	2	17	5		
Queuing Penalty (veh)	4	4	6	6		

Zone Summary

Zone wide Queuing Penalty: 23

Appendix H: Near Term plus Project Traffic Conditions

Intersection	
Intersection Delay, s/veh	139.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	52	114	38	121	204	36	119	214	33	53	508	63
Future Vol, veh/h	52	114	38	121	204	36	119	214	33	53	508	63
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	57	124	41	132	222	39	129	233	36	58	552	68
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	26.3	56.9	57.7	272.3
HCM LOS	D	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	25%	34%	8%
Vol Thru, %	58%	56%	57%	81%
Vol Right, %	9%	19%	10%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	366	204	361	624
LT Vol	119	52	121	53
Through Vol	214	114	204	508
RT Vol	33	38	36	63
Lane Flow Rate	398	222	392	678
Geometry Grp	1	1	1	1
Degree of Util (X)	0.91	0.558	0.903	1.532
Departure Headway (Hd)	9.472	10.631	9.588	8.13
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	386	341	381	448
Service Time	7.472	8.631	7.588	6.2
HCM Lane V/C Ratio	1.031	0.651	1.029	1.513
HCM Control Delay	57.7	26.3	56.9	272.3
HCM Lane LOS	F	D	F	F
HCM 95th-tile Q	9.4	3.2	9.2	36.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	69	51	75	162	169	52	325	83	182	461	107
Future Volume (veh/h)	94	69	51	75	162	169	52	325	83	182	461	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	109	80	59	87	188	197	60	378	97	212	536	124
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	119	137	101	344	232	243	78	447	375	322	571	132
Arrive On Green	0.07	0.14	0.14	0.19	0.28	0.28	0.04	0.24	0.24	0.18	0.39	0.39
Sat Flow, veh/h	1767	982	724	1767	828	868	1767	1856	1553	1767	1455	337
Grp Volume(v), veh/h	109	0	139	87	0	385	60	378	97	212	0	660
Grp Sat Flow(s),veh/h/ln	1767	0	1706	1767	0	1696	1767	1856	1553	1767	0	1792
Q Serve(g_s), s	5.3	0.0	6.6	3.6	0.0	18.2	2.9	16.7	4.3	9.6	0.0	30.5
Cycle Q Clear(g_c), s	5.3	0.0	6.6	3.6	0.0	18.2	2.9	16.7	4.3	9.6	0.0	30.5
Prop In Lane	1.00		0.42	1.00		0.51	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	119	0	239	344	0	474	78	447	375	322	0	703
V/C Ratio(X)	0.91	0.00	0.58	0.25	0.00	0.81	0.77	0.84	0.26	0.66	0.00	0.94
Avail Cap(c_a), veh/h	119	0	784	344	0	789	103	583	488	322	0	742
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.8	0.0	34.6	29.3	0.0	28.8	40.6	31.1	26.4	32.6	0.0	25.1
Incr Delay (d2), s/veh	56.5	0.0	2.2	0.4	0.0	3.4	21.7	8.7	0.4	4.8	0.0	19.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	2.7	1.5	0.0	7.3	1.7	8.0	1.6	4.3	0.0	15.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	96.3	0.0	36.8	29.7	0.0	32.2	62.4	39.8	26.8	37.5	0.0	44.4
LnGrp LOS	F	A	D	C	A	C	E	D	C	D	A	D
Approach Vol, veh/h		248			472			535			872	
Approach Delay, s/veh		63.0			31.8			40.0			42.7	
Approach LOS		E			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	26.0	21.6	17.3	8.0	39.0	10.0	28.9
Change Period (Y+Rc), s	5.3	* 5.3	4.9	* 5.3	* 4.2	5.3	* 4.2	4.9
Max Green Setting (Gmax), s	13.6	* 27	5.9	* 40	* 5	35.6	* 5.8	40.0
Max Q Clear Time (g_c+I1), s	11.6	18.7	5.6	8.6	4.9	32.5	7.3	20.2
Green Ext Time (p_c), s	0.1	1.5	0.0	0.7	0.0	1.2	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	41.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	111	584	20	108	837
Future Vol, veh/h	0	111	584	20	108	837
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	129	679	23	126	973

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	691	0	0	702	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	4.13	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	0	443	-	-	891	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	443	-	-	891	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.4	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	443	891	-
HCM Lane V/C Ratio	-	-	0.291	0.141	-
HCM Control Delay (s)	-	-	16.4	9.7	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.5	-

Intersection						
Int Delay, s/veh	0.9					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	19	0	317	690	0
Future Vol, veh/h	25	19	0	317	690	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	29	22	0	369	802	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1171	802	802	0	-	0
Stage 1	802	-	-	-	-	-
Stage 2	369	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	212	382	817	-	-	-
Stage 1	440	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	212	382	817	-	-	-
Mov Cap-2 Maneuver	212	-	-	-	-	-
Stage 1	440	-	-	-	-	-
Stage 2	697	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	817	-	262	-	-
HCM Lane V/C Ratio	-	-	0.195	-	-
HCM Control Delay (s)	0	-	22	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	12	596	10	18	823
Future Vol, veh/h	3	12	596	10	18	823
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	3	13	670	11	20	925

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1641	676	0	0	681	0
Stage 1	676	-	-	-	-	-
Stage 2	965	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	109	452	-	-	907	-
Stage 1	503	-	-	-	-	-
Stage 2	368	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	104	452	-	-	907	-
Mov Cap-2 Maneuver	104	-	-	-	-	-
Stage 1	503	-	-	-	-	-
Stage 2	351	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.2	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	271	907	-
HCM Lane V/C Ratio	-	-	0.062	0.022	-
HCM Control Delay (s)	-	-	19.2	9.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	8	14	52	8	14	9	289	13	9	689	5
Future Vol, veh/h	7	8	14	52	8	14	9	289	13	9	689	5
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	170	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	9	15	57	9	15	10	318	14	10	757	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1138	1133	761	1137	1128	325	763	0	0	332	0	0
Stage 1	781	781	-	345	345	-	-	-	-	-	-	-
Stage 2	357	352	-	792	783	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	178	202	404	178	203	714	845	-	-	1222	-	-
Stage 1	386	404	-	668	634	-	-	-	-	-	-	-
Stage 2	659	630	-	381	403	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	166	198	404	163	199	714	844	-	-	1222	-	-
Mov Cap-2 Maneuver	166	198	-	163	199	-	-	-	-	-	-	-
Stage 1	381	400	-	660	626	-	-	-	-	-	-	-
Stage 2	628	622	-	356	399	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.7	36.1	0.3	0.1
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	844	-	-	182	404	195	1222	-	-
HCM Lane V/C Ratio	0.012	-	-	0.091	0.038	0.417	0.008	-	-
HCM Control Delay (s)	9.3	-	-	26.7	14.3	36.1	8	-	-
HCM Lane LOS	A	-	-	D	B	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	1.9	0	-	-

Intersection	
Intersection Delay, s/veh	42.8
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	95	12	92	255	36	48	203	93	35	300	489
Future Vol, veh/h	73	95	12	92	255	36	48	203	93	35	300	489
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	77	100	13	97	268	38	51	214	98	37	316	515
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	15.3	26.1	38.5	58.3
HCM LOS	C	D	E	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	14%	100%	0%	100%	0%	10%	0%
Vol Thru, %	59%	0%	89%	0%	88%	90%	0%
Vol Right, %	27%	0%	11%	0%	12%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	344	73	107	92	291	335	489
LT Vol	48	73	0	92	0	35	0
Through Vol	203	0	95	0	255	300	0
RT Vol	93	0	12	0	36	0	489
Lane Flow Rate	362	77	113	97	306	353	515
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.814	0.205	0.283	0.241	0.712	0.781	1.03
Departure Headway (Hd)	8.261	9.845	9.239	9.154	8.544	7.976	7.201
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	442	367	391	395	426	455	504
Service Time	6.261	7.545	6.939	6.854	6.244	5.704	4.928
HCM Lane V/C Ratio	0.819	0.21	0.289	0.246	0.718	0.776	1.022
HCM Control Delay	38.5	15.1	15.5	14.7	29.7	33.8	75
HCM Lane LOS	E	C	C	B	D	D	F
HCM 95th-tile Q	7.5	0.8	1.1	0.9	5.5	6.9	14.8

Intersection	
Intersection Delay, s/veh	174.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	72	108	44	146	213	32	21	356	60	30	418	139
Future Vol, veh/h	72	108	44	146	213	32	21	356	60	30	418	139
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	81	121	49	164	239	36	24	400	67	34	470	156
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	36.8	104.1	141.1	298.3
HCM LOS	E	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	32%	37%	5%
Vol Thru, %	81%	48%	54%	71%
Vol Right, %	14%	20%	8%	24%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	437	224	391	587
LT Vol	21	72	146	30
Through Vol	356	108	213	418
RT Vol	60	44	32	139
Lane Flow Rate	491	252	439	660
Geometry Grp	1	1	1	1
Degree of Util (X)	1.187	0.671	1.074	1.583
Departure Headway (Hd)	10.415	12.15	10.688	9.449
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	354	300	343	389
Service Time	8.415	10.15	8.688	7.449
HCM Lane V/C Ratio	1.387	0.84	1.28	1.697
HCM Control Delay	141.1	36.8	104.1	298.3
HCM Lane LOS	F	E	F	F
HCM 95th-tile Q	17.1	4.5	13.3	34.3

Intersection	
Int Delay, s/veh	17.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	347	197	6	5	154	54	20	25	5	56	20	341
Future Vol, veh/h	347	197	6	5	154	54	20	25	5	56	20	341
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	0	250	-	-	300	-	130	250	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	403	229	7	6	179	63	23	29	6	65	23	397

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	242	0	0	236	0	0	1468	1289	229	1279	1265	211
Stage 1	-	-	-	-	-	-	1035	1035	-	223	223	-
Stage 2	-	-	-	-	-	-	433	254	-	1056	1042	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1319	-	-	1325	-	-	105	163	808	142	168	827
Stage 1	-	-	-	-	-	-	279	308	-	777	717	-
Stage 2	-	-	-	-	-	-	599	695	-	271	305	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1319	-	-	1325	-	-	35	113	808	87	116	827
Mov Cap-2 Maneuver	-	-	-	-	-	-	35	113	-	87	116	-
Stage 1	-	-	-	-	-	-	194	214	-	539	713	-
Stage 2	-	-	-	-	-	-	300	692	-	161	212	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.6	0.2	114.1	29.2
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	35	113	808	1319	-	-	1325	-	-	87	116	827
HCM Lane V/C Ratio	0.664	0.257	0.007	0.306	-	-	0.004	-	-	0.748	0.2	0.479
HCM Control Delay (s)	223.3	47.6	9.5	8.9	-	-	7.7	-	-	120.7	43.7	13.3
HCM Lane LOS	F	E	A	A	-	-	A	-	-	F	E	B
HCM 95th %tile Q(veh)	2.3	1	0	1.3	-	-	0	-	-	3.8	0.7	2.6

Intersection	
Intersection Delay, s/veh	90.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	106	73	67	126	101	46	30	324	34	40	516	34
Future Vol, veh/h	106	73	67	126	101	46	30	324	34	40	516	34
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	114	78	72	135	109	49	32	348	37	43	555	37
Number of Lanes	0	1	1	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	19.3	23.7	47	179.6
HCM LOS	C	C	E	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	8%	59%	0%	56%	0%	7%
Vol Thru, %	84%	41%	0%	44%	0%	87%
Vol Right, %	9%	0%	100%	0%	100%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	388	179	67	227	46	590
LT Vol	30	106	0	126	0	40
Through Vol	324	73	0	101	0	516
RT Vol	34	0	67	0	46	34
Lane Flow Rate	417	192	72	244	49	634
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.876	0.483	0.161	0.601	0.108	1.317
Departure Headway (Hd)	8.293	9.927	8.879	9.722	8.695	7.474
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	442	366	406	373	415	488
Service Time	6.293	7.627	6.579	7.422	6.395	5.543
HCM Lane V/C Ratio	0.943	0.525	0.177	0.654	0.118	1.299
HCM Control Delay	47	21.6	13.3	26	12.4	179.6
HCM Lane LOS	E	C	B	D	B	F
HCM 95th-tile Q	9	2.5	0.6	3.8	0.4	27.5

Intersection	
Intersection Delay, s/veh	115.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	94	225	126	43	101	38	72	471	55	52	267	44
Future Vol, veh/h	94	225	126	43	101	38	72	471	55	52	267	44
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	98	234	131	45	105	40	75	491	57	54	278	46
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	79.9	22.9	209.4	49.5
HCM LOS	F	C	F	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	21%	24%	14%
Vol Thru, %	79%	51%	55%	74%
Vol Right, %	9%	28%	21%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	598	445	182	363
LT Vol	72	94	43	52
Through Vol	471	225	101	267
RT Vol	55	126	38	44
Lane Flow Rate	623	464	190	378
Geometry Grp	1	1	1	1
Degree of Util (X)	1.383	1.019	0.484	0.868
Departure Headway (Hd)	8.228	8.838	10.474	9.224
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	449	413	347	397
Service Time	6.228	6.838	8.474	7.224
HCM Lane V/C Ratio	1.388	1.123	0.548	0.952
HCM Control Delay	209.4	79.9	22.9	49.5
HCM Lane LOS	F	F	C	E
HCM 95th-tile Q	28.8	13	2.5	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	66	58	28	31	72	68	532	72	90	383	87
Future Volume (veh/h)	120	66	58	28	31	72	68	532	72	90	383	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	128	70	62	30	33	77	72	566	77	96	407	93
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	164	182	161	58	70	163	105	683	574	123	552	126
Arrive On Green	0.09	0.20	0.20	0.03	0.14	0.14	0.06	0.37	0.37	0.07	0.38	0.38
Sat Flow, veh/h	1767	900	797	1767	492	1148	1767	1856	1560	1767	1459	333
Grp Volume(v), veh/h	128	0	132	30	0	110	72	566	77	96	0	500
Grp Sat Flow(s),veh/h/ln	1767	0	1698	1767	0	1639	1767	1856	1560	1767	0	1792
Q Serve(g_s), s	4.1	0.0	3.9	1.0	0.0	3.6	2.3	16.1	1.9	3.1	0.0	14.0
Cycle Q Clear(g_c), s	4.1	0.0	3.9	1.0	0.0	3.6	2.3	16.1	1.9	3.1	0.0	14.0
Prop In Lane	1.00		0.47	1.00		0.70	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	164	0	343	58	0	233	105	683	574	123	0	679
V/C Ratio(X)	0.78	0.00	0.38	0.51	0.00	0.47	0.69	0.83	0.13	0.78	0.00	0.74
Avail Cap(c_a), veh/h	253	0	1222	186	0	1129	170	1009	849	198	0	1003
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.8	0.0	20.0	27.6	0.0	22.9	26.8	16.7	12.2	26.6	0.0	15.6
Incr Delay (d2), s/veh	8.2	0.0	0.7	6.8	0.0	1.5	7.8	3.8	0.1	10.2	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	1.4	0.5	0.0	1.3	1.1	6.1	0.6	1.5	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.0	0.0	20.8	34.5	0.0	24.4	34.6	20.5	12.3	36.8	0.0	17.1
LnGrp LOS	C	A	C	C	A	C	C	C	B	D	A	B
Approach Vol, veh/h		260			140			715			596	
Approach Delay, s/veh		27.3			26.5			21.0			20.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	26.7	6.1	17.0	7.6	27.3	9.6	13.6
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	5.3	* 4.2	5.3	* 4.2	* 5.3
Max Green Setting (Gmax), s	* 6.5	31.6	* 6.1	41.8	* 5.6	32.5	* 8.3	* 40
Max Q Clear Time (g_c+I1), s	5.1	18.1	3.0	5.9	4.3	16.0	6.1	5.6
Green Ext Time (p_c), s	0.0	3.0	0.0	0.7	0.0	2.7	0.1	0.6

Intersection Summary	
HCM 6th Ctrl Delay	22.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	30	852	5	22	747
Future Vol, veh/h	0	30	852	5	22	747
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	33	947	6	24	830

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	950	0	0	953	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	4.13	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	0	314	-	-	717	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	314	-	-	717	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.8	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	314	717	-
HCM Lane V/C Ratio	-	-	0.106	0.034	-
HCM Control Delay (s)	-	-	17.8	10.2	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection						
Int Delay, s/veh	0.5					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	12	0	612	339	0
Future Vol, veh/h	17	12	0	612	339	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	19	13	0	680	377	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1057	377	377	0	-	0
Stage 1	377	-	-	-	-	-
Stage 2	680	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	248	667	1176	-	-	-
Stage 1	691	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	248	667	1176	-	-	-
Mov Cap-2 Maneuver	248	-	-	-	-	-
Stage 1	691	-	-	-	-	-
Stage 2	501	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1176	-	335	-	-
HCM Lane V/C Ratio	-	-	0.096	-	-
HCM Control Delay (s)	0	-	16.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection						
Int Delay, s/veh	0.5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	12	863	14	14	748
Future Vol, veh/h	9	12	863	14	14	748
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	10	13	928	15	15	804

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1770	936	0	0	943	0
Stage 1	936	-	-	-	-	-
Stage 2	834	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	91	320	-	-	723	-
Stage 1	380	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	88	320	-	-	723	-
Mov Cap-2 Maneuver	88	-	-	-	-	-
Stage 1	380	-	-	-	-	-
Stage 2	409	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.2	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	150	723	-
HCM Lane V/C Ratio	-	-	0.151	0.021	-
HCM Control Delay (s)	-	-	33.2	10.1	0
HCM Lane LOS	-	-	D	B	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	7	10	9	4	19	3	620	25	15	362	10
Future Vol, veh/h	5	7	10	9	4	19	3	620	25	15	362	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	170	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	8	11	10	4	20	3	667	27	16	389	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1126	1127	395	1123	1119	681	400	0	0	694	0	0
Stage 1	427	427	-	687	687	-	-	-	-	-	-	-
Stage 2	699	700	-	436	432	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	181	204	652	182	206	449	1153	-	-	897	-	-
Stage 1	604	584	-	435	446	-	-	-	-	-	-	-
Stage 2	429	440	-	597	581	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	167	200	652	171	202	449	1153	-	-	897	-	-
Mov Cap-2 Maneuver	167	200	-	171	202	-	-	-	-	-	-	-
Stage 1	602	573	-	434	445	-	-	-	-	-	-	-
Stage 2	404	439	-	569	571	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.9	19.7	0	0.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1153	-	-	185	652	279	897	-	-
HCM Lane V/C Ratio	0.003	-	-	0.07	0.016	0.123	0.018	-	-
HCM Control Delay (s)	8.1	-	-	25.9	10.6	19.7	9.1	-	-
HCM Lane LOS	A	-	-	D	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0.4	0.1	-	-

Intersection	
Intersection Delay, s/veh	30.8
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	224	194	13	22	113	28	13	340	65	33	152	168
Future Vol, veh/h	224	194	13	22	113	28	13	340	65	33	152	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	243	211	14	24	123	30	14	370	71	36	165	183
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	20.7	15.9	59.4	16.2
HCM LOS	C	C	F	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	3%	100%	0%	100%	0%	18%	0%
Vol Thru, %	81%	0%	94%	0%	80%	82%	0%
Vol Right, %	16%	0%	6%	0%	20%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	418	224	207	22	141	185	168
LT Vol	13	224	0	22	0	33	0
Through Vol	340	0	194	0	113	152	0
RT Vol	65	0	13	0	28	0	168
Lane Flow Rate	454	243	225	24	153	201	183
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.957	0.582	0.502	0.062	0.369	0.459	0.376
Departure Headway (Hd)	7.696	8.598	8.034	9.329	8.662	8.221	7.405
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	473	421	450	385	417	440	488
Service Time	5.696	6.31	5.747	7.056	6.389	5.936	5.12
HCM Lane V/C Ratio	0.96	0.577	0.5	0.062	0.367	0.457	0.375
HCM Control Delay	59.4	22.6	18.6	12.7	16.4	17.7	14.5
HCM Lane LOS	F	C	C	B	C	C	B
HCM 95th-tile Q	11.8	3.6	2.8	0.2	1.7	2.4	1.7

Intersection	
Intersection Delay, s/veh	67
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	123	126	27	43	74	42	28	507	67	26	331	62
Future Vol, veh/h	123	126	27	43	74	42	28	507	67	26	331	62
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	127	130	28	44	76	43	29	523	69	27	341	64
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	23.2	16.7	120.9	37.5
HCM LOS	C	C	F	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	45%	27%	6%
Vol Thru, %	84%	46%	47%	79%
Vol Right, %	11%	10%	26%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	602	276	159	419
LT Vol	28	123	43	26
Through Vol	507	126	74	331
RT Vol	67	27	42	62
Lane Flow Rate	621	285	164	432
Geometry Grp	1	1	1	1
Degree of Util (X)	1.174	0.609	0.37	0.834
Departure Headway (Hd)	6.81	8.223	8.715	7.37
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	534	441	416	497
Service Time	4.887	6.223	6.715	5.37
HCM Lane V/C Ratio	1.163	0.646	0.394	0.869
HCM Control Delay	120.9	23.2	16.7	37.5
HCM Lane LOS	F	C	C	E
HCM 95th-tile Q	21.9	3.9	1.7	8.3

Intersection													
Int Delay, s/veh	5.2												

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	1	389	215	24	5	124	49	13	14	14	39	25	139
Future Vol, veh/h	1	389	215	24	5	124	49	13	14	14	39	25	139
Conflicting Peds, #/hr	0	0	0	4	4	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	250	-	0	250	-	-	300	-	130	250	-	0
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	414	229	26	5	132	52	14	15	15	41	27	148

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	-	184	0	0	259	0	0	1317	1257	234	1254	1257	158
Stage 1	-	-	-	-	-	-	-	1061	1063	-	168	168	-
Stage 2	-	-	-	-	-	-	-	256	194	-	1086	1089	-
Critical Hdwy	-	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	-	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	-	1385	-	-	1300	-	-	134	170	803	148	170	885
Stage 1	-	-	-	-	-	-	-	270	299	-	832	758	-
Stage 2	-	-	-	-	-	-	-	746	738	-	261	290	-
Platoon blocked, %			-	-		-	-						
Mov Cap-1 Maneuver	~ -542	~ -542	-	-	1295	-	-	97	169	799	135	169	885
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	97	169	-	135	169	-
Stage 1	-	-	-	-	-	-	-	270	298	-	832	755	-
Stage 2	-	-	-	-	-	-	-	597	735	-	243	289	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.2	28.3	18.8
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	97	169	799	+	-	-	1295	-	-	135	169	885
HCM Lane V/C Ratio	0.143	0.088	0.019	-	-	-	0.004	-	-	0.307	0.157	0.167
HCM Control Delay (s)	48.2	28.4	9.6	1.2	-	-	7.8	-	-	43.1	30.2	9.9
HCM Lane LOS	E	D	A	A	-	-	A	-	-	E	D	A
HCM 95th %tile Q(veh)	0.5	0.3	0.1	-	-	-	0	-	-	1.2	0.5	0.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	48.3
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	85	133	17	58	75	45	32	477	37	44	320	33
Future Vol, veh/h	85	133	17	58	75	45	32	477	37	44	320	33
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	89	139	18	60	78	47	33	497	39	46	333	34
Number of Lanes	0	1	1	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	19.8	15	82.8	32.7
HCM LOS	C	B	F	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	6%	39%	0%	44%	0%	11%
Vol Thru, %	87%	61%	0%	56%	0%	81%
Vol Right, %	7%	0%	100%	0%	100%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	546	218	17	133	45	397
LT Vol	32	85	0	58	0	44
Through Vol	477	133	0	75	0	320
RT Vol	37	0	17	0	45	33
Lane Flow Rate	569	227	18	139	47	414
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	1.064	0.523	0.036	0.33	0.101	0.797
Departure Headway (Hd)	6.732	8.678	7.745	8.997	8.038	7.15
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	540	418	465	402	449	509
Service Time	4.756	6.378	5.445	6.697	5.738	5.15
HCM Lane V/C Ratio	1.054	0.543	0.039	0.346	0.105	0.813
HCM Control Delay	82.8	20.5	10.7	16.1	11.6	32.7
HCM Lane LOS	F	C	B	C	B	D
HCM 95th-tile Q	16.9	2.9	0.1	1.4	0.3	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	114	38	121	204	36	119	214	33	53	508	63
Future Volume (veh/h)	52	114	38	121	204	36	119	214	33	53	508	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	57	124	41	132	222	39	129	233	36	58	552	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	86	181	60	167	280	49	164	674	104	87	625	77
Arrive On Green	0.05	0.14	0.14	0.09	0.18	0.18	0.09	0.43	0.43	0.05	0.39	0.39
Sat Flow, veh/h	1767	1335	441	1767	1537	270	1767	1569	242	1767	1620	200
Grp Volume(v), veh/h	57	0	165	132	0	261	129	0	269	58	0	620
Grp Sat Flow(s),veh/h/ln	1767	0	1776	1767	0	1807	1767	0	1812	1767	0	1820
Q Serve(g_s), s	2.1	0.0	6.0	4.9	0.0	9.4	4.8	0.0	6.7	2.2	0.0	21.5
Cycle Q Clear(g_c), s	2.1	0.0	6.0	4.9	0.0	9.4	4.8	0.0	6.7	2.2	0.0	21.5
Prop In Lane	1.00		0.25	1.00		0.15	1.00		0.13	1.00		0.11
Lane Grp Cap(c), veh/h	86	0	241	167	0	329	164	0	778	87	0	702
V/C Ratio(X)	0.66	0.00	0.68	0.79	0.00	0.79	0.79	0.00	0.35	0.67	0.00	0.88
Avail Cap(c_a), veh/h	138	0	498	230	0	600	214	0	942	191	0	922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.7	0.0	27.9	30.0	0.0	26.5	30.1	0.0	12.9	31.7	0.0	19.4
Incr Delay (d2), s/veh	8.5	0.0	3.4	11.9	0.0	4.4	13.6	0.0	0.3	8.6	0.0	8.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	2.5	2.5	0.0	4.0	2.4	0.0	2.2	1.0	0.0	8.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.2	0.0	31.3	41.9	0.0	30.8	43.6	0.0	13.2	40.2	0.0	27.5
LnGrp LOS	D	A	C	D	A	C	D	A	B	D	A	C
Approach Vol, veh/h		222			393			398			678	
Approach Delay, s/veh		33.6			34.5			23.1			28.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	35.1	10.6	14.5	10.5	32.1	7.5	17.6
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.3	* 4.2	6.0	* 4.2	5.3
Max Green Setting (Gmax), s	* 7.3	35.2	* 8.8	19.0	* 8.2	34.3	* 5.3	22.5
Max Q Clear Time (g_c+I1), s	4.2	8.7	6.9	8.0	6.8	23.5	4.1	11.4
Green Ext Time (p_c), s	0.0	1.3	0.1	0.5	0.0	2.7	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	29.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	8	14	52	8	14	9	289	13	9	689	5
Future Vol, veh/h	7	8	14	52	8	14	9	289	13	9	689	5
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	170	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	9	15	57	9	15	10	318	14	10	757	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1138	1133	382	748	1128	325	763	0	0	332	0	0
Stage 1	781	781	-	345	345	-	-	-	-	-	-	-
Stage 2	357	352	-	403	783	-	-	-	-	-	-	-
Critical Hdwy	7.345	6.545	6.945	7.345	6.545	6.245	4.145	-	-	4.145	-	-
Critical Hdwy Stg 1	6.545	5.545	-	6.145	5.545	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.145	5.545	-	6.545	5.545	-	-	-	-	-	-	-
Follow-up Hdwy	3.5285	4.0285	3.3285	3.5285	4.0285	3.3285	2.2285	-	-	2.2285	-	-
Pot Cap-1 Maneuver	166	201	614	313	202	713	842	-	-	1219	-	-
Stage 1	353	402	-	667	633	-	-	-	-	-	-	-
Stage 2	657	629	-	594	402	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	154	197	613	290	198	713	841	-	-	1219	-	-
Mov Cap-2 Maneuver	154	197	-	290	198	-	-	-	-	-	-	-
Stage 1	348	398	-	659	625	-	-	-	-	-	-	-
Stage 2	626	621	-	562	398	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.7	20.8	0.3	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	841	-	-	174	613	309	1219	-	-
HCM Lane V/C Ratio	0.012	-	-	0.095	0.025	0.263	0.008	-	-
HCM Control Delay (s)	9.3	-	-	27.8	11	20.8	8	-	-
HCM Lane LOS	A	-	-	D	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	95	12	92	255	36	48	203	93	35	300	489
Future Volume (veh/h)	73	95	12	92	255	36	48	203	93	35	300	489
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	77	100	13	97	268	38	51	214	98	37	316	515
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	103	321	42	125	338	48	82	453	207	66	681	577
Arrive On Green	0.06	0.20	0.20	0.07	0.21	0.21	0.05	0.38	0.38	0.04	0.37	0.37
Sat Flow, veh/h	1767	1609	209	1767	1590	225	1767	1205	552	1767	1856	1572
Grp Volume(v), veh/h	77	0	113	97	0	306	51	0	312	37	316	515
Grp Sat Flow(s),veh/h/ln	1767	0	1818	1767	0	1815	1767	0	1756	1767	1856	1572
Q Serve(g_s), s	2.8	0.0	3.4	3.5	0.0	10.3	1.8	0.0	8.7	1.3	8.4	19.9
Cycle Q Clear(g_c), s	2.8	0.0	3.4	3.5	0.0	10.3	1.8	0.0	8.7	1.3	8.4	19.9
Prop In Lane	1.00		0.12	1.00		0.12	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	103	0	363	125	0	385	82	0	660	66	681	577
V/C Ratio(X)	0.75	0.00	0.31	0.77	0.00	0.79	0.62	0.00	0.47	0.56	0.46	0.89
Avail Cap(c_a), veh/h	137	0	620	282	0	788	137	0	716	164	785	666
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.9	0.0	22.0	29.5	0.0	24.1	30.2	0.0	15.3	30.5	15.6	19.2
Incr Delay (d2), s/veh	14.7	0.0	0.5	9.7	0.0	3.7	7.5	0.0	0.5	7.1	0.5	13.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	1.3	1.7	0.0	4.3	0.9	0.0	2.8	0.6	2.9	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.6	0.0	22.5	39.1	0.0	27.8	37.7	0.0	15.8	37.6	16.1	32.4
LnGrp LOS	D	A	C	D	A	C	D	A	B	D	B	C
Approach Vol, veh/h		190			403			363			868	
Approach Delay, s/veh		31.5			30.5			18.9			26.7	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	30.2	8.8	18.9	7.2	29.7	7.9	19.7
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	6.0	* 4.2	6.0	* 4.2	* 6
Max Green Setting (Gmax), s	* 6	26.3	* 10	22.0	* 5	27.3	* 5	* 28
Max Q Clear Time (g_c+I1), s	3.3	10.7	5.5	5.4	3.8	21.9	4.8	12.3
Green Ext Time (p_c), s	0.0	1.4	0.1	0.4	0.0	1.8	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	26.5
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	108	44	146	213	32	21	356	60	30	418	139
Future Volume (veh/h)	72	108	44	146	213	32	21	356	60	30	418	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	81	121	49	164	239	36	24	400	67	34	470	156
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	106	167	68	206	326	49	48	482	81	186	542	180
Arrive On Green	0.06	0.13	0.13	0.12	0.21	0.21	0.03	0.31	0.31	0.11	0.41	0.41
Sat Flow, veh/h	1767	1256	508	1767	1576	237	1767	1549	260	1767	1333	443
Grp Volume(v), veh/h	81	0	170	164	0	275	24	0	467	34	0	626
Grp Sat Flow(s),veh/h/ln	1767	0	1764	1767	0	1813	1767	0	1809	1767	0	1776
Q Serve(g_s), s	2.9	0.0	5.9	5.7	0.0	9.0	0.8	0.0	15.2	1.1	0.0	20.5
Cycle Q Clear(g_c), s	2.9	0.0	5.9	5.7	0.0	9.0	0.8	0.0	15.2	1.1	0.0	20.5
Prop In Lane	1.00		0.29	1.00		0.13	1.00		0.14	1.00		0.25
Lane Grp Cap(c), veh/h	106	0	234	206	0	375	48	0	563	186	0	722
V/C Ratio(X)	0.77	0.00	0.73	0.79	0.00	0.73	0.50	0.00	0.83	0.18	0.00	0.87
Avail Cap(c_a), veh/h	195	0	531	301	0	654	139	0	1029	186	0	1010
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.4	0.0	26.4	27.3	0.0	23.5	30.4	0.0	20.3	25.9	0.0	17.3
Incr Delay (d2), s/veh	10.9	0.0	4.2	8.8	0.0	2.8	7.8	0.0	3.2	0.5	0.0	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	2.5	2.7	0.0	3.7	0.4	0.0	5.9	0.4	0.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.2	0.0	30.6	36.1	0.0	26.3	38.3	0.0	23.5	26.4	0.0	23.2
LnGrp LOS	D	A	C	D	A	C	D	A	C	C	A	C
Approach Vol, veh/h		251			439			491			660	
Approach Delay, s/veh		33.7			30.0			24.2			23.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	25.0	12.7	13.7	5.9	31.1	8.0	18.4
Change Period (Y+Rc), s	5.3	* 5.3	5.3	* 5.3	* 4.2	5.3	* 4.2	5.3
Max Green Setting (Gmax), s	5.0	* 36	10.8	* 19	* 5	36.1	* 7	22.9
Max Q Clear Time (g_c+I1), s	13.1	17.2	7.7	7.9	2.8	22.5	4.9	11.0
Green Ext Time (p_c), s	0.0	2.5	0.1	0.6	0.0	3.3	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	26.6
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	347	197	6	5	154	54	20	25	5	56	20	341
Future Volume (veh/h)	347	197	6	5	154	54	20	25	5	56	20	341
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	403	229	7	6	179	63	23	29	6	65	23	397
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	445	770	653	14	225	79	45	484	410	87	529	448
Arrive On Green	0.25	0.42	0.42	0.01	0.17	0.17	0.03	0.26	0.26	0.05	0.28	0.28
Sat Flow, veh/h	1767	1856	1572	1767	1311	461	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	403	229	7	6	0	242	23	29	6	65	23	397
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	0	1772	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	16.7	6.2	0.2	0.3	0.0	9.9	1.0	0.9	0.2	2.7	0.7	18.2
Cycle Q Clear(g_c), s	16.7	6.2	0.2	0.3	0.0	9.9	1.0	0.9	0.2	2.7	0.7	18.2
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	445	770	653	14	0	304	45	484	410	87	529	448
V/C Ratio(X)	0.91	0.30	0.01	0.43	0.00	0.80	0.51	0.06	0.01	0.75	0.04	0.89
Avail Cap(c_a), veh/h	488	1091	924	117	0	661	117	771	653	227	886	751
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.3	14.7	12.9	37.2	0.0	30.0	36.3	20.9	20.7	35.4	19.5	25.8
Incr Delay (d2), s/veh	19.5	0.2	0.0	19.9	0.0	4.8	8.8	0.1	0.0	11.8	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	2.3	0.1	0.2	0.0	4.2	0.5	0.3	0.1	1.4	0.3	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	14.9	13.0	57.2	0.0	34.7	45.1	21.0	20.7	47.2	19.5	32.9
LnGrp LOS	D	B	B	E	A	C	D	C	C	D	B	C
Approach Vol, veh/h		639			248			58			485	
Approach Delay, s/veh		35.0			35.3			30.5			34.2	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	25.7	4.8	37.0	6.1	27.5	23.2	18.6
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	* 5.7	* 4.2	6.0	* 4.2	5.7
Max Green Setting (Gmax), s	* 9.7	31.3	* 5	* 44	* 5	36.0	* 21	28.1
Max Q Clear Time (g_c+I1), s	14.7	2.9	2.3	8.2	3.0	20.2	18.7	11.9
Green Ext Time (p_c), s	0.0	0.1	0.0	1.2	0.0	1.3	0.3	1.0

Intersection Summary	
HCM 6th Ctrl Delay	34.6
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	73	67	126	101	46	30	324	34	40	516	34
Future Volume (veh/h)	106	73	67	126	101	46	30	324	34	40	516	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	114	78	72	135	109	49	32	348	37	43	555	37
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	146	115	106	173	175	79	62	611	65	77	652	43
Arrive On Green	0.08	0.13	0.13	0.10	0.14	0.14	0.04	0.37	0.37	0.04	0.38	0.38
Sat Flow, veh/h	1767	888	820	1767	1212	545	1767	1649	175	1767	1720	115
Grp Volume(v), veh/h	114	0	150	135	0	158	32	0	385	43	0	592
Grp Sat Flow(s),veh/h/ln	1767	0	1708	1767	0	1757	1767	0	1824	1767	0	1835
Q Serve(g_s), s	3.5	0.0	4.6	4.1	0.0	4.7	1.0	0.0	9.3	1.3	0.0	16.3
Cycle Q Clear(g_c), s	3.5	0.0	4.6	4.1	0.0	4.7	1.0	0.0	9.3	1.3	0.0	16.3
Prop In Lane	1.00		0.48	1.00		0.31	1.00		0.10	1.00		0.06
Lane Grp Cap(c), veh/h	146	0	220	173	0	253	62	0	676	77	0	696
V/C Ratio(X)	0.78	0.00	0.68	0.78	0.00	0.62	0.52	0.00	0.57	0.56	0.00	0.85
Avail Cap(c_a), veh/h	218	0	588	250	0	637	160	0	933	167	0	958
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	22.9	24.3	0.0	22.2	26.1	0.0	13.8	25.8	0.0	15.7
Incr Delay (d2), s/veh	10.1	0.0	3.7	9.5	0.0	2.5	6.5	0.0	0.8	6.1	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	1.8	1.9	0.0	1.8	0.5	0.0	3.0	0.6	0.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.9	0.0	26.6	33.8	0.0	24.7	32.6	0.0	14.6	32.0	0.0	21.2
LnGrp LOS	C	A	C	C	A	C	C	A	B	C	A	C
Approach Vol, veh/h		264			293			417			635	
Approach Delay, s/veh		30.2			28.9			16.0			21.9	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	26.1	9.6	12.8	6.1	26.6	8.8	13.6
Change Period (Y+Rc), s	* 4.2	5.7	* 4.2	5.7	* 4.2	* 5.7	* 4.2	5.7
Max Green Setting (Gmax), s	* 5.2	28.2	* 7.8	19.0	* 5	* 29	* 6.8	20.0
Max Q Clear Time (g_c+I1), s	3.3	11.3	6.1	6.6	3.0	18.3	5.5	6.7
Green Ext Time (p_c), s	0.0	1.8	0.0	0.5	0.0	2.6	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	225	126	43	101	38	72	471	55	52	267	44
Future Volume (veh/h)	94	225	126	43	101	38	72	471	55	52	267	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	98	234	131	45	105	40	75	491	57	54	278	46
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	125	276	155	77	281	107	104	557	65	86	514	85
Arrive On Green	0.07	0.25	0.25	0.04	0.22	0.22	0.06	0.34	0.34	0.05	0.33	0.33
Sat Flow, veh/h	1767	1117	626	1767	1280	488	1767	1632	189	1767	1552	257
Grp Volume(v), veh/h	98	0	365	45	0	145	75	0	548	54	0	324
Grp Sat Flow(s),veh/h/ln	1767	0	1743	1767	0	1768	1767	0	1821	1767	0	1809
Q Serve(g_s), s	3.4	0.0	12.3	1.5	0.0	4.3	2.6	0.0	17.5	1.8	0.0	9.0
Cycle Q Clear(g_c), s	3.4	0.0	12.3	1.5	0.0	4.3	2.6	0.0	17.5	1.8	0.0	9.0
Prop In Lane	1.00		0.36	1.00		0.28	1.00		0.10	1.00		0.14
Lane Grp Cap(c), veh/h	125	0	431	77	0	389	104	0	621	86	0	599
V/C Ratio(X)	0.78	0.00	0.85	0.58	0.00	0.37	0.72	0.00	0.88	0.62	0.00	0.54
Avail Cap(c_a), veh/h	166	0	557	146	0	545	172	0	750	146	0	719
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	22.1	28.9	0.0	20.4	28.5	0.0	19.2	28.8	0.0	16.8
Incr Delay (d2), s/veh	15.9	0.0	9.4	6.9	0.0	0.6	9.2	0.0	10.5	7.2	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	5.4	0.7	0.0	1.6	1.2	0.0	7.5	0.9	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.1	0.0	31.5	35.8	0.0	21.0	37.7	0.0	29.6	36.0	0.0	17.6
LnGrp LOS	D	A	C	D	A	C	D	A	C	D	A	B
Approach Vol, veh/h		463			190			623			378	
Approach Delay, s/veh		34.2			24.5			30.6			20.2	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.2	27.0	6.9	20.5	7.8	26.4	8.6	18.9				
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	5.3	* 4.2	6.0	* 4.2	5.3				
Max Green Setting (Gmax), s	* 5.1	25.4	* 5.1	19.7	* 6	24.5	* 5.8	19.0				
Max Q Clear Time (g_c+I1), s	3.8	19.5	3.5	14.3	4.6	11.0	5.4	6.3				
Green Ext Time (p_c), s	0.0	1.5	0.0	0.9	0.0	1.3	0.0	0.5				
Intersection Summary												
HCM 6th Ctrl Delay			28.5									
HCM 6th LOS			C									
Notes												

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	7	10	9	4	19	3	620	25	15	362	10
Future Vol, veh/h	5	7	10	9	4	19	3	620	25	15	362	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	170	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	8	11	10	4	20	3	667	27	16	389	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1126	1127	200	918	1119	681	400	0	0	694	0	0
Stage 1	427	427	-	687	687	-	-	-	-	-	-	-
Stage 2	699	700	-	231	432	-	-	-	-	-	-	-
Critical Hdwy	7.345	6.545	6.945	7.345	6.545	6.245	4.145	-	-	4.145	-	-
Critical Hdwy Stg 1	6.545	5.545	-	6.145	5.545	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.145	5.545	-	6.545	5.545	-	-	-	-	-	-	-
Follow-up Hdwy	3.5285	4.0285	3.3285	3.5285	4.0285	3.3285	2.2285	-	-	2.2285	-	-
Pot Cap-1 Maneuver	169	203	805	238	205	447	1151	-	-	894	-	-
Stage 1	574	582	-	434	445	-	-	-	-	-	-	-
Stage 2	427	438	-	749	579	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	156	199	805	224	201	447	1151	-	-	894	-	-
Mov Cap-2 Maneuver	156	199	-	224	201	-	-	-	-	-	-	-
Stage 1	572	572	-	433	444	-	-	-	-	-	-	-
Stage 2	402	437	-	716	569	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.9	18	0	0.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1151	-	-	178	805	312	894	-	-
HCM Lane V/C Ratio	0.003	-	-	0.072	0.013	0.11	0.018	-	-
HCM Control Delay (s)	8.1	-	-	26.8	9.5	18	9.1	-	-
HCM Lane LOS	A	-	-	D	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0.4	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	194	13	22	113	28	13	340	65	33	152	168
Future Volume (veh/h)	224	194	13	22	113	28	13	340	65	33	152	168
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	243	211	14	24	123	30	14	370	71	36	165	183
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	180	359	24	50	195	47	31	465	89	70	611	517
Arrive On Green	0.10	0.21	0.21	0.03	0.13	0.13	0.02	0.31	0.31	0.04	0.33	0.33
Sat Flow, veh/h	1767	1721	114	1767	1441	351	1767	1513	290	1767	1856	1572
Grp Volume(v), veh/h	243	0	225	24	0	153	14	0	441	36	165	183
Grp Sat Flow(s),veh/h/ln	1767	0	1835	1767	0	1792	1767	0	1803	1767	1856	1572
Q Serve(g_s), s	5.0	0.0	5.4	0.7	0.0	4.0	0.4	0.0	11.0	1.0	3.2	4.3
Cycle Q Clear(g_c), s	5.0	0.0	5.4	0.7	0.0	4.0	0.4	0.0	11.0	1.0	3.2	4.3
Prop In Lane	1.00		0.06	1.00		0.20	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	180	0	383	50	0	242	31	0	554	70	611	517
V/C Ratio(X)	1.35	0.00	0.59	0.48	0.00	0.63	0.45	0.00	0.80	0.52	0.27	0.35
Avail Cap(c_a), veh/h	180	0	1003	198	0	1024	180	0	1004	180	1034	876
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.0	0.0	17.5	23.4	0.0	20.0	23.8	0.0	15.6	23.1	12.1	12.5
Incr Delay (d2), s/veh	188.6	0.0	1.4	6.9	0.0	2.7	9.7	0.0	2.7	5.8	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.1	0.0	1.9	0.3	0.0	1.6	0.2	0.0	3.6	0.4	1.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	210.6	0.0	18.9	30.3	0.0	22.8	33.5	0.0	18.2	28.8	12.3	12.9
LnGrp LOS	F	A	B	C	A	C	C	A	B	C	B	B
Approach Vol, veh/h		468			177			455			384	
Approach Delay, s/veh		118.5			23.8			18.7			14.2	
Approach LOS		F			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	21.1	5.6	16.2	5.1	22.1	9.2	12.6
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	6.0	* 4.2	6.0	* 4.2	* 6
Max Green Setting (Gmax), s	* 5	27.3	* 5.5	26.8	* 5	27.3	* 5	* 28
Max Q Clear Time (g_c+I1), s	3.0	13.0	2.7	7.4	2.4	6.3	7.0	6.0
Green Ext Time (p_c), s	0.0	2.0	0.0	1.0	0.0	1.3	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	49.6
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	123	126	27	43	74	42	28	507	67	26	331	62
Future Volume (veh/h)	123	126	27	43	74	42	28	507	67	26	331	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	127	130	28	44	76	43	29	523	69	27	341	64
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	163	198	43	85	124	70	201	627	83	55	435	82
Arrive On Green	0.09	0.13	0.13	0.05	0.11	0.11	0.11	0.39	0.39	0.03	0.29	0.29
Sat Flow, veh/h	1767	1480	319	1767	1113	630	1767	1606	212	1767	1519	285
Grp Volume(v), veh/h	127	0	158	44	0	119	29	0	592	27	0	405
Grp Sat Flow(s),veh/h/ln	1767	0	1798	1767	0	1742	1767	0	1817	1767	0	1804
Q Serve(g_s), s	3.6	0.0	4.2	1.2	0.0	3.3	0.7	0.0	14.9	0.8	0.0	10.5
Cycle Q Clear(g_c), s	3.6	0.0	4.2	1.2	0.0	3.3	0.7	0.0	14.9	0.8	0.0	10.5
Prop In Lane	1.00		0.18	1.00		0.36	1.00		0.12	1.00		0.16
Lane Grp Cap(c), veh/h	163	0	241	85	0	194	201	0	709	55	0	516
V/C Ratio(X)	0.78	0.00	0.66	0.52	0.00	0.61	0.14	0.00	0.83	0.49	0.00	0.78
Avail Cap(c_a), veh/h	272	0	727	220	0	653	201	0	1047	174	0	1040
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	0.0	20.8	23.6	0.0	21.5	20.2	0.0	14.0	24.2	0.0	16.6
Incr Delay (d2), s/veh	7.8	0.0	3.0	4.8	0.0	3.1	0.3	0.0	3.9	6.6	0.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	1.7	0.6	0.0	1.3	0.3	0.0	5.2	0.4	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.3	0.0	23.9	28.4	0.0	24.6	20.6	0.0	17.8	30.7	0.0	19.3
LnGrp LOS	C	A	C	C	A	C	C	A	B	C	A	B
Approach Vol, veh/h		285			163			621			432	
Approach Delay, s/veh		26.7			25.6			18.0			20.0	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	25.1	7.7	12.1	11.1	19.8	8.9	10.9
Change Period (Y+Rc), s	* 4.2	5.3	5.3	* 5.3	5.3	* 5.3	* 4.2	5.3
Max Green Setting (Gmax), s	* 5	29.2	6.3	* 21	5.0	* 29	* 7.8	19.0
Max Q Clear Time (g_c+I1), s	2.8	16.9	3.2	6.2	2.7	12.5	5.6	5.3
Green Ext Time (p_c), s	0.0	2.9	0.0	0.6	0.0	2.0	0.1	0.4

Intersection Summary	
HCM 6th Ctrl Delay	21.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	390	215	24	5	124	49	13	14	14	39	25	140
Future Volume (veh/h)	390	215	24	5	124	49	13	14	14	39	25	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	415	229	26	5	132	52	14	15	15	41	27	149
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	489	804	678	12	207	82	31	212	179	76	260	220
Arrive On Green	0.28	0.43	0.43	0.01	0.16	0.16	0.02	0.11	0.11	0.04	0.14	0.14
Sat Flow, veh/h	1767	1856	1565	1767	1267	499	1767	1856	1566	1767	1856	1572
Grp Volume(v), veh/h	415	229	26	5	0	184	14	15	15	41	27	149
Grp Sat Flow(s),veh/h/ln	1767	1856	1565	1767	0	1766	1767	1856	1566	1767	1856	1572
Q Serve(g_s), s	11.3	4.0	0.5	0.1	0.0	4.9	0.4	0.4	0.4	1.2	0.6	4.6
Cycle Q Clear(g_c), s	11.3	4.0	0.5	0.1	0.0	4.9	0.4	0.4	0.4	1.2	0.6	4.6
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	489	804	678	12	0	289	31	212	179	76	260	220
V/C Ratio(X)	0.85	0.28	0.04	0.42	0.00	0.64	0.45	0.07	0.08	0.54	0.10	0.68
Avail Cap(c_a), veh/h	724	1620	1367	174	0	967	174	1251	1055	237	1317	1116
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	9.3	8.3	25.1	0.0	19.8	24.7	20.1	20.1	23.8	19.0	20.7
Incr Delay (d2), s/veh	6.3	0.2	0.0	22.1	0.0	2.3	9.8	0.1	0.2	5.7	0.2	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	1.2	0.1	0.1	0.0	1.8	0.2	0.1	0.1	0.5	0.2	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.6	9.5	8.3	47.2	0.0	22.1	34.5	20.2	20.3	29.5	19.2	24.3
LnGrp LOS	C	A	A	D	A	C	C	C	C	C	B	C
Approach Vol, veh/h		670			189			44			217	
Approach Delay, s/veh		18.2			22.8			24.8			24.7	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	11.8	4.5	28.0	5.1	13.1	18.2	14.3
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	* 6	* 4.2	6.0	* 4.2	6.0
Max Green Setting (Gmax), s	* 6.8	34.2	* 5	* 44	* 5	36.0	* 21	27.8
Max Q Clear Time (g_c+I1), s	13.3	2.4	2.1	6.0	2.4	6.6	13.3	6.9
Green Ext Time (p_c), s	0.0	0.1	0.0	1.3	0.0	0.6	0.8	0.8

Intersection Summary		
HCM 6th Ctrl Delay		20.5
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	133	17	58	75	45	32	477	37	44	320	33
Future Volume (veh/h)	85	133	17	58	75	45	32	477	37	44	320	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	89	139	18	60	78	47	33	497	39	46	333	34
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	124	255	33	99	125	75	258	594	47	83	428	44
Arrive On Green	0.07	0.16	0.16	0.06	0.11	0.11	0.15	0.35	0.35	0.05	0.26	0.26
Sat Flow, veh/h	1767	1610	208	1767	1084	653	1767	1698	133	1767	1656	169
Grp Volume(v), veh/h	89	0	157	60	0	125	33	0	536	46	0	367
Grp Sat Flow(s),veh/h/ln	1767	0	1818	1767	0	1738	1767	0	1832	1767	0	1825
Q Serve(g_s), s	2.5	0.0	4.1	1.7	0.0	3.5	0.8	0.0	13.7	1.3	0.0	9.5
Cycle Q Clear(g_c), s	2.5	0.0	4.1	1.7	0.0	3.5	0.8	0.0	13.7	1.3	0.0	9.5
Prop In Lane	1.00		0.11	1.00		0.38	1.00		0.07	1.00		0.09
Lane Grp Cap(c), veh/h	124	0	288	99	0	200	258	0	640	83	0	472
V/C Ratio(X)	0.72	0.00	0.54	0.60	0.00	0.63	0.13	0.00	0.84	0.55	0.00	0.78
Avail Cap(c_a), veh/h	201	0	707	177	0	652	258	0	906	177	0	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	19.7	23.5	0.0	21.5	18.9	0.0	15.2	23.8	0.0	17.5
Incr Delay (d2), s/veh	7.5	0.0	1.6	5.8	0.0	3.2	0.2	0.0	4.9	5.7	0.0	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.5	0.8	0.0	1.4	0.3	0.0	5.0	0.6	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.7	0.0	21.3	29.3	0.0	24.7	19.2	0.0	20.1	29.4	0.0	20.3
LnGrp LOS	C	A	C	C	A	C	B	A	C	C	A	C
Approach Vol, veh/h		246			185			569			413	
Approach Delay, s/veh		24.7			26.2			20.0			21.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	23.5	7.1	13.8	11.6	18.5	9.3	11.6
Change Period (Y+Rc), s	4.2	* 5.7	* 4.2	5.7	4.2	* 5.3	5.7	* 5.7
Max Green Setting (Gmax), s	5.1	* 25	* 5.1	19.8	5.0	* 26	5.8	* 19
Max Q Clear Time (g_c+I1), s	3.3	15.7	3.7	6.1	2.8	11.5	4.5	5.5
Green Ext Time (p_c), s	0.0	2.1	0.0	0.5	0.0	1.7	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: Armstrong Ave & Clinton Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	92	178	162	197	177	157	369	467
Average Queue (ft)	37	72	71	101	85	59	60	230
95th Queue (ft)	76	123	128	162	144	116	162	374
Link Distance (ft)		1230		2615		1262		1256
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250		250		250		250	
Storage Blk Time (%)								9
Queuing Penalty (veh)								5

Intersection: 2: Temperance Ave & Clinton Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	119	159	84	278	98	323	74	300	583
Average Queue (ft)	68	73	41	116	45	165	29	131	284
95th Queue (ft)	118	138	76	204	92	278	60	283	501
Link Distance (ft)		2615		1097		1294	1294		1268
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	60		200		250			150	
Storage Blk Time (%)	19	12		1		2		2	27
Queuing Penalty (veh)	23	11		1		1		11	50

Intersection: 3: Fowler Ave & Kerry Ave

Movement	WB	SB
Directions Served	R	LT
Maximum Queue (ft)	96	134
Average Queue (ft)	40	44
95th Queue (ft)	68	105
Link Distance (ft)		1222
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Armstrong Ave & Kerry Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	23
95th Queue (ft)	44
Link Distance (ft)	2569
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Fowler Ave & Floradora Ave

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	25	53
Average Queue (ft)	7	9
95th Queue (ft)	25	37
Link Distance (ft)	2558	1371
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Armstrong Ave & Floradora Ave

Movement	EB	EB	WB	NB
Directions Served	LT	R	LTR	L
Maximum Queue (ft)	32	25	51	18
Average Queue (ft)	15	9	27	2
95th Queue (ft)	36	27	46	12
Link Distance (ft)	2558		2565	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100		170
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Armstrong Ave & Olive Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	86	124	130	248	74	205	67	224	162
Average Queue (ft)	34	53	50	109	29	99	22	85	80
95th Queue (ft)	69	97	101	189	64	181	59	171	131
Link Distance (ft)		1323		2573		1249		1246	1246
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	150		130		150		150		
Storage Blk Time (%)			0	6		3		2	
Queuing Penalty (veh)			1	5		1		1	

Intersection: 9: Temperance Ave & Olive Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	131	216	180	204	54	369	74	374
Average Queue (ft)	52	92	100	93	15	157	23	187
95th Queue (ft)	106	176	161	170	46	292	59	344
Link Distance (ft)		2573		2576		2558		3927
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250		250		250		250	
Storage Blk Time (%)						1		5
Queuing Penalty (veh)						0		2

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	308	108	17	24	108	63	42	18	91	51	182
Average Queue (ft)	148	41	1	6	56	14	11	2	30	13	78
95th Queue (ft)	235	82	6	20	106	40	30	11	68	39	137
Link Distance (ft)		2488	2488		2566		1883			578	578
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	250			250		300		130	250		
Storage Blk Time (%)	1										
Queuing Penalty (veh)	2										

Intersection: 11: Temperance Ave & Belmont Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	96	133	205	135	52	224	54	284
Average Queue (ft)	48	59	69	64	24	118	33	149
95th Queue (ft)	89	96	134	117	48	205	62	231
Link Distance (ft)		2566		2595		2244		2558
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250		250		250		250	
Storage Blk Time (%)								1
Queuing Penalty (veh)								0

Zone Summary

Zone wide Queuing Penalty: 115

Intersection: 1: Armstrong Ave & Clinton Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	118	250	70	116	109	383	73	158
Average Queue (ft)	67	138	32	71	42	180	39	90
95th Queue (ft)	101	223	64	111	87	297	68	144
Link Distance (ft)		1230		2615		1262		1256
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250		250		250		250	
Storage Blk Time (%)		1				3		
Queuing Penalty (veh)		0				2		

Intersection: 2: Temperance Ave & Clinton Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (ft)	120	216	46	120	348	444	53	300	579
Average Queue (ft)	73	70	20	34	68	208	24	89	238
95th Queue (ft)	119	147	50	73	171	381	50	215	454
Link Distance (ft)		2615		1097		1294	1294		1268
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	60		200		250			150	
Storage Blk Time (%)	21	7				5		0	24
Queuing Penalty (veh)	26	9				4		0	22

Intersection: 3: Fowler Ave & Kerry Ave

Movement	WB	SB
Directions Served	R	LT
Maximum Queue (ft)	100	156
Average Queue (ft)	21	13
95th Queue (ft)	54	71
Link Distance (ft)		1222
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Armstrong Ave & Kerry Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	52
Average Queue (ft)	16
95th Queue (ft)	43
Link Distance (ft)	2569
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Fowler Ave & Floradora Ave

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	31	209
Average Queue (ft)	16	19
95th Queue (ft)	34	95
Link Distance (ft)	2558	1371
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Armstrong Ave & Floradora Ave

Movement	EB	EB	WB	SB
Directions Served	LT	R	LTR	L
Maximum Queue (ft)	30	24	43	25
Average Queue (ft)	10	5	18	6
95th Queue (ft)	31	21	39	23
Link Distance (ft)	2558		2565	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		100		100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Armstrong Ave & Olive Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	225	682	53	135	31	350	86	112	70
Average Queue (ft)	163	222	23	56	11	144	22	31	28
95th Queue (ft)	272	542	55	97	34	278	54	82	57
Link Distance (ft)		1323		2573		1249		1246	1246
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	150		130		150		150		
Storage Blk Time (%)	41	0		0		10			
Queuing Penalty (veh)	85	0		0		1			

Intersection: 9: Temperance Ave & Olive Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	122	162	53	96	52	297	54	294
Average Queue (ft)	69	71	27	56	22	154	24	123
95th Queue (ft)	108	125	56	87	47	284	54	234
Link Distance (ft)		2573		2576		2551		3927
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250		250		250		250	
Storage Blk Time (%)						1		1
Queuing Penalty (veh)						0		0

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	294	118	40	23	124	24	21	16	92	52	55
Average Queue (ft)	143	34	6	3	48	9	7	3	29	14	33
95th Queue (ft)	256	83	22	15	95	23	20	12	64	45	51
Link Distance (ft)		2488	2488		2562		1883			578	578
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	250			250		300		130	250		
Storage Blk Time (%)	1										
Queuing Penalty (veh)	2										

Intersection: 11: Temperance Ave & Belmont Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	114	116	97	120	68	234	74	266
Average Queue (ft)	51	61	41	57	26	138	36	108
95th Queue (ft)	93	97	78	107	60	211	67	212
Link Distance (ft)		2562		2595		2244		2551
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250		250		250		250	
Storage Blk Time (%)						0		0
Queuing Penalty (veh)						0		0

Zone Summary

Zone wide Queuing Penalty: 152

Appendix I: Cumulative Year 2035 No Project Traffic Conditions

Intersection	
Intersection Delay, s/veh	497.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	68	114	33	141	420	51	70	408	29	67	843	156
Future Vol, veh/h	68	114	33	141	420	51	70	408	29	67	843	156
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	74	124	36	153	457	55	76	443	32	73	916	170
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	49.7	318.8	212	826.5
HCM LOS	E	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	32%	23%	6%
Vol Thru, %	80%	53%	69%	79%
Vol Right, %	6%	15%	8%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	507	215	612	1066
LT Vol	70	68	141	67
Through Vol	408	114	420	843
RT Vol	29	33	51	156
Lane Flow Rate	551	234	665	1159
Geometry Grp	1	1	1	1
Degree of Util (X)	1.326	0.624	1.602	2.767
Departure Headway (Hd)	15.258	19.222	13.262	11.207
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	242	192	279	336
Service Time	13.258	17.222	11.262	9.207
HCM Lane V/C Ratio	2.277	1.219	2.384	3.449
HCM Control Delay	212	49.7	318.8	826.5
HCM Lane LOS	F	E	F	F
HCM 95th-tile Q	16.7	3.5	26.6	75.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	99	76	363	301	246	167	1112	210	229	1680	115
Future Volume (veh/h)	92	99	76	363	301	246	167	1112	210	229	1680	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	107	115	88	422	350	286	194	1293	244	266	1953	134
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	116	158	121	428	330	270	88	662	556	104	643	44
Arrive On Green	0.07	0.16	0.16	0.24	0.35	0.35	0.05	0.36	0.36	0.06	0.37	0.37
Sat Flow, veh/h	1767	967	740	1767	943	771	1767	1856	1559	1767	1716	118
Grp Volume(v), veh/h	107	0	203	422	0	636	194	1293	244	266	0	2087
Grp Sat Flow(s),veh/h/ln	1767	0	1706	1767	0	1714	1767	1856	1559	1767	0	1833
Q Serve(g_s), s	7.0	0.0	13.1	27.6	0.0	40.6	5.8	41.4	13.9	6.8	0.0	43.5
Cycle Q Clear(g_c), s	7.0	0.0	13.1	27.6	0.0	40.6	5.8	41.4	13.9	6.8	0.0	43.5
Prop In Lane	1.00		0.43	1.00		0.45	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	116	0	279	428	0	599	88	662	556	104	0	687
V/C Ratio(X)	0.92	0.00	0.73	0.99	0.00	1.06	2.20	1.95	0.44	2.57	0.00	3.04
Avail Cap(c_a), veh/h	116	0	573	428	0	599	88	662	556	104	0	687
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.0	0.0	46.1	43.8	0.0	37.8	55.2	37.3	28.5	54.7	0.0	36.3
Incr Delay (d2), s/veh	60.6	0.0	3.6	39.6	0.0	54.0	574.0	434.9	0.5	733.9	0.0	921.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	5.7	16.4	0.0	25.3	16.6	97.6	5.1	24.0	0.0	194.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	114.5	0.0	49.7	83.4	0.0	91.7	629.1	472.2	29.0	788.5	0.0	957.5
LnGrp LOS	F	A	D	F	A	F	F	F	C	F	A	F
Approach Vol, veh/h		310			1058			1731			2353	
Approach Delay, s/veh		72.1			88.4			427.3			938.4	
Approach LOS		E			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	46.7	33.0	24.3	10.0	48.8	11.8	45.5
Change Period (Y+Rc), s	5.3	* 5.3	4.9	* 5.3	* 4.2	5.3	* 4.2	4.9
Max Green Setting (Gmax), s	6.8	* 41	8.8	* 39	* 5.8	42.4	* 7.6	40.6
Max Q Clear Time (g_c+I1), s	8.8	43.4	29.6	15.1	7.8	45.5	9.0	42.6
Green Ext Time (p_c), s	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0

Intersection Summary		
HCM 6th Ctrl Delay		561.9
HCM 6th LOS		F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	2.2					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	147	739	20	113	925
Future Vol, veh/h	0	147	739	20	113	925
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	160	803	22	123	1005

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	814	0	0	825	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	4.13	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	0	376	-	-	801	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	376	-	-	801	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.5	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	376	801	-
HCM Lane V/C Ratio	-	-	0.425	0.153	-
HCM Control Delay (s)	-	-	21.5	10.3	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	2.1	0.5	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	36	50	474	948	50
Future Vol, veh/h	2	36	50	474	948	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	2	39	54	515	1030	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1680	1057	1084	0	-	0
Stage 1	1057	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	104	272	640	-	-	-
Stage 1	333	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	92	272	640	-	-	-
Mov Cap-2 Maneuver	92	-	-	-	-	-
Stage 1	294	-	-	-	-	-
Stage 2	533	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.5	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	640	-	247	-	-
HCM Lane V/C Ratio	0.085	-	0.167	-	-
HCM Control Delay (s)	11.1	0	22.5	-	-
HCM Lane LOS	B	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.6	-	-

Intersection	
Int Delay, s/veh	1591.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	71	26	152	208	144	97	207	327	51	37	771	148
Future Vol, veh/h	71	26	152	208	144	97	207	327	51	37	771	148
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	77	28	165	226	157	105	225	355	55	40	838	161

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1963	1859	919	1928	1912	383	999	0	0	410	0	0
Stage 1	999	999	-	833	833	-	-	-	-	-	-	-
Stage 2	964	860	-	1095	1079	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	~ 47	73	327	~ 50	~ 68	662	689	-	-	1143	-	-
Stage 1	292	320	-	362	382	-	-	-	-	-	-	-
Stage 2	306	371	-	258	293	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	38	327	~ 7	~ 36	662	689	-	-	1143	-	-
Mov Cap-2 Maneuver	-	38	-	~ 7	~ 36	-	-	-	-	-	-	-
Stage 1	167	294	-	~ 207	219	-	-	-	-	-	-	-
Stage 2	~ 42	213	-	~ 106	269	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s		$ 7928.5	4.5	0.3
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	689	-	-	-	155	7	58	1143	-	-
HCM Lane V/C Ratio	0.327	-	-	-	1.248	32.298	4.516	0.035	-	-
HCM Control Delay (s)	12.7	0	-	-	$ 211.2	$ 25115.5	$ 1725.6	8.3	0	-
HCM Lane LOS	B	A	-	-	F	F	F	A	A	-
HCM 95th %tile Q(veh)	1.4	-	-	-	11.3	30.2	28.9	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	14.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	66	1085	18	27	1302
Future Vol, veh/h	21	66	1085	18	27	1302
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	23	72	1179	20	29	1415

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2662	1189	0	0	1199	0
Stage 1	1189	-	-	-	-	-
Stage 2	1473	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	25	228	-	-	579	-
Stage 1	288	-	-	-	-	-
Stage 2	209	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 19	228	-	-	579	-
Mov Cap-2 Maneuver	~ 19	-	-	-	-	-
Stage 1	221	-	-	-	-	-
Stage 2	209	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 413.2	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	62	579	-
HCM Lane V/C Ratio	-	-	1.525	0.051	-
HCM Control Delay (s)	-	-	$ 413.2	11.5	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	8.3	0.2	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	270.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	10	29	149	25	28	58	559	39	29	1065	31
Future Vol, veh/h	7	10	29	149	25	28	58	559	39	29	1065	31
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	170	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	11	32	162	27	30	63	608	42	32	1158	34

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2024	2016	1176	2016	2012	629	1193	0	0	650	0	0
Stage 1	1240	1240	-	755	755	-	-	-	-	-	-	-
Stage 2	784	776	-	1261	1257	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	43	58	232	~ 43	58	480	582	-	-	931	-	-
Stage 1	213	246	-	399	415	-	-	-	-	-	-	-
Stage 2	385	406	-	208	241	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	21	50	232	~ 28	50	480	581	-	-	931	-	-
Mov Cap-2 Maneuver	21	50	-	~ 28	50	-	-	-	-	-	-	-
Stage 1	190	237	-	356	370	-	-	-	-	-	-	-
Stage 2	298	362	-	166	233	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	95	$ 2686.4	1.1	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	581	-	-	32	232	34	931	-	-
HCM Lane V/C Ratio	0.109	-	-	0.577	0.136	6.458	0.034	-	-
HCM Control Delay (s)	11.9	-	-	218.1	22.9	$ 2686.4	9	-	-
HCM Lane LOS	B	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	1.9	0.5	26.3	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	263.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	108	143	26	234	419	104	80	447	184	44	532	624
Future Vol, veh/h	108	143	26	234	419	104	80	447	184	44	532	624
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	114	151	27	246	441	109	84	471	194	46	560	657
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	21.1	155.9	441.6	281
HCM LOS	C	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	11%	100%	0%	100%	0%	8%	0%
Vol Thru, %	63%	0%	85%	0%	80%	92%	0%
Vol Right, %	26%	0%	15%	0%	20%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	711	108	169	234	523	576	624
LT Vol	80	108	0	234	0	44	0
Through Vol	447	0	143	0	419	532	0
RT Vol	184	0	26	0	104	0	624
Lane Flow Rate	748	114	178	246	551	606	657
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	1.914	0.329	0.484	0.659	1.376	1.537	1.53
Departure Headway (Hd)	9.074	11.038	10.384	10.384	9.705	11.121	10.334
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	412	327	349	350	380	333	361
Service Time	7.074	8.738	8.084	8.084	7.405	8.821	8.034
HCM Lane V/C Ratio	1.816	0.349	0.51	0.703	1.45	1.82	1.82
HCM Control Delay	441.6	19.1	22.4	31	211.8	283.9	278.4
HCM Lane LOS	F	C	C	D	F	F	F
HCM 95th-tile Q	50.9	1.4	2.5	4.5	25.1	28.3	29.8

Intersection	
Intersection Delay, s/veh	1758.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	182	108	84	170	232	32	43	1449	80	74	1623	457
Future Vol, veh/h	182	108	84	170	232	32	43	1449	80	74	1623	457
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	198	117	91	185	252	35	47	1575	87	80	1764	497
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	221.2	268.6	1669.6	2389.6
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	49%	39%	3%
Vol Thru, %	92%	29%	53%	75%
Vol Right, %	5%	22%	7%	21%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1572	374	434	2154
LT Vol	43	182	170	74
Through Vol	1449	108	232	1623
RT Vol	80	84	32	457
Lane Flow Rate	1709	407	472	2341
Geometry Grp	1	1	1	1
Degree of Util (X)	4.567	1.085	1.269	6.197
Departure Headway (Hd)	27.271	46.755	40.841	21.99
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	154	81	94	187
Service Time	25.271	44.755	38.841	19.99
HCM Lane V/C Ratio	11.097	5.025	5.021	12.519
HCM Control Delay	1669.6	221.2	268.6	2389.6
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	62.5	6	8.1	109.8

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	436	254	24	11	568	174	174	218	78	81	193	540
Future Vol, veh/h	436	254	24	11	568	174	174	218	78	81	193	540
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	0	250	-	-	300	-	130	250	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	474	276	26	12	617	189	189	237	85	88	210	587

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	806	0	0	302	0	0	2358	2054	276	2134	1986	712
Stage 1	-	-	-	-	-	-	1224	1224	-	736	736	-
Stage 2	-	-	-	-	-	-	1134	830	-	1398	1250	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	814	-	-	1253	-	-	~ 25	~ 55	760	~ 36	~ 61	~ 431
Stage 1	-	-	-	-	-	-	218	250	-	409	424	-
Stage 2	-	-	-	-	-	-	245	383	-	173	243	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	814	-	-	1253	-	-	-	~ 23	760	-	~ 25	~ 431
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 23	-	-	~ 25	-
Stage 1	-	-	-	-	-	-	~ 91	~ 105	-	171	420	-
Stage 2	-	-	-	-	-	-	-	379	-	-	~ 102	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	0.1		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	23	760	814	-	-	1253	-	-	-	25	431
HCM Lane V/C Ratio	-	10.302	0.112	0.582	-	-	0.01	-	-	-	8.391	1.362
HCM Control Delay (s)		$ 4514.3	10.3	15.4	-	-	7.9	-	-		$ 3631.2	203.2
HCM Lane LOS	-	F	B	C	-	-	A	-	-	-	F	F
HCM 95th %tile Q(veh)	-	29.7	0.4	3.8	-	-	0	-	-	-	26.1	27.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	1371.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	182	122	106	177	309	133	90	1232	64	117	1455	350
Future Vol, veh/h	182	122	106	177	309	133	90	1232	64	117	1455	350
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	196	131	114	190	332	143	97	1325	69	126	1565	376
Number of Lanes	0	1	1	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	95.8	217.4	1368.9	2016.9
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	6%	60%	0%	36%	0%	6%
Vol Thru, %	89%	40%	0%	64%	0%	76%
Vol Right, %	5%	0%	100%	0%	100%	18%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1386	304	106	486	133	1922
LT Vol	90	182	0	177	0	117
Through Vol	1232	122	0	309	0	1455
RT Vol	64	0	106	0	133	350
Lane Flow Rate	1490	327	114	523	143	2067
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	3.915	0.912	0.286	1.422	0.354	5.382
Departure Headway (Hd)	23.432	26.611	25.622	20.766	19.862	18.979
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	179	141	142	183	183	227
Service Time	21.432	24.311	23.322	18.466	17.562	16.979
HCM Lane V/C Ratio	8.324	2.319	0.803	2.858	0.781	9.106
HCM Control Delay	1368.9	115.9	38.3	267.8	33.1	2016.9
HCM Lane LOS	F	F	E	F	D	F
HCM 95th-tile Q	59.8	6.1	1.1	15.2	1.5	107.5

Intersection	
Intersection Delay, s/veh	471.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	134	480	64	98	149	49	52	824	73	74	501	44
Future Vol, veh/h	134	480	64	98	149	49	52	824	73	74	501	44
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	140	500	67	102	155	51	54	858	76	77	522	46
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	408.1	81.3	719.8	346.5
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	5%	20%	33%	12%
Vol Thru, %	87%	71%	50%	81%
Vol Right, %	8%	9%	17%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	949	678	296	619
LT Vol	52	134	98	74
Through Vol	824	480	149	501
RT Vol	73	64	49	44
Lane Flow Rate	989	706	308	645
Geometry Grp	1	1	1	1
Degree of Util (X)	2.514	1.8	0.824	1.643
Departure Headway (Hd)	13.615	14.664	21.078	16.59
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	277	254	176	226
Service Time	11.615	12.664	19.078	14.59
HCM Lane V/C Ratio	3.57	2.78	1.75	2.854
HCM Control Delay	719.8	408.1	81.3	346.5
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	54.6	30.1	5.6	23.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	222	190	191	137	178	99	1809	378	137	1273	85
Future Volume (veh/h)	149	222	190	191	137	178	99	1809	378	137	1273	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	159	236	202	203	146	189	105	1924	402	146	1354	90
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	88	262	224	104	223	288	76	791	666	88	761	51
Arrive On Green	0.05	0.29	0.29	0.06	0.30	0.30	0.04	0.43	0.43	0.05	0.44	0.44
Sat Flow, veh/h	1767	918	786	1767	733	948	1767	1856	1561	1767	1720	114
Grp Volume(v), veh/h	159	0	438	203	0	335	105	1924	402	146	0	1444
Grp Sat Flow(s),veh/h/ln	1767	0	1704	1767	0	1681	1767	1856	1561	1767	0	1834
Q Serve(g_s), s	5.8	0.0	28.6	6.8	0.0	20.1	5.0	49.4	23.1	5.8	0.0	51.3
Cycle Q Clear(g_c), s	5.8	0.0	28.6	6.8	0.0	20.1	5.0	49.4	23.1	5.8	0.0	51.3
Prop In Lane	1.00		0.46	1.00		0.56	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	88	0	487	104	0	511	76	791	666	88	0	812
V/C Ratio(X)	1.80	0.00	0.90	1.96	0.00	0.66	1.38	2.43	0.60	1.65	0.00	1.78
Avail Cap(c_a), veh/h	88	0	573	104	0	586	76	791	666	88	0	812
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.1	0.0	39.8	54.6	0.0	35.1	55.5	33.3	25.7	55.1	0.0	32.3
Incr Delay (d2), s/veh	400.2	0.0	15.6	464.0	0.0	2.2	232.7	648.6	1.6	337.7	0.0	355.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	0.0	13.6	16.3	0.0	8.3	7.1	163.0	8.5	10.8	0.0	101.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	455.3	0.0	55.4	518.6	0.0	37.3	288.1	681.9	27.2	392.8	0.0	387.8
LnGrp LOS	F	A	E	F	A	D	F	F	C	F	A	F
Approach Vol, veh/h		597			538			2431			1590	
Approach Delay, s/veh		161.9			218.9			556.6			388.2	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	54.7	11.7	38.4	9.2	56.6	10.0	40.1
Change Period (Y+Rc), s	5.3	* 5.3	4.9	* 5.3	* 4.2	5.3	* 4.2	4.9
Max Green Setting (Gmax), s	5.8	* 49	6.8	* 39	* 5	50.2	* 5.8	40.4
Max Q Clear Time (g_c+I1), s	7.8	51.4	8.8	30.6	7.0	53.3	7.8	22.1
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.8

Intersection Summary	
HCM 6th Ctrl Delay	423.7
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	0.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	51	993	37	44	914
Future Vol, veh/h	0	51	993	37	44	914
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	55	1079	40	48	993

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1099	0	0	1119	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	4.13	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	0	257	-	-	620	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	257	-	-	620	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.8	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	257	620	-
HCM Lane V/C Ratio	-	-	0.216	0.077	-
HCM Control Delay (s)	-	-	22.8	11.3	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.8	0.2	-

Intersection						
Int Delay, s/veh	0.6					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	23	15	863	590	15
Future Vol, veh/h	9	23	15	863	590	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	10	25	16	938	641	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1619	649	657	0	-	0
Stage 1	649	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	113	468	926	-	-	-
Stage 1	518	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	109	468	926	-	-	-
Mov Cap-2 Maneuver	109	-	-	-	-	-
Stage 1	499	-	-	-	-	-
Stage 2	366	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.3	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	926	-	243	-	-
HCM Lane V/C Ratio	0.018	-	0.143	-	-
HCM Control Delay (s)	9	0	22.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	373.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	128	88	182	63	16	44	122	707	225	111	423	60
Future Vol, veh/h	128	88	182	63	16	44	122	707	225	111	423	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	139	96	198	68	17	48	133	768	245	121	460	65

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1924	2014	493	2039	1924	891	525	0	0	1013	0	0
Stage 1	735	735	-	1157	1157	-	-	-	-	-	-	-
Stage 2	1189	1279	-	882	767	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	~ 50	~ 58	574	~ 42	66	340	1037	-	-	681	-	-
Stage 1	410	424	-	238	270	-	-	-	-	-	-	-
Stage 2	228	236	-	340	410	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 17	~ 30	574	-	34	340	1037	-	-	681	-	-
Mov Cap-2 Maneuver	~ 17	~ 30	-	-	34	-	-	-	-	-	-	-
Stage 1	282	317	-	164	185	-	-	-	-	-	-	-
Stage 2	~ 122	162	-	116	306	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 2028		1	2.1
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1037	-	-	17	83	-	100	681	-	-
HCM Lane V/C Ratio	0.128	-	-	8.184	3.536	-	0.652	0.177	-	-
HCM Control Delay (s)	9	0		$ 3675.5	$ 1247.1	-	91.9	11.4	0	-
HCM Lane LOS	A	A	-	F	F	-	F	B	A	-
HCM 95th %tile Q(veh)	0.4	-	-	18.1	30	-	3.2	0.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	13.2					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	83	1408	12	14	1153
Future Vol, veh/h	14	83	1408	12	14	1153
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	89	1514	13	15	1240

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2791	1521	0	0	1527	0
Stage 1	1521	-	-	-	-	-
Stage 2	1270	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	20	145	-	-	433	-
Stage 1	198	-	-	-	-	-
Stage 2	263	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	18	145	-	-	433	-
Mov Cap-2 Maneuver	18	-	-	-	-	-
Stage 1	176	-	-	-	-	-
Stage 2	263	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 362.8	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	72	433	-
HCM Lane V/C Ratio	-	-	1.449	0.035	-
HCM Control Delay (s)	-	-	$ 362.8	13.6	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	8.6	0.1	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	96.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	29	10	54	39	78	34	969	41	27	620	25
Future Vol, veh/h	6	29	10	54	39	78	34	969	41	27	620	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	170	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	31	11	58	42	84	37	1042	44	29	667	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1940	1899	681	1898	1890	1064	694	0	0	1086	0	0
Stage 1	739	739	-	1138	1138	-	-	-	-	-	-	-
Stage 2	1201	1160	-	760	752	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	49	69	449	~ 52	70	270	897	-	-	639	-	-
Stage 1	408	422	-	244	275	-	-	-	-	-	-	-
Stage 2	225	269	-	397	416	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	15	63	449	~ 29	64	270	897	-	-	639	-	-
Mov Cap-2 Maneuver	15	63	-	~ 29	64	-	-	-	-	-	-	-
Stage 1	391	403	-	234	264	-	-	-	-	-	-	-
Stage 2	125	258	-	341	397	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	209.6	$ 1027.9	0.3	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	897	-	-	41	449	62	639	-	-
HCM Lane V/C Ratio	0.041	-	-	0.918	0.024	2.966	0.045	-	-
HCM Control Delay (s)	9.2	-	-	265.7	13.2	$ 1027.9	10.9	-	-
HCM Lane LOS	A	-	-	F	B	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.6	0.1	18.9	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	340.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	352	362	40	105	272	38	23	683	158	65	491	255
Future Vol, veh/h	352	362	40	105	272	38	23	683	158	65	491	255
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	383	393	43	114	296	41	25	742	172	71	534	277
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	131.5	58	752.1	240.1
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	3%	100%	0%	100%	0%	12%	0%
Vol Thru, %	79%	0%	90%	0%	88%	88%	0%
Vol Right, %	18%	0%	10%	0%	12%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	864	352	402	105	310	556	255
LT Vol	23	352	0	105	0	65	0
Through Vol	683	0	362	0	272	491	0
RT Vol	158	0	40	0	38	0	255
Lane Flow Rate	939	383	437	114	337	604	277
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	2.603	1.082	1.167	0.331	0.924	1.642	0.695
Departure Headway (Hd)	10.719	13.487	12.865	12.65	12.01	12.518	11.696
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	347	272	288	286	303	296	313
Service Time	8.719	11.187	10.565	10.35	9.71	10.218	9.396
HCM Lane V/C Ratio	2.706	1.408	1.517	0.399	1.112	2.041	0.885
HCM Control Delay	752.1	117.7	143.5	21.5	70.3	333.2	37.2
HCM Lane LOS	F	F	F	C	F	F	E
HCM 95th-tile Q	71.9	11.9	14.4	1.4	8.9	29.2	4.8

Intersection	
Intersection Delay, s/veh	1573.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	374	148	45	76	102	42	46	2051	99	77	1490	257
Future Vol, veh/h	374	148	45	76	102	42	46	2051	99	77	1490	257
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	386	153	46	78	105	43	47	2114	102	79	1536	265
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	274.2	103.8	2027.8	1608.8
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	66%	35%	4%
Vol Thru, %	93%	26%	46%	82%
Vol Right, %	5%	8%	19%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2196	567	220	1824
LT Vol	46	374	76	77
Through Vol	2051	148	102	1490
RT Vol	99	45	42	257
Lane Flow Rate	2264	585	227	1880
Geometry Grp	1	1	1	1
Degree of Util (X)	5.408	1.414	0.605	4.463
Departure Headway (Hd)	18.597	23.779	46.419	20.931
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	226	158	82	207
Service Time	16.597	21.779	44.419	18.931
HCM Lane V/C Ratio	10.018	3.703	2.768	9.082
HCM Control Delay	2027.8	274.2	103.8	1608.8
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	110.2	13.7	2.7	78.1

Intersection	
Int Delay, s/veh	0.8

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	1	540	357	24	59	224	132	115	341	125	85	372	190
Future Vol, veh/h	1	540	357	24	59	224	132	115	341	125	85	372	190
Conflicting Peds, #/hr	0	0	0	4	4	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	250	-	0	250	-	-	300	-	130	250	-	0
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	574	380	26	63	238	140	122	363	133	90	396	202

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	-	378	0	0	410	0	0	2265	2038	385	2224	1994	308
Stage 1	-	-	-	-	-	-	-	1532	1534	-	434	434	-
Stage 2	-	-	-	-	-	-	-	733	504	-	1790	1560	-
Critical Hdwy	-	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	-	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	-	1175	-	-	1143	-	-	~ 29	~ 56	660	~ 31	~ 60	730
Stage 1	-	-	-	-	-	-	-	145	~ 177	-	598	579	-
Stage 2	-	-	-	-	-	-	-	411	539	-	103	~ 172	-
Platoon blocked, %			-	-		-	-						
Mov Cap-1 Maneuver	~ -1001	~ -1001	-	-	1139	-	-	-	~ 53	657	-	~ 56	730
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	~ 53	-	-	~ 56	-
Stage 1	-	-	-	-	-	-	-	145	~ 176	-	598	547	-
Stage 2	-	-	-	-	-	-	-	~ 78	509	-	-	~ 171	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	1.2		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	53	657	+	-	-	1139	-	-	-	56	730
HCM Lane V/C Ratio	-	6.845	0.202	-	-	-	0.055	-	-	-	7.067	0.277
HCM Control Delay (s)		$ 2780.3	11.9	2.7	-	-	8.3	-	-		$ 2872.3	11.8
HCM Lane LOS	-	F	B	A	-	-	A	-	-	-	F	B
HCM 95th %tile Q(veh)	-	42	0.8	-	-	-	0.2	-	-	-	45.7	1.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	1356.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	230	391	42	181	213	160	35	1646	53	72	1449	145
Future Vol, veh/h	230	391	42	181	213	160	35	1646	53	72	1449	145
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	240	407	44	189	222	167	36	1715	55	75	1509	151
Number of Lanes	0	1	1	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	403.2	146.9	1783.9	1694.5
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	2%	37%	0%	46%	0%	4%
Vol Thru, %	95%	63%	0%	54%	0%	87%
Vol Right, %	3%	0%	100%	0%	100%	9%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1734	621	42	394	160	1666
LT Vol	35	230	0	181	0	72
Through Vol	1646	391	0	213	0	1449
RT Vol	53	0	42	0	160	145
Lane Flow Rate	1806	647	44	410	167	1735
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	4.829	1.784	0.11	1.137	0.419	4.626
Departure Headway (Hd)	25.848	24.351	23.468	28.53	27.67	26.592
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	163	155	154	131	133	156
Service Time	23.848	22.051	21.168	26.23	25.37	24.592
HCM Lane V/C Ratio	11.08	4.174	0.286	3.13	1.256	11.122
HCM Control Delay	1783.9	428.5	29	186.7	49	1694.5
HCM Lane LOS	F	F	D	F	E	F
HCM 95th-tile Q	70.3	19.5	0.4	8.5	1.8	65

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	114	33	141	420	51	70	408	29	67	843	156
Future Volume (veh/h)	68	114	33	141	420	51	70	408	29	67	843	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	74	124	36	153	457	55	76	443	32	73	916	170
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	95	159	46	394	482	58	127	1259	91	94	1006	187
Arrive On Green	0.05	0.12	0.12	0.22	0.30	0.30	0.02	0.12	0.12	0.05	0.34	0.34
Sat Flow, veh/h	1767	1382	401	1767	1625	196	1767	3335	240	1767	2968	551
Grp Volume(v), veh/h	74	0	160	153	0	512	76	233	242	73	544	542
Grp Sat Flow(s),veh/h/ln	1767	0	1783	1767	0	1820	1767	1763	1812	1767	1763	1756
Q Serve(g_s), s	3.7	0.0	7.8	6.6	0.0	24.8	3.8	10.9	11.0	3.7	26.5	26.6
Cycle Q Clear(g_c), s	3.7	0.0	7.8	6.6	0.0	24.8	3.8	10.9	11.0	3.7	26.5	26.6
Prop In Lane	1.00		0.22	1.00		0.11	1.00		0.13	1.00		0.31
Lane Grp Cap(c), veh/h	95	0	205	394	0	540	127	666	684	94	597	595
V/C Ratio(X)	0.78	0.00	0.78	0.39	0.00	0.95	0.60	0.35	0.35	0.78	0.91	0.91
Avail Cap(c_a), veh/h	114	0	414	394	0	540	127	666	684	185	627	625
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.37	0.00	0.37	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.1	0.0	38.7	29.7	0.0	31.0	42.6	29.3	29.3	42.1	28.4	28.5
Incr Delay (d2), s/veh	24.5	0.0	6.3	0.2	0.0	13.2	7.4	1.5	1.4	12.8	20.4	20.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	3.6	2.7	0.0	12.0	1.9	4.9	5.1	1.8	13.2	13.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	0.0	45.0	30.0	0.0	44.2	50.1	30.7	30.7	54.8	48.8	48.9
LnGrp LOS	E	A	D	C	A	D	D	C	C	D	D	D
Approach Vol, veh/h		234			665			551			1159	
Approach Delay, s/veh		51.8			40.9			33.4			49.2	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	40.0	25.4	15.7	12.5	36.5	9.0	32.0
Change Period (Y+Rc), s	* 4.2	6.0	5.3	* 5.3	6.0	* 6	* 4.2	5.3
Max Green Setting (Gmax), s	* 9.4	28.4	11.6	* 21	5.8	* 32	* 5.8	26.7
Max Q Clear Time (g_c+I1), s	5.7	13.0	8.6	9.8	5.8	28.6	5.7	26.8
Green Ext Time (p_c), s	0.0	2.1	0.1	0.5	0.0	1.9	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	44.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	99	76	363	301	246	167	1112	210	229	1680	115
Future Volume (veh/h)	92	99	76	363	301	246	167	1112	210	229	1680	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	107	115	88	422	350	286	194	1293	244	266	1953	134
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	133	158	121	337	517	437	175	1630	501	292	1880	128
Arrive On Green	0.08	0.16	0.16	0.19	0.28	0.28	0.10	0.32	0.32	0.17	0.39	0.39
Sat Flow, veh/h	1767	970	742	1767	1856	1569	1767	5066	1558	1767	4839	331
Grp Volume(v), veh/h	107	0	203	422	350	286	194	1293	244	266	1360	727
Grp Sat Flow(s),veh/h/ln	1767	0	1712	1767	1856	1569	1767	1689	1558	1767	1689	1793
Q Serve(g_s), s	7.1	0.0	13.5	22.8	20.0	19.2	11.8	27.8	15.0	17.7	46.4	46.4
Cycle Q Clear(g_c), s	7.1	0.0	13.5	22.8	20.0	19.2	11.8	27.8	15.0	17.7	46.4	46.4
Prop In Lane	1.00		0.43	1.00		1.00	1.00		1.00	1.00		0.18
Lane Grp Cap(c), veh/h	133	0	279	337	517	437	175	1630	501	292	1312	696
V/C Ratio(X)	0.81	0.00	0.73	1.25	0.68	0.65	1.11	0.79	0.49	0.91	1.04	1.04
Avail Cap(c_a), veh/h	238	0	573	337	732	619	175	1630	501	308	1312	696
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	0.0	47.5	48.3	38.3	38.0	53.8	36.9	32.6	49.0	36.5	36.5
Incr Delay (d2), s/veh	10.8	0.0	3.6	135.3	1.6	1.7	101.2	2.8	0.7	28.7	35.0	46.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	5.9	22.5	9.1	7.4	10.0	11.4	5.6	9.9	24.3	27.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.2	0.0	51.1	183.6	39.9	39.7	155.0	39.7	33.3	77.7	71.5	82.6
LnGrp LOS	E	A	D	F	D	D	F	D	C	E	F	F
Approach Vol, veh/h		310			1058			1731			2353	
Approach Delay, s/veh		56.0			97.2			51.7			75.6	
Approach LOS		E			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	43.7	27.0	24.8	16.0	51.7	13.2	38.6
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	5.3	* 4.2	5.3	* 4.2	* 5.3
Max Green Setting (Gmax), s	* 21	37.4	* 23	40.0	* 12	46.4	* 16	* 47
Max Q Clear Time (g_c+I1), s	19.7	29.8	24.8	15.5	13.8	48.4	9.1	22.0
Green Ext Time (p_c), s	0.1	5.0	0.0	1.0	0.0	0.0	0.1	3.0

Intersection Summary	
HCM 6th Ctrl Delay	71.1
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	0.7					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	36	50	474	948	50
Future Vol, veh/h	2	36	50	474	948	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	2	39	54	515	1030	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1680	542	1084	0	-	0
Stage 1	1057	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Critical Hdwy	6.645	6.945	4.145	-	-	-
Critical Hdwy Stg 1	5.845	-	-	-	-	-
Critical Hdwy Stg 2	5.445	-	-	-	-	-
Follow-up Hdwy	3.5285	3.3285	2.2285	-	-	-
Pot Cap-1 Maneuver	94	483	637	-	-	-
Stage 1	295	-	-	-	-	-
Stage 2	531	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	83	483	637	-	-	-
Mov Cap-2 Maneuver	83	-	-	-	-	-
Stage 1	260	-	-	-	-	-
Stage 2	531	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.5	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	637	-	385	-	-
HCM Lane V/C Ratio	0.085	-	0.107	-	-
HCM Control Delay (s)	11.2	0	15.5	-	-
HCM Lane LOS	B	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.4	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	26	152	208	144	97	207	327	51	37	771	148
Future Volume (veh/h)	71	26	152	208	144	97	207	327	51	37	771	148
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	77	28	165	226	157	105	225	355	55	40	838	161
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	99	34	199	240	245	164	319	841	713	62	849	163
Arrive On Green	0.06	0.14	0.14	0.14	0.24	0.24	0.18	0.45	0.45	0.07	0.58	0.58
Sat Flow, veh/h	1767	233	1375	1767	1037	694	1767	1856	1572	1767	2950	567
Grp Volume(v), veh/h	77	0	193	226	0	262	225	355	55	40	501	498
Grp Sat Flow(s),veh/h/ln	1767	0	1608	1767	0	1731	1767	1856	1572	1767	1763	1754
Q Serve(g_s), s	3.9	0.0	10.5	11.4	0.0	12.3	10.8	11.6	0.9	2.0	25.1	25.1
Cycle Q Clear(g_c), s	3.9	0.0	10.5	11.4	0.0	12.3	10.8	11.6	0.9	2.0	25.1	25.1
Prop In Lane	1.00		0.85	1.00		0.40	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	99	0	233	240	0	409	319	841	713	62	507	505
V/C Ratio(X)	0.78	0.00	0.83	0.94	0.00	0.64	0.70	0.42	0.08	0.64	0.99	0.99
Avail Cap(c_a), veh/h	188	0	357	240	0	435	319	841	713	124	507	505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.71	0.71	0.71	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.9	0.0	37.4	38.6	0.0	30.9	34.6	16.6	3.8	41.3	18.9	18.9
Incr Delay (d2), s/veh	12.2	0.0	9.3	42.7	0.0	2.9	4.9	1.1	0.1	10.7	36.9	37.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	4.5	7.5	0.0	5.1	4.7	4.5	0.6	1.0	10.2	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.1	0.0	46.7	81.2	0.0	33.8	39.6	17.7	4.0	51.9	55.9	56.0
LnGrp LOS	D	A	D	F	A	C	D	B	A	D	E	E
Approach Vol, veh/h		270			488			635			1039	
Approach Delay, s/veh		48.8			55.8			24.3			55.8	
Approach LOS		D			E			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	46.8	17.5	18.3	22.3	31.9	9.2	26.6
Change Period (Y+Rc), s	* 4.2	6.0	5.3	* 5.3	6.0	* 6	* 4.2	5.3
Max Green Setting (Gmax), s	* 6.3	31.8	12.2	* 20	12.2	* 26	* 9.6	22.6
Max Q Clear Time (g_c+I1), s	4.0	13.6	13.4	12.5	12.8	27.1	5.9	14.3
Green Ext Time (p_c), s	0.0	1.8	0.0	0.5	0.0	0.0	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	46.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	95	1199	1444
Demand Flow Rate, veh/h	98	1235	1487
Vehicles Circulating, veh/h	1214	30	24
Vehicles Exiting, veh/h	51	1481	1288
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	10.1	7.3	8.8
Approach LOS	B	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	98	580	655	699	788
Cap Entry Lane, veh/h	506	1313	1384	1320	1391
Entry HV Adj Factor	0.969	0.971	0.970	0.971	0.971
Flow Entry, veh/h	95	563	635	678	765
Cap Entry, veh/h	490	1275	1343	1282	1351
V/C Ratio	0.194	0.442	0.473	0.529	0.566
Control Delay, s/veh	10.1	7.2	7.4	8.6	8.9
LOS	B	A	A	A	A
95th %tile Queue, veh	1	2	3	3	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	10	29	149	25	28	58	559	39	29	1065	31
Future Volume (veh/h)	7	10	29	149	25	28	58	559	39	29	1065	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	8	11	32	162	27	30	63	608	42	32	1158	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	180	131	111	204	68	75	97	692	48	109	1435	42
Arrive On Green	0.10	0.07	0.07	0.12	0.08	0.08	0.05	0.40	0.40	0.06	0.41	0.41
Sat Flow, veh/h	1767	1856	1572	1767	803	892	1767	1716	119	1767	3497	103
Grp Volume(v), veh/h	8	11	32	162	0	57	63	0	650	32	584	608
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	0	1695	1767	0	1834	1767	1763	1837
Q Serve(g_s), s	0.2	0.3	1.1	5.2	0.0	1.9	2.0	0.0	19.2	1.0	17.1	17.1
Cycle Q Clear(g_c), s	0.2	0.3	1.1	5.2	0.0	1.9	2.0	0.0	19.2	1.0	17.1	17.1
Prop In Lane	1.00		1.00	1.00		0.53	1.00		0.06	1.00		0.06
Lane Grp Cap(c), veh/h	180	131	111	204	0	143	97	0	740	109	723	754
V/C Ratio(X)	0.04	0.08	0.29	0.79	0.00	0.40	0.65	0.00	0.88	0.29	0.81	0.81
Avail Cap(c_a), veh/h	180	825	699	266	0	863	154	0	934	151	895	932
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.7	25.4	25.8	25.2	0.0	25.4	27.1	0.0	16.1	26.2	15.2	15.2
Incr Delay (d2), s/veh	0.1	0.3	1.4	11.7	0.0	1.8	7.2	0.0	8.0	1.5	4.5	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.4	2.5	0.0	0.7	0.9	0.0	7.3	0.4	5.7	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.8	25.7	27.2	36.9	0.0	27.2	34.3	0.0	24.1	27.7	19.7	19.5
LnGrp LOS	C	C	C	D	A	C	C	A	C	C	B	B
Approach Vol, veh/h		51			219			713			1224	
Approach Delay, s/veh		26.3			34.4			25.0			19.8	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	29.6	11.0	10.1	7.4	30.0	10.2	10.9
Change Period (Y+Rc), s	4.2	* 6	4.2	* 6	4.2	* 6	4.2	* 6
Max Green Setting (Gmax), s	5.0	* 30	8.8	* 26	5.1	* 30	5.0	* 30
Max Q Clear Time (g_c+I1), s	3.0	21.2	7.2	3.1	4.0	19.1	2.2	3.9
Green Ext Time (p_c), s	0.0	2.5	0.1	0.1	0.0	4.9	0.0	0.2

Intersection Summary		
HCM 6th Ctrl Delay		23.1
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	143	26	234	419	104	80	447	184	44	532	624
Future Volume (veh/h)	108	143	26	234	419	104	80	447	184	44	532	624
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	114	151	27	246	441	109	84	471	194	46	560	657
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	135	319	56	271	603	269	104	524	444	373	844	715
Arrive On Green	0.08	0.11	0.11	0.15	0.17	0.17	0.06	0.28	0.28	0.21	0.45	0.45
Sat Flow, veh/h	1767	2998	525	1767	3526	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	114	88	90	246	441	109	84	471	194	46	560	657
Grp Sat Flow(s),veh/h/ln	1767	1763	1761	1767	1763	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	5.7	4.2	4.4	12.3	10.7	5.6	4.2	22.0	5.7	1.9	21.2	21.7
Cycle Q Clear(g_c), s	5.7	4.2	4.4	12.3	10.7	5.6	4.2	22.0	5.7	1.9	21.2	21.7
Prop In Lane	1.00		0.30	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	135	188	187	271	603	269	104	524	444	373	844	715
V/C Ratio(X)	0.84	0.47	0.48	0.91	0.73	0.41	0.81	0.90	0.44	0.12	0.66	0.92
Avail Cap(c_a), veh/h	135	431	430	271	1160	517	104	594	503	373	844	715
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.65	0.65	0.65
Uniform Delay (d), s/veh	41.0	37.8	37.9	37.5	35.4	33.2	41.8	31.1	10.4	28.7	19.2	8.7
Incr Delay (d2), s/veh	35.4	1.8	1.9	31.7	1.7	1.0	35.8	21.0	3.1	0.1	2.7	13.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	1.8	1.8	7.4	4.5	2.1	2.8	11.8	3.4	0.8	8.3	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.4	39.6	39.8	69.2	37.1	34.2	77.6	52.0	13.6	28.8	21.9	22.2
LnGrp LOS	E	D	D	E	D	C	E	D	B	C	C	C
Approach Vol, veh/h		292			796			749			1263	
Approach Delay, s/veh		54.0			46.6			44.9			22.3	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.0	31.4	18.0	15.6	9.5	46.9	12.9	20.7				
Change Period (Y+Rc), s	6.0	* 6	* 4.2	6.0	* 4.2	6.0	6.0	* 5.3				
Max Green Setting (Gmax), s	5.0	* 29	* 14	22.0	* 5.3	28.5	6.9	* 30				
Max Q Clear Time (g_c+I1), s	3.9	24.0	14.3	6.4	6.2	23.7	7.7	12.7				
Green Ext Time (p_c), s	0.0	1.4	0.0	0.6	0.0	2.5	0.0	2.7				
Intersection Summary												
HCM 6th Ctrl Delay			37.0									
HCM 6th LOS			D									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	108	84	170	232	32	43	1449	80	74	1623	457
Future Volume (veh/h)	182	108	84	170	232	32	43	1449	80	74	1623	457
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	198	117	91	185	252	35	47	1575	87	80	1764	497
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	227	157	133	336	289	245	60	1829	568	332	2653	823
Arrive On Green	0.13	0.08	0.08	0.19	0.16	0.16	0.03	0.36	0.36	0.19	0.52	0.52
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	5066	1572	1767	5066	1572
Grp Volume(v), veh/h	198	117	91	185	252	35	47	1575	87	80	1764	497
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1689	1572	1767	1689	1572
Q Serve(g_s), s	13.2	7.4	5.9	11.4	15.9	1.6	3.2	34.6	4.5	4.6	30.5	26.4
Cycle Q Clear(g_c), s	13.2	7.4	5.9	11.4	15.9	1.6	3.2	34.6	4.5	4.6	30.5	26.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	227	157	133	336	289	245	60	1829	568	332	2653	823
V/C Ratio(X)	0.87	0.75	0.69	0.55	0.87	0.14	0.78	0.86	0.15	0.24	0.67	0.60
Avail Cap(c_a), veh/h	292	436	370	336	387	328	100	1959	608	332	2653	823
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.54	0.54	0.54	0.09	0.09	0.09
Uniform Delay (d), s/veh	51.4	53.7	41.0	43.9	49.5	19.8	57.5	35.6	25.9	41.5	20.9	19.9
Incr Delay (d2), s/veh	20.2	6.9	6.1	1.9	15.3	0.3	11.1	3.1	0.3	0.0	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	3.7	2.8	5.0	8.4	0.9	1.6	14.1	1.7	2.0	11.1	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.5	60.6	47.1	45.9	64.8	20.1	68.6	38.7	26.2	41.5	21.0	20.2
LnGrp LOS	E	E	D	D	E	C	E	D	C	D	C	C
Approach Vol, veh/h		406			472			1709			2341	
Approach Delay, s/veh		62.9			54.0			38.9			21.5	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.8	48.6	28.1	15.4	8.3	68.1	19.6	24.0
Change Period (Y+Rc), s	5.3	* 5.3	5.3	* 5.3	* 4.2	5.3	* 4.2	5.3
Max Green Setting (Gmax), s	9.8	* 46	16.6	* 28	* 6.8	49.4	* 20	25.0
Max Q Clear Time (g_c+I1), s	6.6	36.6	13.4	9.4	5.2	32.5	15.2	17.9
Green Ext Time (p_c), s	0.0	6.7	0.1	0.7	0.0	12.2	0.2	0.8

Intersection Summary	
HCM 6th Ctrl Delay	34.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	436	254	24	11	568	174	174	218	78	81	193	540
Future Volume (veh/h)	436	254	24	11	568	174	174	218	78	81	193	540
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	474	276	26	12	617	189	189	237	85	88	210	587
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	506	934	792	25	762	340	223	292	247	188	289	695
Arrive On Green	0.29	0.50	0.50	0.01	0.22	0.22	0.13	0.16	0.16	0.11	0.16	0.16
Sat Flow, veh/h	1767	1856	1572	1767	3526	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	474	276	26	12	617	189	189	237	85	88	210	587
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1763	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	25.7	8.5	0.8	0.7	16.3	10.5	10.3	12.1	4.1	4.6	10.6	9.9
Cycle Q Clear(g_c), s	25.7	8.5	0.8	0.7	16.3	10.5	10.3	12.1	4.1	4.6	10.6	9.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	506	934	792	25	762	340	223	292	247	188	289	695
V/C Ratio(X)	0.94	0.30	0.03	0.48	0.81	0.56	0.85	0.81	0.34	0.47	0.73	0.84
Avail Cap(c_a), veh/h	543	998	846	90	979	437	304	679	576	188	481	858
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.2	14.2	12.3	48.1	36.6	34.3	42.0	40.0	27.3	41.3	39.5	8.1
Incr Delay (d2), s/veh	23.3	0.2	0.0	13.4	4.0	1.4	15.0	5.4	0.8	1.8	3.5	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.6	3.3	0.3	0.4	7.0	3.9	5.1	5.6	1.8	2.0	4.8	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.5	14.4	12.3	61.5	40.6	35.7	57.0	45.4	28.1	43.1	43.0	14.6
LnGrp LOS	E	B	B	E	D	D	E	D	C	D	D	B
Approach Vol, veh/h		776			818			511			885	
Approach Delay, s/veh		40.6			39.8			46.8			24.2	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.5	21.5	5.6	54.8	16.6	21.3	33.4	26.9
Change Period (Y+Rc), s	6.0	* 6	* 4.2	5.3	* 4.2	6.0	5.3	* 5.7
Max Green Setting (Gmax), s	6.4	* 36	* 5	52.9	* 17	25.5	30.2	* 27
Max Q Clear Time (g_c+I1), s	6.6	14.1	2.7	10.5	12.3	12.6	27.7	18.3
Green Ext Time (p_c), s	0.0	1.3	0.0	1.6	0.2	2.7	0.4	2.9

Intersection Summary	
HCM 6th Ctrl Delay	36.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	122	106	177	309	133	90	1232	64	117	1455	350
Future Volume (veh/h)	182	122	106	177	309	133	90	1232	64	117	1455	350
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	196	131	114	190	332	143	97	1325	69	126	1565	376
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	212	388	329	212	388	329	206	1861	578	147	1632	507
Arrive On Green	0.12	0.21	0.21	0.12	0.21	0.21	0.12	0.37	0.37	0.08	0.32	0.32
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	5066	1572	1767	5066	1572
Grp Volume(v), veh/h	196	131	114	190	332	143	97	1325	69	126	1565	376
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1689	1572	1767	1689	1572
Q Serve(g_s), s	9.9	5.4	3.9	9.5	15.5	7.1	4.6	20.2	2.6	6.3	27.3	12.8
Cycle Q Clear(g_c), s	9.9	5.4	3.9	9.5	15.5	7.1	4.6	20.2	2.6	6.3	27.3	12.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	212	388	329	212	388	329	206	1861	578	147	1632	507
V/C Ratio(X)	0.92	0.34	0.35	0.90	0.86	0.43	0.47	0.71	0.12	0.86	0.96	0.74
Avail Cap(c_a), veh/h	212	515	437	212	515	437	206	1861	578	147	1632	507
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Uniform Delay (d), s/veh	39.2	30.3	14.6	39.0	34.3	31.0	37.2	24.4	18.8	40.7	29.9	12.1
Incr Delay (d2), s/veh	41.3	0.5	0.6	35.0	10.4	0.9	1.7	2.3	0.4	26.6	10.8	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	2.3	2.0	5.9	7.6	2.6	2.0	7.6	0.9	3.7	11.7	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.5	30.8	15.2	74.1	44.7	31.9	38.9	26.7	19.3	67.3	40.8	18.6
LnGrp LOS	F	C	B	E	D	C	D	C	B	E	D	B
Approach Vol, veh/h		441			665			1491			2067	
Approach Delay, s/veh		48.8			50.3			27.2			38.3	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	38.8	15.0	24.5	16.2	34.3	15.0	24.5
Change Period (Y+Rc), s	* 4.2	5.7	* 4.2	5.7	5.7	* 5.3	* 4.2	5.7
Max Green Setting (Gmax), s	* 7.5	26.9	* 11	25.0	5.8	* 29	* 11	25.0
Max Q Clear Time (g_c+I1), s	8.3	22.2	11.5	7.4	6.6	29.3	11.9	17.5
Green Ext Time (p_c), s	0.0	3.2	0.0	0.8	0.0	0.0	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	37.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	480	64	98	149	49	52	824	73	74	501	44
Future Volume (veh/h)	134	480	64	98	149	49	52	824	73	74	501	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	140	500	67	102	155	51	54	858	76	77	522	46
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	168	532	71	126	424	140	70	1206	107	98	1259	111
Arrive On Green	0.10	0.33	0.33	0.07	0.32	0.32	0.03	0.25	0.25	0.06	0.38	0.38
Sat Flow, veh/h	1767	1602	215	1767	1337	440	1767	3276	290	1767	3278	288
Grp Volume(v), veh/h	140	0	567	102	0	206	54	462	472	77	280	288
Grp Sat Flow(s),veh/h/ln	1767	0	1817	1767	0	1776	1767	1763	1803	1767	1763	1804
Q Serve(g_s), s	9.3	0.0	36.4	6.8	0.0	10.7	3.6	28.7	28.7	5.2	14.0	14.0
Cycle Q Clear(g_c), s	9.3	0.0	36.4	6.8	0.0	10.7	3.6	28.7	28.7	5.2	14.0	14.0
Prop In Lane	1.00		0.12	1.00		0.25	1.00		0.16	1.00		0.16
Lane Grp Cap(c), veh/h	168	0	603	126	0	564	70	649	664	98	677	693
V/C Ratio(X)	0.83	0.00	0.94	0.81	0.00	0.37	0.78	0.71	0.71	0.79	0.41	0.42
Avail Cap(c_a), veh/h	267	0	653	156	0	564	138	649	664	130	677	693
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.86	0.00	0.86	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.4	0.0	38.9	54.9	0.0	31.6	57.9	39.4	39.4	56.0	27.1	27.1
Incr Delay (d2), s/veh	11.9	0.0	21.0	19.4	0.0	0.3	16.5	6.5	6.4	20.5	1.9	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	18.9	3.6	0.0	4.5	1.9	13.7	14.0	2.8	5.9	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.2	0.0	60.0	74.3	0.0	32.0	74.4	45.9	45.7	76.5	28.9	28.9
LnGrp LOS	E	A	E	E	A	C	E	D	D	E	C	C
Approach Vol, veh/h		707			308			988			645	
Approach Delay, s/veh		61.0			46.0			47.4			34.6	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	50.2	13.9	45.1	8.9	52.1	15.6	43.4
Change Period (Y+Rc), s	* 4.2	6.0	5.3	* 5.3	* 4.2	6.0	* 4.2	5.3
Max Green Setting (Gmax), s	* 8.8	37.8	10.6	* 43	* 9.4	37.2	* 18	35.6
Max Q Clear Time (g_c+I1), s	7.2	30.7	8.8	38.4	5.6	16.0	11.3	12.7
Green Ext Time (p_c), s	0.0	2.9	0.0	1.4	0.0	2.8	0.2	1.0

Intersection Summary	
HCM 6th Ctrl Delay	47.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	222	190	191	137	178	99	1809	378	137	1273	85
Future Volume (veh/h)	149	222	190	191	137	178	99	1809	378	137	1273	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	159	236	202	203	146	189	105	1924	402	146	1354	90
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	431	257	220	174	236	200	244	1985	616	130	1544	103
Arrive On Green	0.24	0.28	0.28	0.10	0.13	0.13	0.14	0.39	0.39	0.07	0.32	0.32
Sat Flow, veh/h	1767	923	790	1767	1856	1572	1767	5066	1572	1767	4852	323
Grp Volume(v), veh/h	159	0	438	203	146	189	105	1924	402	146	942	502
Grp Sat Flow(s),veh/h/ln	1767	0	1713	1767	1856	1572	1767	1689	1572	1767	1689	1797
Q Serve(g_s), s	9.0	0.0	29.8	11.8	8.9	11.9	6.5	44.7	25.1	8.8	31.7	31.7
Cycle Q Clear(g_c), s	9.0	0.0	29.8	11.8	8.9	11.9	6.5	44.7	25.1	8.8	31.7	31.7
Prop In Lane	1.00		0.46	1.00		1.00	1.00		1.00	1.00		0.18
Lane Grp Cap(c), veh/h	431	0	476	174	236	200	244	1985	616	130	1075	572
V/C Ratio(X)	0.37	0.00	0.92	1.17	0.62	0.95	0.43	0.97	0.65	1.13	0.88	0.88
Avail Cap(c_a), veh/h	431	0	571	174	623	528	244	1985	616	130	1143	608
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.33	0.00	0.33	1.00	1.00	1.00	0.20	0.20	0.20	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	0.0	42.0	54.1	49.6	35.7	47.4	35.8	29.8	55.6	38.7	38.7
Incr Delay (d2), s/veh	0.2	0.0	7.5	120.8	2.7	19.2	0.2	4.3	1.1	117.1	10.1	17.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	13.1	11.0	4.3	5.5	2.8	18.1	9.3	8.0	14.0	16.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.9	0.0	49.5	174.9	52.3	55.0	47.7	40.1	30.9	172.7	48.8	55.8
LnGrp LOS	D	A	D	F	D	D	D	D	C	F	D	E
Approach Vol, veh/h		597			538			2431			1590	
Approach Delay, s/veh		46.4			99.5			38.9			62.4	
Approach LOS		D			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	52.3	16.0	38.7	21.8	43.5	34.5	20.1
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	5.3	5.3	* 5.3	5.3	* 4.9
Max Green Setting (Gmax), s	* 8.8	40.4	* 12	40.0	8.6	* 41	11.9	* 40
Max Q Clear Time (g_c+I1), s	10.8	46.7	13.8	31.8	8.5	33.7	11.0	13.9
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	4.5	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	53.3
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	0.6					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	23	15	863	590	15
Future Vol, veh/h	9	23	15	863	590	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	10	25	16	938	641	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1619	329	657	0	-	0
Stage 1	649	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Critical Hdwy	6.645	6.945	4.145	-	-	-
Critical Hdwy Stg 1	5.845	-	-	-	-	-
Critical Hdwy Stg 2	5.445	-	-	-	-	-
Follow-up Hdwy	3.5285	3.3285	2.2285	-	-	-
Pot Cap-1 Maneuver	103	665	923	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	99	665	923	-	-	-
Mov Cap-2 Maneuver	99	-	-	-	-	-
Stage 1	464	-	-	-	-	-
Stage 2	365	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.3	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	923	-	255	-	-
HCM Lane V/C Ratio	0.018	-	0.136	-	-
HCM Control Delay (s)	9	0	21.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	88	182	63	16	44	122	707	225	111	423	60
Future Volume (veh/h)	128	88	182	63	16	44	122	707	225	111	423	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	139	96	198	68	17	48	133	768	245	121	460	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	328	105	216	87	24	69	691	945	801	147	579	81
Arrive On Green	0.19	0.19	0.19	0.05	0.06	0.06	0.39	0.51	0.51	0.03	0.06	0.06
Sat Flow, veh/h	1767	540	1115	1767	428	1209	1767	1856	1572	1767	3103	436
Grp Volume(v), veh/h	139	0	294	68	0	65	133	768	245	121	260	265
Grp Sat Flow(s),veh/h/ln	1767	0	1655	1767	0	1638	1767	1856	1572	1767	1763	1777
Q Serve(g_s), s	8.3	0.0	20.9	4.6	0.0	4.7	5.9	41.6	7.9	8.2	17.5	17.6
Cycle Q Clear(g_c), s	8.3	0.0	20.9	4.6	0.0	4.7	5.9	41.6	7.9	8.2	17.5	17.6
Prop In Lane	1.00		0.67	1.00		0.74	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	328	0	321	87	0	93	691	945	801	147	329	332
V/C Ratio(X)	0.42	0.00	0.92	0.78	0.00	0.70	0.19	0.81	0.31	0.82	0.79	0.80
Avail Cap(c_a), veh/h	328	0	348	112	0	273	691	945	801	159	746	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.37	0.37	0.37	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.2	0.0	47.4	56.4	0.0	55.5	24.0	24.6	9.0	57.5	54.0	54.1
Incr Delay (d2), s/veh	0.9	0.0	27.1	23.3	0.0	8.9	0.0	2.9	0.4	26.4	17.5	17.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	10.8	2.6	0.0	2.1	2.4	17.0	3.6	4.8	9.8	10.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.0	0.0	74.6	79.7	0.0	64.5	24.1	27.6	9.4	83.8	71.5	72.0
LnGrp LOS	D	A	E	E	A	E	C	C	A	F	E	E
Approach Vol, veh/h		433			133			1146			646	
Approach Delay, s/veh		64.8			72.3			23.3			74.0	
Approach LOS		E			E			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	67.1	10.1	28.6	53.0	28.4	26.5	12.2
Change Period (Y+Rc), s	* 4.2	6.0	4.2	* 5.3	6.0	* 6	4.2	* 5.3
Max Green Setting (Gmax), s	* 11	56.7	7.6	* 25	16.7	* 51	12.8	* 20
Max Q Clear Time (g_c+I1), s	10.2	43.6	6.6	22.9	7.9	19.6	10.3	6.7
Green Ext Time (p_c), s	0.0	4.6	0.0	0.4	0.2	2.8	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	47.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	104	1527	1255
Demand Flow Rate, veh/h	107	1572	1292
Vehicles Circulating, veh/h	1559	15	15
Vehicles Exiting, veh/h	28	1292	1651
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	15.1	9.2	7.5
Approach LOS	C	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	107	739	833	607	685
Cap Entry Lane, veh/h	377	1331	1402	1331	1402
Entry HV Adj Factor	0.972	0.971	0.971	0.972	0.971
Flow Entry, veh/h	104	717	809	590	665
Cap Entry, veh/h	367	1293	1362	1294	1361
V/C Ratio	0.284	0.555	0.594	0.456	0.489
Control Delay, s/veh	15.1	9.0	9.4	7.4	7.6
LOS	C	A	A	A	A
95th %tile Queue, veh	1	4	4	2	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	29	10	54	39	78	34	969	41	27	620	25
Future Volume (veh/h)	6	29	10	54	39	78	34	969	41	27	620	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	6	31	11	58	42	84	37	1042	44	29	667	27
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	14	123	104	76	56	112	60	1115	47	51	2161	87
Arrive On Green	0.01	0.07	0.07	0.04	0.10	0.10	0.03	0.63	0.63	0.03	0.63	0.63
Sat Flow, veh/h	1767	1856	1572	1767	552	1104	1767	1767	75	1767	3453	140
Grp Volume(v), veh/h	6	31	11	58	0	126	37	0	1086	29	340	354
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	0	1657	1767	0	1842	1767	1763	1830
Q Serve(g_s), s	0.3	1.4	0.6	2.9	0.0	6.5	1.8	0.0	46.8	1.4	7.9	7.9
Cycle Q Clear(g_c), s	0.3	1.4	0.6	2.9	0.0	6.5	1.8	0.0	46.8	1.4	7.9	7.9
Prop In Lane	1.00		1.00	1.00		0.67	1.00		0.04	1.00		0.08
Lane Grp Cap(c), veh/h	14	123	104	76	0	168	60	0	1162	51	1103	1145
V/C Ratio(X)	0.44	0.25	0.11	0.76	0.00	0.75	0.62	0.00	0.93	0.57	0.31	0.31
Avail Cap(c_a), veh/h	100	547	463	100	0	488	136	0	1328	100	1235	1282
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.6	39.1	38.7	41.8	0.0	38.5	42.1	0.0	14.7	42.3	7.7	7.7
Incr Delay (d2), s/veh	20.5	1.1	0.4	21.6	0.0	6.5	10.0	0.0	11.4	9.6	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.6	0.2	1.6	0.0	2.8	0.9	0.0	17.0	0.7	2.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.1	40.2	39.2	63.4	0.0	45.0	52.1	0.0	26.1	51.9	7.8	7.8
LnGrp LOS	E	D	D	E	A	D	D	A	C	D	A	A
Approach Vol, veh/h		48			184			1123			723	
Approach Delay, s/veh		42.9			50.8			27.0			9.6	
Approach LOS		D			D			C			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	61.6	8.0	11.9	7.2	61.2	4.9	15.0
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	6.0	* 4.2	6.0	* 4.2	6.0
Max Green Setting (Gmax), s	* 5	63.6	* 5	26.0	* 6.8	61.8	* 5	26.0
Max Q Clear Time (g_c+I1), s	3.4	48.8	4.9	3.4	3.8	9.9	2.3	8.5
Green Ext Time (p_c), s	0.0	6.8	0.0	0.1	0.0	3.9	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	23.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	352	362	40	105	272	38	23	683	158	65	491	255
Future Volume (veh/h)	352	362	40	105	272	38	23	683	158	65	491	255
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	383	393	43	114	296	41	25	742	172	71	534	277
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	383	503	55	298	408	182	44	772	653	84	846	717
Arrive On Green	0.22	0.16	0.16	0.17	0.12	0.12	0.02	0.42	0.42	0.05	0.46	0.46
Sat Flow, veh/h	1767	3207	349	1767	3526	1572	1767	1856	1571	1767	1856	1572
Grp Volume(v), veh/h	383	215	221	114	296	41	25	742	172	71	534	277
Grp Sat Flow(s),veh/h/ln	1767	1763	1793	1767	1763	1572	1767	1856	1571	1767	1856	1572
Q Serve(g_s), s	22.8	12.3	12.5	6.0	8.5	2.5	1.5	41.0	7.6	4.2	23.1	5.2
Cycle Q Clear(g_c), s	22.8	12.3	12.5	6.0	8.5	2.5	1.5	41.0	7.6	4.2	23.1	5.2
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	383	277	281	298	408	182	44	772	653	84	846	717
V/C Ratio(X)	1.00	0.78	0.79	0.38	0.73	0.23	0.57	0.96	0.26	0.85	0.63	0.39
Avail Cap(c_a), veh/h	383	581	591	298	938	418	84	785	664	84	846	717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.2	42.6	42.7	38.9	44.9	42.3	50.8	29.9	20.2	49.7	21.9	3.4
Incr Delay (d2), s/veh	46.1	4.7	4.8	0.8	2.5	0.6	11.4	22.9	0.2	51.2	1.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.1	5.4	5.6	2.6	3.7	1.0	0.8	21.1	2.6	3.0	9.3	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.3	47.3	47.5	39.7	47.4	42.9	62.1	52.9	20.4	100.9	23.4	3.7
LnGrp LOS	F	D	D	D	D	D	E	D	C	F	C	A
Approach Vol, veh/h		819			451			939			882	
Approach Delay, s/veh		66.0			45.0			47.2			23.5	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	49.8	22.0	22.5	6.8	54.0	27.0	17.5
Change Period (Y+Rc), s	6.0	* 6	4.2	* 6	* 4.2	6.0	4.2	* 5.3
Max Green Setting (Gmax), s	5.0	* 45	15.4	* 35	* 5	44.5	22.8	* 28
Max Q Clear Time (g_c+I1), s	6.2	43.0	8.0	14.5	3.5	25.1	24.8	10.5
Green Ext Time (p_c), s	0.0	0.8	0.1	2.0	0.0	3.7	0.0	1.6

Intersection Summary	
HCM 6th Ctrl Delay	45.1
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	374	148	45	76	102	42	46	2051	99	77	1490	257
Future Volume (veh/h)	374	148	45	76	102	42	46	2051	99	77	1490	257
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	386	153	46	78	105	43	47	2114	102	79	1536	265
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	405	200	169	355	147	125	63	2279	708	85	2396	744
Arrive On Green	0.23	0.11	0.11	0.20	0.08	0.08	0.04	0.45	0.45	0.05	0.47	0.47
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	5066	1572	1767	5066	1572
Grp Volume(v), veh/h	386	153	46	78	105	43	47	2114	102	79	1536	265
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1689	1572	1767	1689	1572
Q Serve(g_s), s	22.4	8.3	2.4	3.8	5.7	2.7	2.7	40.9	4.0	4.6	23.8	4.3
Cycle Q Clear(g_c), s	22.4	8.3	2.4	3.8	5.7	2.7	2.7	40.9	4.0	4.6	23.8	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	405	200	169	355	147	125	63	2279	708	85	2396	744
V/C Ratio(X)	0.95	0.77	0.27	0.22	0.71	0.34	0.74	0.93	0.14	0.93	0.64	0.36
Avail Cap(c_a), veh/h	405	657	557	355	447	378	100	2302	714	85	2396	744
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.5	45.1	31.3	34.7	46.7	45.3	49.6	27.0	16.8	49.3	20.7	2.7
Incr Delay (d2), s/veh	32.8	6.0	0.9	0.3	6.3	1.6	15.8	7.2	0.1	74.1	0.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	4.0	1.1	1.6	2.8	1.1	1.4	16.4	1.4	3.7	8.7	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.3	51.1	32.2	35.0	52.9	46.9	65.4	34.2	16.9	123.3	21.3	3.0
LnGrp LOS	E	D	C	D	D	D	E	C	B	F	C	A
Approach Vol, veh/h		585			226			2263			1880	
Approach Delay, s/veh		63.6			45.6			34.1			23.0	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	52.0	25.0	16.5	7.9	54.4	28.0	13.5
Change Period (Y+Rc), s	5.3	* 5.3	4.2	* 5.3	* 4.2	5.3	4.2	* 5.3
Max Green Setting (Gmax), s	5.0	* 47	12.0	* 37	* 5.9	46.3	23.8	* 25
Max Q Clear Time (g_c+I1), s	6.6	42.9	5.8	10.3	4.7	25.8	24.4	7.7
Green Ext Time (p_c), s	0.0	3.8	0.1	0.9	0.0	11.6	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	33.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	541	357	24	59	224	132	115	341	125	85	372	190
Future Volume (veh/h)	541	357	24	59	224	132	115	341	125	85	372	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	576	380	26	63	238	140	122	363	133	90	396	202
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	538	724	611	81	464	207	152	538	452	108	457	866
Arrive On Green	0.30	0.39	0.39	0.05	0.13	0.13	0.09	0.29	0.29	0.06	0.25	0.25
Sat Flow, veh/h	1767	1856	1564	1767	3526	1572	1767	1856	1562	1767	1856	1572
Grp Volume(v), veh/h	576	380	26	63	238	140	122	363	133	90	396	202
Grp Sat Flow(s),veh/h/ln	1767	1856	1564	1767	1763	1572	1767	1856	1562	1767	1856	1572
Q Serve(g_s), s	28.8	14.8	0.6	3.3	5.9	8.0	6.4	16.3	6.3	4.8	19.3	2.7
Cycle Q Clear(g_c), s	28.8	14.8	0.6	3.3	5.9	8.0	6.4	16.3	6.3	4.8	19.3	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	538	724	611	81	464	207	152	538	452	108	457	866
V/C Ratio(X)	1.07	0.52	0.04	0.78	0.51	0.68	0.80	0.68	0.29	0.83	0.87	0.23
Avail Cap(c_a), veh/h	538	954	804	185	1093	487	202	706	595	108	608	995
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.9	22.1	7.7	44.6	38.2	39.1	42.4	29.6	26.1	43.9	34.2	3.2
Incr Delay (d2), s/veh	58.9	0.6	0.0	14.5	0.9	3.8	15.7	1.6	0.4	39.3	10.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	20.2	6.1	0.3	1.7	2.5	3.1	3.3	6.8	2.2	3.1	9.2	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	91.8	22.7	7.7	59.1	39.1	42.9	58.1	31.3	26.4	83.2	44.1	3.3
LnGrp LOS	F	C	A	E	D	D	E	C	C	F	D	A
Approach Vol, veh/h		982			441			618			688	
Approach Delay, s/veh		62.8			43.2			35.5			37.3	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	33.4	8.5	42.6	14.1	29.3	33.0	18.2
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	* 5.7	6.0	* 6	* 4.2	5.7
Max Green Setting (Gmax), s	* 5.8	36.0	* 9.9	* 49	10.8	* 31	* 29	29.3
Max Q Clear Time (g_c+I1), s	6.8	18.3	5.3	16.8	8.4	21.3	30.8	10.0
Green Ext Time (p_c), s	0.0	2.1	0.0	2.2	0.1	1.9	0.0	1.6

Intersection Summary	
HCM 6th Ctrl Delay	47.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	391	42	181	213	160	35	1646	53	72	1449	145
Future Volume (veh/h)	230	391	42	181	213	160	35	1646	53	72	1449	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	240	407	44	189	222	167	36	1715	55	75	1509	151
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	268	438	371	216	407	345	173	2079	645	95	1810	562
Arrive On Green	0.15	0.24	0.24	0.12	0.22	0.22	0.10	0.41	0.41	0.05	0.36	0.36
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	5066	1572	1767	5066	1572
Grp Volume(v), veh/h	240	407	44	189	222	167	36	1715	55	75	1509	151
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1689	1572	1767	1689	1572
Q Serve(g_s), s	16.0	25.8	2.6	12.6	12.7	11.1	2.3	36.2	1.6	5.0	32.7	5.3
Cycle Q Clear(g_c), s	16.0	25.8	2.6	12.6	12.7	11.1	2.3	36.2	1.6	5.0	32.7	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	268	438	371	216	407	345	173	2079	645	95	1810	562
V/C Ratio(X)	0.90	0.93	0.12	0.88	0.55	0.48	0.21	0.83	0.09	0.79	0.83	0.27
Avail Cap(c_a), veh/h	308	469	397	233	407	345	173	2079	645	115	2014	625
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.72	0.72
Uniform Delay (d), s/veh	50.0	44.8	36.0	51.8	41.5	40.9	49.9	31.5	8.6	56.1	35.3	11.3
Incr Delay (d2), s/veh	24.8	24.2	0.1	27.8	1.5	1.1	0.6	3.9	0.3	19.2	3.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	14.3	1.0	7.1	5.8	4.3	1.0	14.5	0.9	2.7	13.4	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.8	69.0	36.1	79.6	43.1	42.0	50.5	35.4	8.9	75.3	38.7	12.1
LnGrp LOS	E	E	D	E	D	D	D	D	A	E	D	B
Approach Vol, veh/h		691			578			1806			1735	
Approach Delay, s/veh		68.9			54.7			34.9			38.0	
Approach LOS		E			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	54.9	20.3	34.0	17.4	48.2	22.4	32.0
Change Period (Y+Rc), s	* 4.2	5.7	5.7	* 5.7	5.7	* 5.3	* 4.2	5.7
Max Green Setting (Gmax), s	* 7.8	46.3	15.8	* 30	6.8	* 48	* 21	25.2
Max Q Clear Time (g_c+I1), s	7.0	38.2	14.6	27.8	4.3	34.7	18.0	14.7
Green Ext Time (p_c), s	0.0	6.0	0.1	0.6	0.0	8.2	0.2	1.2

Intersection Summary		
HCM 6th Ctrl Delay		43.3
HCM 6th LOS		D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: Armstrong Ave & Clinton Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	96	135	184	536	133	138	173	93	286	268
Average Queue (ft)	49	78	86	255	59	67	76	39	153	164
95th Queue (ft)	86	122	153	410	106	118	146	72	240	253
Link Distance (ft)		1218		2579		1261	1261		1256	1256
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)				12					1	
Queuing Penalty (veh)				16					1	

Intersection: 2: Temperance Ave & Clinton Ave

Movement	EB	EB	WB	WB	WB	B28	NB	NB	NB	NB	NB	SB
Directions Served	L	TR	L	T	R	T	L	T	T	T	R	L
Maximum Queue (ft)	120	309	300	1164	370	1103	349	396	438	460	210	300
Average Queue (ft)	82	134	281	899	214	378	172	203	225	246	126	252
95th Queue (ft)	136	235	353	1545	473	917	277	341	376	417	258	369
Link Distance (ft)		2579		1074		1374		5264	5264	5264		
Upstream Blk Time (%)				41								
Queuing Penalty (veh)				0								
Storage Bay Dist (ft)	60		200		250		250				150	150
Storage Blk Time (%)	25	35	60	4			5	4		28	0	31
Queuing Penalty (veh)	43	33	329	22			18	7		60	0	173

Intersection: 2: Temperance Ave & Clinton Ave

Movement	SB	SB	SB
Directions Served	T	T	TR
Maximum Queue (ft)	851	831	866
Average Queue (ft)	513	507	503
95th Queue (ft)	820	810	814
Link Distance (ft)	1261	1261	1261
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)	49		
Queuing Penalty (veh)	111		

Intersection: 3: Fowler Ave & Kerry Ave

Movement	WB	SB
Directions Served	R	LT
Maximum Queue (ft)	97	607
Average Queue (ft)	50	170
95th Queue (ft)	83	417
Link Distance (ft)	2557	1222
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Armstrong Ave & Kerry Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	91	183
Average Queue (ft)	26	31
95th Queue (ft)	60	107
Link Distance (ft)	2557	1208
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Armstrong Ave & McKinley Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	TR
Maximum Queue (ft)	92	181	255	231	213	233	30	95	305	304
Average Queue (ft)	54	78	117	111	118	135	13	30	108	137
95th Queue (ft)	83	136	191	190	186	225	36	67	213	242
Link Distance (ft)		2562		2541		1344			1208	1208
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250		250	250		
Storage Blk Time (%)			0	0		0			1	
Queuing Penalty (veh)			0	0		0			0	

Intersection: 6: Fowler Ave & Floradora Ave

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	TR	LT	T
Maximum Queue (ft)	52	170	152	144	170
Average Queue (ft)	23	99	44	66	31
95th Queue (ft)	54	174	145	132	118
Link Distance (ft)	2488	1214	1214	824	824
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: Armstrong Ave & Floradora Ave

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	T	TR
Maximum Queue (ft)	49	30	52	138	71	87	253	79	280	266
Average Queue (ft)	10	9	20	69	22	32	118	20	104	130
95th Queue (ft)	32	29	39	118	54	61	217	57	197	222
Link Distance (ft)		2488			2565		1228		1344	1344
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		100	250		170		250		
Storage Blk Time (%)							2		1	
Queuing Penalty (veh)							1		0	

Intersection: 8: Armstrong Ave & Olive Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	163	103	87	222	170	230	63	120	312	75	369	458
Average Queue (ft)	88	55	28	132	95	108	29	62	173	40	48	218
95th Queue (ft)	161	92	68	197	166	184	54	108	306	72	158	367
Link Distance (ft)		1323	1323		1247	1247			1237			1228
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150			130			250	250		250	250	
Storage Blk Time (%)	3			13	3				4			6
Queuing Penalty (veh)	2			27	7				11			3

Intersection: 8: Armstrong Ave & Olive Ave

Movement	SB
Directions Served	R
Maximum Queue (ft)	330
Average Queue (ft)	190
95th Queue (ft)	307
Link Distance (ft)	1228
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: Temperance Ave & Olive Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	212	212	85	222	433	370	89	387	421	436	368	132
Average Queue (ft)	122	80	28	116	200	29	38	210	220	240	30	62
95th Queue (ft)	205	154	66	195	347	136	74	349	368	396	137	104
Link Distance (ft)		1220			2540			2528	2528	2528		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250		250	250		250	250				250	250
Storage Blk Time (%)					7			6		10		
Queuing Penalty (veh)					14			3		8		

Intersection: 9: Temperance Ave & Olive Ave

Movement	SB	SB	SB	SB
Directions Served	T	T	T	R
Maximum Queue (ft)	427	428	410	370
Average Queue (ft)	174	189	202	123
95th Queue (ft)	341	366	372	302
Link Distance (ft)	5264	5264	5264	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				250
Storage Blk Time (%)	2		6	1
Queuing Penalty (veh)	2		29	4

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	369	474	44	48	222	260	163	220	194	195	157	203
Average Queue (ft)	237	118	5	9	136	142	55	109	112	34	54	115
95th Queue (ft)	358	323	21	33	209	220	123	187	184	125	115	184
Link Distance (ft)		2488	2488		1186	1186			1883			557
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250			250			250	300		130	250	
Storage Blk Time (%)	11	0				0			8			
Queuing Penalty (veh)	28	0				1			20			

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	SB
Directions Served	R
Maximum Queue (ft)	236
Average Queue (ft)	107
95th Queue (ft)	192
Link Distance (ft)	557
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Temperance Ave & Belmont Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	222	124	88	265	238	91	185	272	260	289	38	182
Average Queue (ft)	122	49	32	129	150	30	70	183	172	146	15	80
95th Queue (ft)	196	103	71	214	218	62	149	249	234	227	29	141
Link Distance (ft)		1284			2559			2232	2232	2232		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250		250	250		250	250				250	250
Storage Blk Time (%)				1	0			1				
Queuing Penalty (veh)				4	0			0				

Intersection: 11: Temperance Ave & Belmont Ave

Movement	SB	SB	SB	SB
Directions Served	T	T	T	R
Maximum Queue (ft)	388	452	428	370
Average Queue (ft)	192	206	225	95
95th Queue (ft)	321	346	361	210
Link Distance (ft)	2528	2528	2528	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				250
Storage Blk Time (%)	3		6	
Queuing Penalty (veh)	4		20	

Zone Summary

Zone wide Queuing Penalty: 1002

Intersection: 1: Armstrong Ave & Clinton Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	370	688	156	312	96	274	311	140	206	184
Average Queue (ft)	192	344	80	114	45	165	201	58	115	101
95th Queue (ft)	391	526	142	218	91	268	301	113	174	155
Link Distance (ft)		1218		2579		1261	1261		1256	1256
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)		27		1		1				
Queuing Penalty (veh)		37		1		0				

Intersection: 2: Temperance Ave & Clinton Ave

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	T	T	T	R	L	T
Maximum Queue (ft)	120	661	300	830	370	350	1430	1486	1513	210	299	325
Average Queue (ft)	100	403	260	311	133	154	749	786	820	189	154	228
95th Queue (ft)	144	596	348	725	372	386	1372	1417	1476	264	276	328
Link Distance (ft)		2579		1074			5264	5264	5264			1261
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	60		200		250	250				150	150	
Storage Blk Time (%)	26	46	58	0			51		56	6	23	26
Queuing Penalty (veh)	105	69	184	1			50		214	37	99	35

Intersection: 2: Temperance Ave & Clinton Ave

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	357	353
Average Queue (ft)	227	214
95th Queue (ft)	334	318
Link Distance (ft)	1261	1261
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Fowler Ave & Kerry Ave

Movement	WB	SB
Directions Served	R	LT
Maximum Queue (ft)	96	353
Average Queue (ft)	36	90
95th Queue (ft)	73	233
Link Distance (ft)	2557	1222
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Armstrong Ave & Kerry Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	53	50
Average Queue (ft)	26	4
95th Queue (ft)	50	23
Link Distance (ft)	2557	1208
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Armstrong Ave & McKinley Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	TR
Maximum Queue (ft)	162	356	89	62	138	582	370	136	226	226
Average Queue (ft)	82	178	50	22	62	270	85	74	100	100
95th Queue (ft)	142	301	88	52	116	456	272	126	210	192
Link Distance (ft)		2562		2541		1344			1208	1208
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250		250	250		
Storage Blk Time (%)		3				8				
Queuing Penalty (veh)		4				28				

Intersection: 6: Fowler Ave & Floradora Ave

Movement	WB	NB	NB	SB
Directions Served	LR	T	TR	LT
Maximum Queue (ft)	96	337	313	81
Average Queue (ft)	40	196	153	34
95th Queue (ft)	79	300	320	72
Link Distance (ft)	2488	1214	1214	824
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Armstrong Ave & Floradora Ave

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	T	TR
Maximum Queue (ft)	28	70	27	91	156	269	437	98	206	193
Average Queue (ft)	4	19	8	47	63	40	167	36	71	51
95th Queue (ft)	19	52	27	83	116	146	365	84	160	131
Link Distance (ft)		2488			2565		1228		1344	1344
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		100	250		170		250		
Storage Blk Time (%)							7			
Queuing Penalty (veh)							3			

Intersection: 8: Armstrong Ave & Olive Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	225	582	540	172	113	126	63	368	686	370	133	299
Average Queue (ft)	195	237	195	70	68	71	12	36	336	121	47	137
95th Queue (ft)	250	481	435	131	112	123	34	144	548	349	96	270
Link Distance (ft)		1323	1323		1247	1247			1237			1228
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150			130			250	250		250	250	
Storage Blk Time (%)	40	4		2	0				23			3
Queuing Penalty (veh)	72	13		2	0				41			2

Intersection: 8: Armstrong Ave & Olive Ave

Movement	SB
Directions Served	R
Maximum Queue (ft)	110
Average Queue (ft)	38
95th Queue (ft)	84
Link Distance (ft)	1228
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: Temperance Ave & Olive Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	323	195	83	129	89	42	157	574	477	489	370	113
Average Queue (ft)	213	88	19	52	50	15	37	269	295	294	88	53
95th Queue (ft)	317	164	59	103	88	39	91	474	492	492	299	99
Link Distance (ft)		1220			2540			2528	2528	2528		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250		250	250		250	250				250	250
Storage Blk Time (%)	6							11		15		
Queuing Penalty (veh)	12							5		15		

Intersection: 9: Temperance Ave & Olive Ave

Movement	SB	SB	SB	SB
Directions Served	T	T	T	R
Maximum Queue (ft)	298	327	397	370
Average Queue (ft)	156	179	197	59
95th Queue (ft)	283	320	332	168
Link Distance (ft)	5264	5264	5264	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				250
Storage Blk Time (%)	2		4	
Queuing Penalty (veh)	2		11	

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	370	1868	970	132	104	109	125	174	349	197	115	366
Average Queue (ft)	363	925	80	48	58	59	46	70	161	41	57	175
95th Queue (ft)	393	1652	470	107	99	109	98	131	243	116	100	327
Link Distance (ft)		2488	2488		1186	1186			1883			557
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250			250			250	300		130	250	
Storage Blk Time (%)	64	0							15			7
Queuing Penalty (veh)	229	0							37			6

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	SB
Directions Served	R
Maximum Queue (ft)	66
Average Queue (ft)	28
95th Queue (ft)	56
Link Distance (ft)	557
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Temperance Ave & Belmont Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	369	556	63	206	238	144	89	354	337	334	56	134
Average Queue (ft)	151	214	20	136	137	66	29	252	249	218	19	71
95th Queue (ft)	248	401	51	193	210	121	67	332	330	299	43	122
Link Distance (ft)		1284			2559			2232	2232	2232		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250		250	250		250	250				250	250
Storage Blk Time (%)	0	7			0			8		2		
Queuing Penalty (veh)	0	20			0			3		1		

Intersection: 11: Temperance Ave & Belmont Ave

Movement	SB	SB	SB	SB
Directions Served	T	T	T	R
Maximum Queue (ft)	353	418	470	370
Average Queue (ft)	212	243	248	106
95th Queue (ft)	379	424	441	348
Link Distance (ft)	2528	2528	2528	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				250
Storage Blk Time (%)	9		14	
Queuing Penalty (veh)	7		20	

Zone Summary

Zone wide Queuing Penalty: 1366

Appendix J: Cumulative Year 2035 plus Project Traffic Conditions

Intersection	
Intersection Delay, s/veh	514.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	68	114	46	145	420	51	90	419	34	67	848	156
Future Vol, veh/h	68	114	46	145	420	51	90	419	34	67	848	156
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	74	124	50	158	457	55	98	455	37	73	922	170
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	55.3	332.4	257.5	847
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	30%	24%	6%
Vol Thru, %	77%	50%	68%	79%
Vol Right, %	6%	20%	8%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	543	228	616	1071
LT Vol	90	68	145	67
Through Vol	419	114	420	848
RT Vol	34	46	51	156
Lane Flow Rate	590	248	670	1164
Geometry Grp	1	1	1	1
Degree of Util (X)	1.436	0.66	1.63	2.81
Departure Headway (Hd)	15.734	20.084	13.805	11.729
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	236	183	268	326
Service Time	13.734	18.084	11.805	9.729
HCM Lane V/C Ratio	2.5	1.355	2.5	3.571
HCM Control Delay	257.5	55.3	332.4	847
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	19	3.9	26.5	73.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	101	76	363	303	246	167	1112	210	229	1680	117
Future Volume (veh/h)	95	101	76	363	303	246	167	1112	210	229	1680	117
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	110	117	88	422	352	286	194	1293	244	266	1953	136
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	113	160	120	426	332	270	88	662	556	104	642	45
Arrive On Green	0.06	0.16	0.16	0.24	0.35	0.35	0.05	0.36	0.36	0.06	0.37	0.37
Sat Flow, veh/h	1767	975	733	1767	946	769	1767	1856	1559	1767	1714	119
Grp Volume(v), veh/h	110	0	205	422	0	638	194	1293	244	266	0	2089
Grp Sat Flow(s),veh/h/ln	1767	0	1708	1767	0	1715	1767	1856	1559	1767	0	1833
Q Serve(g_s), s	7.2	0.0	13.2	27.6	0.0	40.8	5.8	41.4	13.9	6.8	0.0	43.5
Cycle Q Clear(g_c), s	7.2	0.0	13.2	27.6	0.0	40.8	5.8	41.4	13.9	6.8	0.0	43.5
Prop In Lane	1.00		0.43	1.00		0.45	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	113	0	281	426	0	603	88	662	556	104	0	687
V/C Ratio(X)	0.98	0.00	0.73	0.99	0.00	1.06	2.20	1.95	0.44	2.57	0.00	3.04
Avail Cap(c_a), veh/h	113	0	574	426	0	603	88	662	556	104	0	687
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.3	0.0	46.1	43.9	0.0	37.7	55.2	37.3	28.5	54.7	0.0	36.3
Incr Delay (d2), s/veh	77.2	0.0	3.6	40.7	0.0	53.2	574.0	434.9	0.5	733.9	0.0	922.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	5.7	16.5	0.0	25.2	16.6	97.6	5.1	24.0	0.0	194.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	131.4	0.0	49.7	84.6	0.0	90.9	629.1	472.2	29.0	788.5	0.0	959.0
LnGrp LOS	F	A	D	F	A	F	F	F	C	F	A	F
Approach Vol, veh/h		315			1060			1731			2355	
Approach Delay, s/veh		78.2			88.4			427.3			939.8	
Approach LOS		E			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	46.7	32.9	24.4	10.0	48.8	11.6	45.7
Change Period (Y+Rc), s	5.3	* 5.3	4.9	* 5.3	* 4.2	5.3	* 4.2	4.9
Max Green Setting (Gmax), s	6.8	* 41	8.8	* 39	* 5.8	42.4	* 7.4	40.8
Max Q Clear Time (g_c+I1), s	9.8	43.4	29.6	15.2	7.8	45.5	9.2	42.8
Green Ext Time (p_c), s	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0

Intersection Summary		
HCM 6th Ctrl Delay		562.4
HCM 6th LOS		F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	176	739	22	113	925
Future Vol, veh/h	0	176	739	22	113	925
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	191	803	24	123	1005

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	815	0	0	827	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	4.13	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	0	376	-	-	800	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	376	-	-	800	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.1	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	376	800	-
HCM Lane V/C Ratio	-	-	0.509	0.154	-
HCM Control Delay (s)	-	-	24.1	10.3	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	2.8	0.5	-

Intersection						
Int Delay, s/veh	1.6					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	72	50	492	972	50
Future Vol, veh/h	4	72	50	492	972	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	4	78	54	535	1057	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1727	1084	1111	0	-	0
Stage 1	1084	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	97	262	625	-	-	-
Stage 1	323	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	85	262	625	-	-	-
Mov Cap-2 Maneuver	85	-	-	-	-	-
Stage 1	283	-	-	-	-	-
Stage 2	522	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.3	1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	625	-	236	-	-
HCM Lane V/C Ratio	0.087	-	0.35	-	-
HCM Control Delay (s)	11.3	0	28.3	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0.3	-	1.5	-	-

Intersection	
Int Delay, s/veh	3455.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	26	152	208	144	102	207	338	51	48	809	159
Future Vol, veh/h	73	26	152	208	144	102	207	338	51	48	809	159
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	79	28	165	226	157	111	225	367	55	52	879	173

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2049	1942	966	2011	2001	395	1052	0	0	422	0	0
Stage 1	1070	1070	-	845	845	-	-	-	-	-	-	-
Stage 2	979	872	-	1166	1156	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	~ 41	65	307	~ 44	~ 59	652	658	-	-	1132	-	-
Stage 1	266	296	-	356	377	-	-	-	-	-	-	-
Stage 2	300	367	-	235	270	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	32	307	~ 3	~ 29	652	658	-	-	1132	-	-
Mov Cap-2 Maneuver	-	32	-	~ 3	~ 29	-	-	-	-	-	-	-
Stage 1	146	262	-	~ 195	207	-	-	-	-	-	-	-
Stage 2	~ 33	201	-	~ 86	239	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s		$ 17626.8	4.6	0.4
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	658	-	-	-	136	3	48	1132	-	-
HCM Lane V/C Ratio	0.342	-	-	-	1.423	75.362	5.571	0.046	-	-
HCM Control Delay (s)	13.3	0	-	-	287.8	$ 35842.9	$ 2224.5	8.3	0	-
HCM Lane LOS	B	A	-	-	F	F	F	A	A	-
HCM 95th %tile Q(veh)	1.5	-	-	-	12.8	30.7	30.7	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	15.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	66	1089	18	27	1313
Future Vol, veh/h	21	66	1089	18	27	1313
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	23	72	1184	20	29	1427

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2679	1194	0	0	1204	0
Stage 1	1194	-	-	-	-	-
Stage 2	1485	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	24	226	-	-	576	-
Stage 1	286	-	-	-	-	-
Stage 2	206	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 18	226	-	-	576	-
Mov Cap-2 Maneuver	~ 18	-	-	-	-	-
Stage 1	217	-	-	-	-	-
Stage 2	206	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 438.3	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	60	576	-
HCM Lane V/C Ratio	-	-	1.576	0.051	-
HCM Control Delay (s)	-	-	$ 438.3	11.6	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	8.5	0.2	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	293.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	10	29	149	25	28	58	570	39	29	1103	31
Future Vol, veh/h	7	10	29	149	25	28	58	570	39	29	1103	31
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	170	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	11	32	162	27	30	63	620	42	32	1199	34

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2077	2069	1217	2069	2065	641	1234	0	0	662	0	0
Stage 1	1281	1281	-	767	767	-	-	-	-	-	-	-
Stage 2	796	788	-	1302	1298	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	39	54	219	~ 40	54	473	561	-	-	922	-	-
Stage 1	202	235	-	393	410	-	-	-	-	-	-	-
Stage 2	379	401	-	197	231	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	17	46	219	~ 25	46	473	560	-	-	922	-	-
Mov Cap-2 Maneuver	17	46	-	~ 25	46	-	-	-	-	-	-	-
Stage 1	179	227	-	349	364	-	-	-	-	-	-	-
Stage 2	291	356	-	~ 155	223	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	119.5	$ 2987.5	1.1	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	560	-	-	27	219	31	922	-	-
HCM Lane V/C Ratio	0.113	-	-	0.684	0.144	7.083	0.034	-	-
HCM Control Delay (s)	12.2	-	-	282	24.2	$ 2987.5	9	-	-
HCM Lane LOS	B	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	2.2	0.5	26.7	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	275.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	109	143	26	234	419	105	80	456	184	47	555	636
Future Vol, veh/h	109	143	26	234	419	105	80	456	184	47	555	636
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	115	151	27	246	441	111	84	480	194	49	584	669
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	20.8	156.5	452.2	302.5
HCM LOS	C	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	11%	100%	0%	100%	0%	8%	0%
Vol Thru, %	63%	0%	85%	0%	80%	92%	0%
Vol Right, %	26%	0%	15%	0%	20%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	720	109	169	234	524	602	636
LT Vol	80	109	0	234	0	47	0
Through Vol	456	0	143	0	419	555	0
RT Vol	184	0	26	0	105	0	636
Lane Flow Rate	758	115	178	246	552	634	669
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	1.939	0.332	0.485	0.66	1.379	1.607	1.561
Departure Headway (Hd)	8.95	10.832	10.178	10.283	9.602	11.169	10.38
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	417	334	356	355	381	330	355
Service Time	6.95	8.532	7.878	7.983	7.302	8.869	8.08
HCM Lane V/C Ratio	1.818	0.344	0.5	0.693	1.449	1.921	1.885
HCM Control Delay	452.2	18.8	22.1	30.9	212.6	313.9	291.7
HCM Lane LOS	F	C	C	D	F	F	F
HCM 95th-tile Q	52.8	1.4	2.5	4.5	25.4	30.8	30.9

Intersection	
Intersection Delay, s/veh	1767.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	182	108	87	170	232	32	44	1453	80	74	1633	457
Future Vol, veh/h	182	108	87	170	232	32	44	1453	80	74	1633	457
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	198	117	95	185	252	35	48	1579	87	80	1775	497
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	224.3	269.8	1676.7	2402.4
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	48%	39%	3%
Vol Thru, %	92%	29%	53%	75%
Vol Right, %	5%	23%	7%	21%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1577	377	434	2164
LT Vol	44	182	170	74
Through Vol	1453	108	232	1633
RT Vol	80	87	32	457
Lane Flow Rate	1714	410	472	2352
Geometry Grp	1	1	1	1
Degree of Util (X)	4.582	1.093	1.269	6.225
Departure Headway (Hd)	27.451	46.974	41.284	22.107
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	154	82	94	188
Service Time	25.451	44.974	39.284	20.107
HCM Lane V/C Ratio	11.13	5	5.021	12.511
HCM Control Delay	1676.7	224.3	269.8	2402.4
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	62.3	6.1	8.1	109.8

Intersection												
Int Delay, s/veh	2.5											
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations												
Traffic Vol, veh/h	440	254	24	11	568	174	174	223	78	83	203	551
Future Vol, veh/h	440	254	24	11	568	174	174	223	78	83	203	551
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	0	250	-	-	300	-	130	250	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	478	276	26	12	617	189	189	242	85	90	221	599

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	806	0	0	302	0	0	2378	2062	276	2145	1994	712
Stage 1	-	-	-	-	-	-	1232	1232	-	736	736	-
Stage 2	-	-	-	-	-	-	1146	830	-	1409	1258	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	814	-	-	1253	-	-	~ 24	~ 54	760	~ 35	~ 60	~ 431
Stage 1	-	-	-	-	-	-	216	248	-	409	424	-
Stage 2	-	-	-	-	-	-	241	383	-	171	241	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	814	-	-	1253	-	-	-	~ 22	760	-	~ 25	~ 431
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 22	-	-	~ 25	-
Stage 1	-	-	-	-	-	-	~ 89	~ 102	-	169	420	-
Stage 2	-	-	-	-	-	-	-	379	-	-	~ 100	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	0.1		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	22	760	814	-	-	1253	-	-	-	25	431
HCM Lane V/C Ratio	-	11.018	0.112	0.588	-	-	0.01	-	-	-	8.826	1.39
HCM Control Delay (s)		$ 4849.9	10.3	15.5	-	-	7.9	-	-		$ 3826.3	214.6
HCM Lane LOS	-	F	B	C	-	-	A	-	-	-	F	F
HCM 95th %tile Q(veh)	-	30.5	0.4	3.9	-	-	0	-	-	-	27.5	28.8

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	1383.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	182	124	106	177	309	134	90	1236	64	120	1465	350
Future Vol, veh/h	182	124	106	177	309	134	90	1236	64	120	1465	350
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	196	133	114	190	332	144	97	1329	69	129	1575	376
Number of Lanes	0	1	1	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	97.4	217.7	1376.5	2036.4
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	6%	59%	0%	36%	0%	6%
Vol Thru, %	89%	41%	0%	64%	0%	76%
Vol Right, %	5%	0%	100%	0%	100%	18%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1390	306	106	486	134	1935
LT Vol	90	182	0	177	0	120
Through Vol	1236	124	0	309	0	1465
RT Vol	64	0	106	0	134	350
Lane Flow Rate	1495	329	114	523	144	2081
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	3.931	0.918	0.286	1.423	0.357	5.425
Departure Headway (Hd)	23.597	26.759	25.775	20.881	19.979	19.056
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	179	138	141	178	183	229
Service Time	21.597	24.459	23.475	18.581	17.679	17.056
HCM Lane V/C Ratio	8.352	2.384	0.809	2.938	0.787	9.087
HCM Control Delay	1376.5	117.8	38.5	268.5	33.4	2036.4
HCM Lane LOS	F	F	E	F	D	F
HCM 95th-tile Q	59.7	6.2	1.1	15.2	1.5	108.1

Intersection	
Intersection Delay, s/veh	510.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	134	480	118	106	149	49	63	835	80	74	511	44
Future Vol, veh/h	134	480	118	106	149	49	63	835	80	74	511	44
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	140	500	123	110	155	51	66	870	83	77	532	46
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	472.9	90.3	763.1	365.6
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	18%	35%	12%
Vol Thru, %	85%	66%	49%	81%
Vol Right, %	8%	16%	16%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	978	732	304	629
LT Vol	63	134	106	74
Through Vol	835	480	149	511
RT Vol	80	118	49	44
Lane Flow Rate	1019	762	317	655
Geometry Grp	1	1	1	1
Degree of Util (X)	2.607	1.946	0.846	1.68
Departure Headway (Hd)	14.341	15.095	22.703	17.72
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	265	252	165	216
Service Time	12.341	13.095	20.703	15.72
HCM Lane V/C Ratio	3.845	3.024	1.921	3.032
HCM Control Delay	763.1	472.9	90.3	365.6
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	54.9	33.4	5.7	22.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	153	225	190	191	140	178	99	1809	378	137	1273	90
Future Volume (veh/h)	153	225	190	191	140	178	99	1809	378	137	1273	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	163	239	202	203	149	189	105	1924	402	146	1354	96
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	88	265	224	104	226	287	76	790	664	88	756	54
Arrive On Green	0.05	0.29	0.29	0.06	0.30	0.30	0.04	0.43	0.43	0.05	0.44	0.44
Sat Flow, veh/h	1767	924	781	1767	742	941	1767	1856	1561	1767	1711	121
Grp Volume(v), veh/h	163	0	441	203	0	338	105	1924	402	146	0	1450
Grp Sat Flow(s),veh/h/ln	1767	0	1705	1767	0	1683	1767	1856	1561	1767	0	1833
Q Serve(g_s), s	5.8	0.0	28.9	6.8	0.0	20.3	5.0	49.4	23.1	5.8	0.0	51.3
Cycle Q Clear(g_c), s	5.8	0.0	28.9	6.8	0.0	20.3	5.0	49.4	23.1	5.8	0.0	51.3
Prop In Lane	1.00		0.46	1.00		0.56	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	88	0	489	104	0	513	76	790	664	88	0	810
V/C Ratio(X)	1.85	0.00	0.90	1.96	0.00	0.66	1.38	2.44	0.61	1.65	0.00	1.79
Avail Cap(c_a), veh/h	88	0	573	104	0	585	76	790	664	88	0	810
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.2	0.0	39.8	54.7	0.0	35.1	55.6	33.4	25.8	55.2	0.0	32.4
Incr Delay (d2), s/veh	421.1	0.0	15.9	465.6	0.0	2.3	233.7	650.5	1.6	339.0	0.0	360.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.8	0.0	13.7	16.4	0.0	8.4	7.1	163.2	8.5	10.8	0.0	102.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	476.2	0.0	55.7	520.2	0.0	37.3	289.2	683.8	27.4	394.1	0.0	393.1
LnGrp LOS	F	A	E	F	A	D	F	F	C	F	A	F
Approach Vol, veh/h		604			541			2431			1596	
Approach Delay, s/veh		169.2			218.5			558.2			393.2	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	54.7	11.7	38.6	9.2	56.6	10.0	40.3
Change Period (Y+Rc), s	5.3	* 5.3	4.9	* 5.3	* 4.2	5.3	* 4.2	4.9
Max Green Setting (Gmax), s	5.8	* 49	6.8	* 39	* 5	50.2	* 5.8	40.4
Max Q Clear Time (g_c+I1), s	7.8	51.4	8.8	30.9	7.0	53.3	7.8	22.3
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.8

Intersection Summary	
HCM 6th Ctrl Delay	426.3
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	68	993	46	44	914
Future Vol, veh/h	0	68	993	46	44	914
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	74	1079	50	48	993

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1104	0	0	1129	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	4.13	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	0	255	-	-	615	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	255	-	-	615	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.8	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	255	615	-
HCM Lane V/C Ratio	-	-	0.29	0.078	-
HCM Control Delay (s)	-	-	24.8	11.3	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	1.2	0.3	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	46	15	923	604	15
Future Vol, veh/h	18	46	15	923	604	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	20	50	16	1003	657	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1700	665	673	0	-	0
Stage 1	665	-	-	-	-	-
Stage 2	1035	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	101	458	913	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	341	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	97	458	913	-	-	-
Mov Cap-2 Maneuver	97	-	-	-	-	-
Stage 1	489	-	-	-	-	-
Stage 2	341	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.1	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	913	-	224	-	-
HCM Lane V/C Ratio	0.018	-	0.311	-	-
HCM Control Delay (s)	9	0	28.1	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-

Intersection	
Int Delay, s/veh	584.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	140	88	182	63	16	59	122	740	225	119	446	66
Future Vol, veh/h	140	88	182	63	16	59	122	740	225	119	446	66
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	152	96	198	68	17	64	133	804	245	129	485	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2012	2094	521	2119	2008	927	557	0	0	1049	0	0
Stage 1	779	779	-	1193	1193	-	-	-	-	-	-	-
Stage 2	1233	1315	-	926	815	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	~ 43	~ 52	553	~ 36	59	324	1009	-	-	660	-	-
Stage 1	387	405	-	227	259	-	-	-	-	-	-	-
Stage 2	215	226	-	321	390	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 11	~ 25	553	-	28	324	1009	-	-	660	-	-
Mov Cap-2 Maneuver	~ 11	~ 25	-	-	28	-	-	-	-	-	-	-
Stage 1	256	289	-	150	171	-	-	-	-	-	-	-
Stage 2	~ 103	150	-	98	278	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 3225.2		1	2.2
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1009	-	-	11	70	-	100	660	-	-
HCM Lane V/C Ratio	0.131	-	-	13.834	4.193	-	0.815	0.196	-	-
HCM Control Delay (s)	9.1	0		$ 6441.1	$ 1557.7	-	121.6	11.8	0	-
HCM Lane LOS	A	A	-	F	F	-	F	B	A	-
HCM 95th %tile Q(veh)	0.5	-	-	20.4	31.4	-	4.5	0.7	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection						
Int Delay, s/veh	13.4					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Vol, veh/h	14	83	1429	15	14	1159
Future Vol, veh/h	14	83	1429	15	14	1159
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	89	1537	16	15	1246

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2821	1545	0	0	1553	0
Stage 1	1545	-	-	-	-	-
Stage 2	1276	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	20	140	-	-	424	-
Stage 1	193	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	18	140	-	-	424	-
Mov Cap-2 Maneuver	18	-	-	-	-	-
Stage 1	193	-	-	-	-	-
Stage 2	231	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 372.6	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	71	424	-
HCM Lane V/C Ratio	-	-	1.469	0.036	-
HCM Control Delay (s)	-	-	$ 372.6	13.8	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	8.7	0.1	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	113.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	29	10	54	39	78	34	999	41	27	643	25
Future Vol, veh/h	9	29	10	54	39	78	34	999	41	27	643	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	100	-	-	-	170	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	10	31	11	58	42	84	37	1074	44	29	691	27

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1996	1955	705	1954	1946	1096	718	0	0	1118	0	0
Stage 1	763	763	-	1170	1170	-	-	-	-	-	-	-
Stage 2	1233	1192	-	784	776	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	45	64	435	~ 48	64	258	878	-	-	621	-	-
Stage 1	395	412	-	234	266	-	-	-	-	-	-	-
Stage 2	215	259	-	385	406	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	12	58	435	~ 25	58	258	878	-	-	621	-	-
Mov Cap-2 Maneuver	12	58	-	~ 25	58	-	-	-	-	-	-	-
Stage 1	378	393	-	224	255	-	-	-	-	-	-	-
Stage 2	116	248	-	330	387	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 390.4	$ 1211.2	0.3	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	878	-	-	30	435	55	621	-	-
HCM Lane V/C Ratio	0.042	-	-	1.362	0.025	3.343	0.047	-	-
HCM Control Delay (s)	9.3	-	-	$ 489.6	13.5	$ 1211.2	11.1	-	-
HCM Lane LOS	A	-	-	F	B	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	4.7	0.1	19.6	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	357.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	357	362	40	105	272	41	23	705	158	67	507	260
Future Vol, veh/h	357	362	40	105	272	41	23	705	158	67	507	260
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	388	393	43	114	296	45	25	766	172	73	551	283
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	134.4	57.7	784.2	257.8
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	3%	100%	0%	100%	0%	12%	0%
Vol Thru, %	80%	0%	90%	0%	87%	88%	0%
Vol Right, %	18%	0%	10%	0%	13%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	886	357	402	105	313	574	260
LT Vol	23	357	0	105	0	67	0
Through Vol	705	0	362	0	272	507	0
RT Vol	158	0	40	0	41	0	260
Lane Flow Rate	963	388	437	114	340	624	283
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	2.675	1.099	1.168	0.328	0.923	1.697	0.709
Departure Headway (Hd)	10.728	13.572	12.949	12.602	11.954	12.605	11.783
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	347	272	284	288	306	293	311
Service Time	8.728	11.272	10.649	10.302	9.654	10.305	9.483
HCM Lane V/C Ratio	2.775	1.426	1.539	0.396	1.111	2.13	0.91
HCM Control Delay	784.2	123.4	144.2	21.3	69.9	357.1	38.7
HCM Lane LOS	F	F	F	C	F	F	E
HCM 95th-tile Q	74.8	12.2	14.3	1.4	8.9	30.8	5

Intersection	
Intersection Delay, s/veh	1586.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	374	148	47	76	102	42	49	2065	99	77	1496	257
Future Vol, veh/h	374	148	47	76	102	42	49	2065	99	77	1496	257
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	386	153	48	78	105	43	51	2129	102	79	1542	265
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	276.1	104.7	2046.3	1616.3
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	66%	35%	4%
Vol Thru, %	93%	26%	46%	82%
Vol Right, %	4%	8%	19%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	2213	569	220	1830
LT Vol	49	374	76	77
Through Vol	2065	148	102	1496
RT Vol	99	47	42	257
Lane Flow Rate	2281	587	227	1887
Geometry Grp	1	1	1	1
Degree of Util (X)	5.449	1.418	0.605	4.479
Departure Headway (Hd)	18.663	23.872	46.858	21.063
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	228	158	79	208
Service Time	16.663	21.872	44.858	19.063
HCM Lane V/C Ratio	10.004	3.715	2.873	9.072
HCM Control Delay	2046.3	276.1	104.7	1616.3
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	110.8	13.7	2.7	78

Intersection	
Int Delay, s/veh	0.8

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	1	549	357	24	59	224	132	115	354	125	86	379	198
Future Vol, veh/h	1	549	357	24	59	224	132	115	354	125	86	379	198
Conflicting Peds, #/hr	0	0	0	4	4	0	0	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	250	-	0	250	-	-	300	-	130	250	-	0
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	584	380	26	63	238	140	122	377	133	91	403	211

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	-	378	0	0	410	0	0	2293	2058	385	2251	2014	308
Stage 1	-	-	-	-	-	-	-	1552	1554	-	434	434	-
Stage 2	-	-	-	-	-	-	-	741	504	-	1817	1580	-
Critical Hdwy	-	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	-	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	-	1175	-	-	1143	-	-	~ 27	~ 55	660	~ 29	~ 58	730
Stage 1	-	-	-	-	-	-	-	141	~ 173	-	598	579	-
Stage 2	-	-	-	-	-	-	-	407	539	-	99	~ 168	-
Platoon blocked, %			-	-		-	-						
Mov Cap-1 Maneuver	~ -1032	~ -1032	-	-	1139	-	-	-	~ 52	657	-	~ 55	730
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	~ 52	-	-	~ 55	-
Stage 1	-	-	-	-	-	-	-	141	~ 172	-	598	547	-
Stage 2	-	-	-	-	-	-	-	~ 72	509	-	-	~ 167	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	1.2		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	-	52	657	+	-	-	1139	-	-	-	55	730
HCM Lane V/C Ratio	-	7.242	0.202	-	-	-	0.055	-	-	-	7.331	0.289
HCM Control Delay (s)		$ 2961.4	11.9	2.8	-	-	8.3	-	-		$ 2993.2	11.9
HCM Lane LOS	-	F	B	A	-	-	A	-	-	-	F	B
HCM 95th %tile Q(veh)	-	43.8	0.8	-	-	-	0.2	-	-	-	46.8	1.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	1367
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	230	392	42	181	213	165	35	1658	53	74	1455	145
Future Vol, veh/h	230	392	42	181	213	165	35	1658	53	74	1455	145
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	240	408	44	189	222	172	36	1727	55	77	1516	151
Number of Lanes	0	1	1	0	1	1	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	405	146.7	1799.4	1705.1
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	2%	37%	0%	46%	0%	4%
Vol Thru, %	95%	63%	0%	54%	0%	87%
Vol Right, %	3%	0%	100%	0%	100%	9%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1746	622	42	394	165	1674
LT Vol	35	230	0	181	0	74
Through Vol	1658	392	0	213	0	1455
RT Vol	53	0	42	0	165	145
Lane Flow Rate	1819	648	44	410	172	1744
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	4.863	1.787	0.11	1.137	0.432	4.649
Departure Headway (Hd)	25.939	24.565	23.684	28.659	27.803	26.726
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	164	156	153	131	132	157
Service Time	23.939	22.265	21.384	26.359	25.503	24.726
HCM Lane V/C Ratio	11.091	4.154	0.288	3.13	1.303	11.108
HCM Control Delay	1799.4	430.4	29.3	187.1	50.1	1705.1
HCM Lane LOS	F	F	D	F	F	F
HCM 95th-tile Q	70.6	19.5	0.4	8.5	1.9	65.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	114	46	145	420	51	90	419	34	67	848	156
Future Volume (veh/h)	68	114	46	145	420	51	90	419	34	67	848	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	74	124	50	158	457	55	98	455	37	73	922	170
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	95	156	63	378	482	58	127	1247	101	94	1007	186
Arrive On Green	0.05	0.12	0.12	0.21	0.30	0.30	0.02	0.12	0.12	0.05	0.34	0.34
Sat Flow, veh/h	1767	1257	507	1767	1625	196	1767	3302	268	1767	2972	548
Grp Volume(v), veh/h	74	0	174	158	0	512	98	242	250	73	547	545
Grp Sat Flow(s),veh/h/ln	1767	0	1764	1767	0	1820	1767	1763	1807	1767	1763	1757
Q Serve(g_s), s	3.7	0.0	8.6	6.9	0.0	24.8	5.0	11.3	11.4	3.7	26.7	26.8
Cycle Q Clear(g_c), s	3.7	0.0	8.6	6.9	0.0	24.8	5.0	11.3	11.4	3.7	26.7	26.8
Prop In Lane	1.00		0.29	1.00		0.11	1.00		0.15	1.00		0.31
Lane Grp Cap(c), veh/h	95	0	219	378	0	540	127	666	683	94	598	596
V/C Ratio(X)	0.78	0.00	0.80	0.42	0.00	0.95	0.77	0.36	0.37	0.78	0.91	0.92
Avail Cap(c_a), veh/h	106	0	398	378	0	540	127	666	683	185	623	621
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.49	0.00	0.49	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.1	0.0	38.3	30.5	0.0	31.0	43.2	29.5	29.5	42.1	28.5	28.5
Incr Delay (d2), s/veh	27.9	0.0	6.5	0.4	0.0	16.2	24.8	1.5	1.5	12.8	20.9	21.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	3.9	2.8	0.0	12.4	3.0	5.2	5.3	1.8	13.4	13.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.9	0.0	44.8	30.9	0.0	47.2	68.0	31.0	31.0	54.8	49.4	49.6
LnGrp LOS	E	A	D	C	A	D	E	C	C	D	D	D
Approach Vol, veh/h		248			670			590			1165	
Approach Delay, s/veh		52.3			43.3			37.2			49.8	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	40.0	24.6	16.5	12.5	36.5	9.0	32.0
Change Period (Y+Rc), s	* 4.2	6.0	5.3	* 5.3	6.0	* 6	* 4.2	5.3
Max Green Setting (Gmax), s	* 9.4	28.8	11.8	* 20	6.4	* 32	* 5.4	26.7
Max Q Clear Time (g_c+I1), s	5.7	13.4	8.9	10.6	7.0	28.8	5.7	26.8
Green Ext Time (p_c), s	0.0	2.1	0.1	0.5	0.0	1.7	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	45.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	101	76	363	303	246	167	1112	210	229	1680	117
Future Volume (veh/h)	95	101	76	363	303	246	167	1112	210	229	1680	117
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	110	117	88	422	352	286	194	1293	244	266	1953	136
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	136	160	121	337	515	436	174	1627	500	292	1875	130
Arrive On Green	0.08	0.16	0.16	0.19	0.28	0.28	0.10	0.32	0.32	0.17	0.39	0.39
Sat Flow, veh/h	1767	978	736	1767	1856	1569	1767	5066	1558	1767	4834	335
Grp Volume(v), veh/h	110	0	205	422	352	286	194	1293	244	266	1362	727
Grp Sat Flow(s),veh/h/ln	1767	0	1714	1767	1856	1569	1767	1689	1558	1767	1689	1792
Q Serve(g_s), s	7.3	0.0	13.6	22.8	20.2	19.3	11.8	27.8	15.1	17.7	46.4	46.4
Cycle Q Clear(g_c), s	7.3	0.0	13.6	22.8	20.2	19.3	11.8	27.8	15.1	17.7	46.4	46.4
Prop In Lane	1.00		0.43	1.00		1.00	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	136	0	281	337	515	436	174	1627	500	292	1310	695
V/C Ratio(X)	0.81	0.00	0.73	1.25	0.68	0.66	1.11	0.79	0.49	0.91	1.04	1.05
Avail Cap(c_a), veh/h	241	0	573	337	728	615	174	1627	500	307	1310	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	0.0	47.5	48.4	38.5	38.2	53.9	37.0	32.7	49.0	36.6	36.6
Incr Delay (d2), s/veh	10.8	0.0	3.6	135.9	1.6	1.7	101.6	2.8	0.7	28.8	35.7	46.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	5.9	22.5	9.2	7.4	10.0	11.4	5.7	9.9	24.5	28.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.1	0.0	51.1	184.3	40.1	39.9	155.5	39.8	33.4	77.8	72.3	83.4
LnGrp LOS	E	A	D	F	D	D	F	D	C	E	F	F
Approach Vol, veh/h		315			1060			1731			2355	
Approach Delay, s/veh		56.0			97.4			51.9			76.4	
Approach LOS		E			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	43.7	27.0	24.9	16.0	51.7	13.4	38.5
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	5.3	* 4.2	5.3	* 4.2	* 5.3
Max Green Setting (Gmax), s	* 21	37.4	* 23	40.0	* 12	46.4	* 16	* 47
Max Q Clear Time (g_c+I1), s	19.7	29.8	24.8	15.6	13.8	48.4	9.3	22.2
Green Ext Time (p_c), s	0.1	5.0	0.0	1.1	0.0	0.0	0.1	3.0

Intersection Summary	
HCM 6th Ctrl Delay	71.5
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	1.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	72	50	492	972	50
Future Vol, veh/h	4	72	50	492	972	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	4	78	54	535	1057	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1727	556	1111	0	-	0
Stage 1	1084	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Critical Hdwy	6.645	6.945	4.145	-	-	-
Critical Hdwy Stg 1	5.845	-	-	-	-	-
Critical Hdwy Stg 2	5.445	-	-	-	-	-
Follow-up Hdwy	3.5285	3.3285	2.2285	-	-	-
Pot Cap-1 Maneuver	87	473	622	-	-	-
Stage 1	285	-	-	-	-	-
Stage 2	520	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	76	473	622	-	-	-
Mov Cap-2 Maneuver	76	-	-	-	-	-
Stage 1	250	-	-	-	-	-
Stage 2	520	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.5	1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	622	-	371	-	-
HCM Lane V/C Ratio	0.087	-	0.223	-	-
HCM Control Delay (s)	11.3	0	17.5	-	-
HCM Lane LOS	B	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.8	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	26	152	208	144	102	207	338	51	48	809	159
Future Volume (veh/h)	73	26	152	208	144	102	207	338	51	48	809	159
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	79	28	165	226	157	111	225	367	55	52	879	173
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	101	34	199	236	236	167	315	835	708	71	858	169
Arrive On Green	0.06	0.14	0.14	0.13	0.23	0.23	0.18	0.45	0.45	0.08	0.58	0.58
Sat Flow, veh/h	1767	233	1375	1767	1012	715	1767	1856	1572	1767	2936	578
Grp Volume(v), veh/h	79	0	193	226	0	268	225	367	55	52	528	524
Grp Sat Flow(s),veh/h/ln	1767	0	1608	1767	0	1727	1767	1856	1572	1767	1763	1752
Q Serve(g_s), s	4.0	0.0	10.5	11.4	0.0	12.7	10.8	12.2	0.9	2.6	26.3	26.3
Cycle Q Clear(g_c), s	4.0	0.0	10.5	11.4	0.0	12.7	10.8	12.2	0.9	2.6	26.3	26.3
Prop In Lane	1.00		0.85	1.00		0.41	1.00		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	101	0	233	236	0	402	315	835	708	71	515	512
V/C Ratio(X)	0.78	0.00	0.83	0.96	0.00	0.67	0.71	0.44	0.08	0.73	1.02	1.02
Avail Cap(c_a), veh/h	169	0	357	236	0	449	315	835	708	135	515	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.69	0.69	0.69	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.9	0.0	37.4	38.8	0.0	31.3	34.8	17.0	3.9	40.9	18.7	18.7
Incr Delay (d2), s/veh	12.0	0.0	9.3	47.1	0.0	3.2	5.2	1.2	0.1	13.2	45.9	46.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	4.5	7.8	0.0	5.3	4.7	4.7	0.6	1.3	11.6	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.9	0.0	46.7	85.9	0.0	34.5	40.0	18.1	4.1	54.0	64.6	64.9
LnGrp LOS	D	A	D	F	A	C	D	B	A	D	F	F
Approach Vol, veh/h		272			494			647			1104	
Approach Delay, s/veh		48.8			58.0			24.5			64.3	
Approach LOS		D			E			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	46.5	17.3	18.3	22.1	32.3	9.4	26.3
Change Period (Y+Rc), s	* 4.2	6.0	5.3	* 5.3	6.0	* 6	* 4.2	5.3
Max Green Setting (Gmax), s	* 6.9	31.4	12.0	* 20	12.0	* 26	* 8.6	23.4
Max Q Clear Time (g_c+I1), s	4.6	14.2	13.4	12.5	12.8	28.3	6.0	14.7
Green Ext Time (p_c), s	0.0	1.8	0.0	0.5	0.0	0.0	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	51.1
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	95	1204	1456
Demand Flow Rate, veh/h	98	1241	1500
Vehicles Circulating, veh/h	1220	30	24
Vehicles Exiting, veh/h	51	1494	1294
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	10.1	7.4	8.8
Approach LOS	B	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	98	583	658	705	795
Cap Entry Lane, veh/h	503	1313	1384	1320	1391
Entry HV Adj Factor	0.969	0.971	0.970	0.971	0.971
Flow Entry, veh/h	95	566	638	684	772
Cap Entry, veh/h	488	1275	1343	1282	1351
V/C Ratio	0.195	0.444	0.475	0.534	0.571
Control Delay, s/veh	10.1	7.3	7.5	8.6	9.0
LOS	B	A	A	A	A
95th %tile Queue, veh	1	2	3	3	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	10	29	149	25	28	58	570	39	29	1103	31
Future Volume (veh/h)	7	10	29	149	25	28	58	570	39	29	1103	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	8	11	32	162	27	30	63	620	42	32	1199	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	181	130	110	204	67	74	96	701	47	113	1462	41
Arrive On Green	0.10	0.07	0.07	0.12	0.08	0.08	0.05	0.41	0.41	0.06	0.42	0.42
Sat Flow, veh/h	1767	1856	1572	1767	803	892	1767	1718	116	1767	3501	99
Grp Volume(v), veh/h	8	11	32	162	0	57	63	0	662	32	603	630
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	0	1695	1767	0	1835	1767	1763	1838
Q Serve(g_s), s	0.2	0.3	1.1	5.3	0.0	1.9	2.1	0.0	19.9	1.0	18.0	18.1
Cycle Q Clear(g_c), s	0.2	0.3	1.1	5.3	0.0	1.9	2.1	0.0	19.9	1.0	18.0	18.1
Prop In Lane	1.00		1.00	1.00		0.53	1.00		0.06	1.00		0.05
Lane Grp Cap(c), veh/h	181	130	110	204	0	141	96	0	748	113	736	767
V/C Ratio(X)	0.04	0.08	0.29	0.79	0.00	0.41	0.66	0.00	0.88	0.28	0.82	0.82
Avail Cap(c_a), veh/h	181	811	687	261	0	849	151	0	919	148	880	917
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.1	25.9	26.3	25.6	0.0	25.9	27.6	0.0	16.3	26.5	15.3	15.4
Incr Delay (d2), s/veh	0.1	0.3	1.4	12.2	0.0	1.9	7.4	0.0	8.9	1.3	5.3	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.4	2.6	0.0	0.7	1.0	0.0	7.8	0.4	6.2	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.2	26.2	27.7	37.9	0.0	27.8	35.0	0.0	25.2	27.9	20.6	20.5
LnGrp LOS	C	C	C	D	A	C	C	A	C	C	C	C
Approach Vol, veh/h		51			219			725			1265	
Approach Delay, s/veh		26.8			35.2			26.0			20.7	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	30.3	11.1	10.2	7.4	30.9	10.3	10.9
Change Period (Y+Rc), s	4.2	* 6	4.2	* 6	4.2	* 6	4.2	* 6
Max Green Setting (Gmax), s	5.0	* 30	8.8	* 26	5.1	* 30	5.0	* 30
Max Q Clear Time (g_c+I1), s	3.0	21.9	7.3	3.1	4.1	20.1	2.2	3.9
Green Ext Time (p_c), s	0.0	2.4	0.1	0.1	0.0	4.8	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	24.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	143	26	234	419	105	80	456	184	47	555	636
Future Volume (veh/h)	109	143	26	234	419	105	80	456	184	47	555	636
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	115	151	27	246	441	111	84	480	194	49	584	669
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	135	332	58	263	602	269	102	533	451	365	846	717
Arrive On Green	0.08	0.11	0.11	0.15	0.17	0.17	0.06	0.29	0.29	0.21	0.46	0.46
Sat Flow, veh/h	1767	2998	525	1767	3526	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	115	88	90	246	441	111	84	480	194	49	584	669
Grp Sat Flow(s),veh/h/ln	1767	1763	1761	1767	1763	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	5.8	4.2	4.3	12.4	10.7	5.7	4.2	22.4	5.7	2.0	22.5	22.3
Cycle Q Clear(g_c), s	5.8	4.2	4.3	12.4	10.7	5.7	4.2	22.4	5.7	2.0	22.5	22.3
Prop In Lane	1.00		0.30	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	135	195	195	263	602	269	102	533	451	365	846	717
V/C Ratio(X)	0.85	0.45	0.46	0.93	0.73	0.41	0.82	0.90	0.43	0.13	0.69	0.93
Avail Cap(c_a), veh/h	135	431	430	263	1144	510	102	602	510	365	846	717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.62	0.62	0.62
Uniform Delay (d), s/veh	41.0	37.4	37.5	37.9	35.4	33.3	41.9	30.9	10.4	29.1	19.4	8.7
Incr Delay (d2), s/veh	36.9	1.6	1.7	38.3	1.7	1.0	39.5	20.9	3.0	0.1	2.9	14.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	1.8	1.8	7.9	4.5	2.1	2.8	12.0	3.3	0.8	8.8	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.9	39.1	39.2	76.1	37.1	34.3	81.4	51.8	13.4	29.2	22.3	23.4
LnGrp LOS	E	D	D	E	D	C	F	D	B	C	C	C
Approach Vol, veh/h		293			798			758			1302	
Approach Delay, s/veh		54.4			48.8			45.2			23.1	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.6	31.8	17.6	16.0	9.4	47.0	12.9	20.7
Change Period (Y+Rc), s	6.0	* 6	* 4.2	6.0	* 4.2	6.0	6.0	* 5.3
Max Green Setting (Gmax), s	5.0	* 29	* 13	22.0	* 5.2	29.0	6.9	* 29
Max Q Clear Time (g_c+I1), s	4.0	24.4	14.4	6.3	6.2	24.5	7.8	12.7
Green Ext Time (p_c), s	0.0	1.5	0.0	0.6	0.0	2.4	0.0	2.7

Intersection Summary	
HCM 6th Ctrl Delay	37.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	108	87	170	232	32	44	1453	80	74	1633	457
Future Volume (veh/h)	182	108	87	170	232	32	44	1453	80	74	1633	457
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	198	117	95	185	252	35	48	1579	87	80	1775	497
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	200	170	144	330	306	259	276	2301	714	100	1734	538
Arrive On Green	0.11	0.09	0.09	0.19	0.16	0.16	0.05	0.15	0.15	0.06	0.34	0.34
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	5066	1572	1767	5066	1572
Grp Volume(v), veh/h	198	117	95	185	252	35	48	1579	87	80	1775	497
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1689	1572	1767	1689	1572
Q Serve(g_s), s	10.1	5.5	5.3	8.6	11.8	1.4	2.3	26.6	2.0	4.0	30.8	27.4
Cycle Q Clear(g_c), s	10.1	5.5	5.3	8.6	11.8	1.4	2.3	26.6	2.0	4.0	30.8	27.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	200	170	144	330	306	259	276	2301	714	100	1734	538
V/C Ratio(X)	0.99	0.69	0.66	0.56	0.82	0.14	0.17	0.69	0.12	0.80	1.02	0.92
Avail Cap(c_a), veh/h	200	520	440	330	515	437	276	2301	714	100	1734	538
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.53	0.53	0.53	0.09	0.09	0.09
Uniform Delay (d), s/veh	39.8	39.6	39.5	33.3	36.3	20.9	37.1	32.2	4.9	41.9	29.6	28.5
Incr Delay (d2), s/veh	60.2	4.9	5.1	2.2	5.6	0.2	0.2	0.9	0.2	4.2	13.9	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	2.6	2.1	3.7	5.5	0.6	1.0	12.0	1.4	1.8	13.5	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	100.0	44.5	44.6	35.4	41.9	21.1	37.3	33.1	5.1	46.1	43.5	31.8
LnGrp LOS	F	D	D	D	D	C	D	C	A	D	F	C
Approach Vol, veh/h		410			472			1714			2352	
Approach Delay, s/veh		71.3			37.8			31.8			41.1	
Approach LOS		E			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	46.2	21.0	13.5	19.4	36.1	14.4	20.1
Change Period (Y+Rc), s	* 4.2	5.3	4.2	* 5.3	5.3	* 5.3	4.2	* 5.3
Max Green Setting (Gmax), s	* 5.1	30.7	10.0	* 25	5.0	* 31	10.2	* 25
Max Q Clear Time (g_c+I1), s	6.0	28.6	10.6	7.5	4.3	32.8	12.1	13.8
Green Ext Time (p_c), s	0.0	1.7	0.0	0.7	0.0	0.0	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	40.1
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	440	254	24	11	568	174	174	223	78	83	203	551
Future Volume (veh/h)	440	254	24	11	568	174	174	223	78	83	203	551
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	478	276	26	12	617	189	189	242	85	90	221	599
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	507	935	792	25	763	340	222	296	251	192	297	703
Arrive On Green	0.29	0.50	0.50	0.01	0.22	0.22	0.13	0.16	0.16	0.11	0.16	0.16
Sat Flow, veh/h	1767	1856	1572	1767	3526	1572	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	478	276	26	12	617	189	189	242	85	90	221	599
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1763	1572	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	26.6	8.7	0.8	0.7	16.7	10.8	10.5	12.7	4.2	4.8	11.4	10.4
Cycle Q Clear(g_c), s	26.6	8.7	0.8	0.7	16.7	10.8	10.5	12.7	4.2	4.8	11.4	10.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	507	935	792	25	763	340	222	296	251	192	297	703
V/C Ratio(X)	0.94	0.30	0.03	0.48	0.81	0.56	0.85	0.82	0.34	0.47	0.74	0.85
Avail Cap(c_a), veh/h	524	988	838	88	993	443	297	665	564	192	460	841
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	14.5	12.6	49.1	37.4	35.1	43.0	40.8	27.9	42.0	40.2	8.3
Incr Delay (d2), s/veh	25.5	0.2	0.0	13.5	3.9	1.4	16.0	5.5	0.8	1.8	3.7	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.3	3.4	0.3	0.4	7.2	4.0	5.3	5.9	1.8	2.1	5.2	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.5	14.7	12.6	62.7	41.3	36.5	58.9	46.4	28.7	43.8	43.9	15.6
LnGrp LOS	E	B	B	E	D	D	E	D	C	D	D	B
Approach Vol, veh/h		780			818			516			910	
Approach Delay, s/veh		42.7			40.5			48.1			25.3	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.9	22.0	5.6	55.9	16.8	22.1	34.1	27.4
Change Period (Y+Rc), s	6.0	* 6	* 4.2	5.3	* 4.2	6.0	5.3	* 5.7
Max Green Setting (Gmax), s	5.8	* 36	* 5	53.5	* 17	24.9	29.8	* 28
Max Q Clear Time (g_c+I1), s	6.8	14.7	2.7	10.7	12.5	13.4	28.6	18.7
Green Ext Time (p_c), s	0.0	1.3	0.0	1.6	0.2	2.7	0.2	3.0

Intersection Summary		
HCM 6th Ctrl Delay		37.8
HCM 6th LOS		D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	124	106	177	309	134	90	1236	64	120	1465	350
Future Volume (veh/h)	182	124	106	177	309	134	90	1236	64	120	1465	350
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	196	133	114	190	332	144	97	1329	69	129	1575	376
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	212	388	329	212	388	329	207	1855	576	149	1628	505
Arrive On Green	0.12	0.21	0.21	0.12	0.21	0.21	0.12	0.37	0.37	0.17	0.64	0.64
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	5066	1572	1767	5066	1572
Grp Volume(v), veh/h	196	133	114	190	332	144	97	1329	69	129	1575	376
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1689	1572	1767	1689	1572
Q Serve(g_s), s	9.9	5.5	3.8	9.5	15.5	7.2	4.6	20.3	2.6	6.4	26.4	9.8
Cycle Q Clear(g_c), s	9.9	5.5	3.8	9.5	15.5	7.2	4.6	20.3	2.6	6.4	26.4	9.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	212	388	329	212	388	329	207	1855	576	149	1628	505
V/C Ratio(X)	0.92	0.34	0.35	0.90	0.85	0.44	0.47	0.72	0.12	0.86	0.97	0.74
Avail Cap(c_a), veh/h	212	515	437	212	515	437	207	1855	576	149	1632	507
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.62	0.62	0.62
Uniform Delay (d), s/veh	39.2	30.3	14.5	39.0	34.3	31.0	37.1	24.5	18.9	36.9	15.6	6.0
Incr Delay (d2), s/veh	41.3	0.5	0.6	35.0	10.4	0.9	1.6	2.4	0.4	26.3	11.4	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	2.3	2.0	5.9	7.6	2.6	2.0	7.6	0.9	3.5	6.1	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.5	30.8	15.1	74.1	44.7	31.9	38.8	26.9	19.3	63.2	27.0	12.1
LnGrp LOS	F	C	B	E	D	C	D	C	B	E	C	B
Approach Vol, veh/h		443			666			1495			2080	
Approach Delay, s/veh		48.8			50.3			27.3			26.6	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	38.7	15.0	24.5	16.2	34.2	15.0	24.5
Change Period (Y+Rc), s	* 4.2	5.7	* 4.2	5.7	5.7	* 5.3	* 4.2	5.7
Max Green Setting (Gmax), s	* 7.6	26.8	* 11	25.0	5.8	* 29	* 11	25.0
Max Q Clear Time (g_c+I1), s	8.4	22.3	11.5	7.5	6.6	28.4	11.9	17.5
Green Ext Time (p_c), s	0.0	3.1	0.0	0.9	0.0	0.5	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	32.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	480	118	106	149	49	63	835	80	74	511	44
Future Volume (veh/h)	134	480	118	106	149	49	63	835	80	74	511	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	140	500	123	110	155	51	66	870	83	77	532	46
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	170	535	131	136	484	159	286	991	95	98	651	56
Arrive On Green	0.10	0.37	0.37	0.08	0.36	0.36	0.16	0.30	0.30	0.06	0.20	0.20
Sat Flow, veh/h	1767	1438	354	1767	1337	440	1767	3252	310	1767	3284	283
Grp Volume(v), veh/h	140	0	623	110	0	206	66	472	481	77	285	293
Grp Sat Flow(s),veh/h/ln	1767	0	1792	1767	0	1776	1767	1763	1800	1767	1763	1805
Q Serve(g_s), s	8.5	0.0	36.5	6.7	0.0	9.1	3.5	27.6	27.6	4.7	16.8	16.9
Cycle Q Clear(g_c), s	8.5	0.0	36.5	6.7	0.0	9.1	3.5	27.6	27.6	4.7	16.8	16.9
Prop In Lane	1.00		0.20	1.00		0.25	1.00		0.17	1.00		0.16
Lane Grp Cap(c), veh/h	170	0	666	136	0	644	286	537	548	98	349	358
V/C Ratio(X)	0.82	0.00	0.94	0.81	0.00	0.32	0.23	0.88	0.88	0.79	0.82	0.82
Avail Cap(c_a), veh/h	292	0	736	159	0	644	286	628	642	114	577	590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	0.0	32.9	49.4	0.0	25.0	39.7	35.9	35.9	50.8	41.7	41.8
Incr Delay (d2), s/veh	9.4	0.0	18.3	22.8	0.0	0.3	0.4	12.0	11.8	26.2	4.7	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	18.1	3.7	0.0	3.7	1.5	12.7	13.0	2.7	7.3	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.7	0.0	51.2	72.2	0.0	25.3	40.1	47.9	47.7	77.0	46.4	46.4
LnGrp LOS	E	A	D	E	A	C	D	D	D	E	D	D
Approach Vol, veh/h		763			316			1019			655	
Approach Delay, s/veh		52.4			41.6			47.3			50.0	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	39.2	13.7	45.8	21.8	27.6	14.7	44.7
Change Period (Y+Rc), s	4.2	* 6	5.3	* 5.3	4.2	* 6	* 4.2	5.3
Max Green Setting (Gmax), s	7.0	* 39	9.8	* 45	10.2	* 36	* 18	36.5
Max Q Clear Time (g_c+I1), s	6.7	29.6	8.7	38.5	5.5	18.9	10.5	11.1
Green Ext Time (p_c), s	0.0	3.5	0.0	2.0	0.0	2.7	0.2	1.0

Intersection Summary	
HCM 6th Ctrl Delay	48.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	153	225	190	191	140	178	99	1809	378	137	1273	90
Future Volume (veh/h)	153	225	190	191	140	178	99	1809	378	137	1273	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	163	239	202	203	149	189	105	1924	402	146	1354	96
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	186	253	214	211	532	451	127	1935	601	156	1921	136
Arrive On Green	0.11	0.27	0.27	0.12	0.29	0.29	0.07	0.38	0.38	0.09	0.40	0.40
Sat Flow, veh/h	1767	929	785	1767	1856	1572	1767	5066	1572	1767	4829	342
Grp Volume(v), veh/h	163	0	441	203	149	189	105	1924	402	146	947	503
Grp Sat Flow(s),veh/h/ln	1767	0	1714	1767	1856	1572	1767	1689	1572	1767	1689	1794
Q Serve(g_s), s	12.5	0.0	34.6	15.7	8.6	13.4	8.1	52.0	29.2	11.3	32.3	32.3
Cycle Q Clear(g_c), s	12.5	0.0	34.6	15.7	8.6	13.4	8.1	52.0	29.2	11.3	32.3	32.3
Prop In Lane	1.00		0.46	1.00		1.00	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	186	0	467	211	532	451	127	1935	601	156	1343	714
V/C Ratio(X)	0.88	0.00	0.94	0.96	0.28	0.42	0.82	0.99	0.67	0.94	0.70	0.70
Avail Cap(c_a), veh/h	190	0	499	211	567	480	157	1935	601	156	1343	714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.6	0.0	49.0	60.2	38.0	39.8	62.9	42.3	35.3	62.3	34.6	34.6
Incr Delay (d2), s/veh	33.2	0.0	26.1	51.3	0.3	0.6	24.3	19.1	2.9	54.1	1.7	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	0.0	17.8	9.9	3.9	5.2	4.4	24.1	11.4	7.3	13.1	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	93.8	0.0	75.1	111.5	38.3	40.4	87.2	61.5	38.1	116.4	36.3	37.8
LnGrp LOS	F	A	E	F	D	D	F	E	D	F	D	D
Approach Vol, veh/h		604			541			2431			1596	
Approach Delay, s/veh		80.1			66.5			58.7			44.1	
Approach LOS		F			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.3	57.8	20.6	42.8	14.1	60.0	18.7	44.7
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	5.3	* 4.2	5.3	* 4.2	* 5.3
Max Green Setting (Gmax), s	* 12	52.5	* 16	40.0	* 12	52.4	* 15	* 42
Max Q Clear Time (g_c+I1), s	13.3	54.0	17.7	36.6	10.1	34.3	14.5	15.4
Green Ext Time (p_c), s	0.0	0.0	0.0	0.8	0.0	8.9	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	57.5
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	46	15	923	604	15
Future Vol, veh/h	18	46	15	923	604	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	20	50	16	1003	657	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1700	337	673	0	-	0
Stage 1	665	-	-	-	-	-
Stage 2	1035	-	-	-	-	-
Critical Hdwy	6.645	6.945	4.145	-	-	-
Critical Hdwy Stg 1	5.845	-	-	-	-	-
Critical Hdwy Stg 2	5.445	-	-	-	-	-
Follow-up Hdwy	3.5285	3.3285	2.2285	-	-	-
Pot Cap-1 Maneuver	91	657	910	-	-	-
Stage 1	472	-	-	-	-	-
Stage 2	339	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	87	657	910	-	-	-
Mov Cap-2 Maneuver	87	-	-	-	-	-
Stage 1	453	-	-	-	-	-
Stage 2	339	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.2	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	910	-	231	-	-
HCM Lane V/C Ratio	0.018	-	0.301	-	-
HCM Control Delay (s)	9	0	27.2	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	88	182	63	16	59	122	740	225	119	446	66
Future Volume (veh/h)	140	88	182	63	16	59	122	740	225	119	446	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	152	96	198	68	17	64	133	804	245	129	485	72
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	163	105	217	87	55	208	611	876	742	157	609	90
Arrive On Green	0.09	0.19	0.19	0.05	0.16	0.16	0.35	0.47	0.47	0.09	0.20	0.20
Sat Flow, veh/h	1767	540	1115	1767	341	1284	1767	1856	1572	1767	3081	455
Grp Volume(v), veh/h	152	0	294	68	0	81	133	804	245	129	277	280
Grp Sat Flow(s),veh/h/ln	1767	0	1655	1767	0	1625	1767	1856	1572	1767	1763	1774
Q Serve(g_s), s	9.1	0.0	18.5	4.0	0.0	4.7	5.7	43.0	7.3	7.6	15.9	16.0
Cycle Q Clear(g_c), s	9.1	0.0	18.5	4.0	0.0	4.7	5.7	43.0	7.3	7.6	15.9	16.0
Prop In Lane	1.00		0.67	1.00		0.79	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	163	0	322	87	0	264	611	876	742	157	348	351
V/C Ratio(X)	0.93	0.00	0.91	0.78	0.00	0.31	0.22	0.92	0.33	0.82	0.79	0.80
Avail Cap(c_a), veh/h	163	0	338	135	0	305	611	1059	897	163	891	897
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.0	0.0	42.0	50.0	0.0	39.3	24.6	26.2	8.7	47.7	40.6	40.7
Incr Delay (d2), s/veh	51.3	0.0	27.5	14.3	0.0	0.7	0.2	11.1	0.3	27.0	4.1	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	9.7	2.1	0.0	1.9	2.2	19.1	3.3	4.4	6.9	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	99.3	0.0	69.4	64.3	0.0	39.9	24.8	37.2	9.0	74.7	44.7	44.9
LnGrp LOS	F	A	E	E	A	D	C	D	A	E	D	D
Approach Vol, veh/h		446			149			1182			686	
Approach Delay, s/veh		79.6			51.1			30.0			50.4	
Approach LOS		E			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.6	56.2	10.6	26.0	42.8	27.0	14.0	22.6
Change Period (Y+Rc), s	* 4.2	6.0	5.3	* 5.3	6.0	* 6	* 4.2	5.3
Max Green Setting (Gmax), s	* 9.8	60.7	8.1	* 22	16.7	* 54	* 9.8	20.0
Max Q Clear Time (g_c+I1), s	9.6	45.0	6.0	20.5	7.7	18.0	11.1	6.7
Green Ext Time (p_c), s	0.0	5.2	0.0	0.2	0.2	3.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	45.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	104	1553	1261
Demand Flow Rate, veh/h	107	1599	1298
Vehicles Circulating, veh/h	1583	15	15
Vehicles Exiting, veh/h	31	1298	1675
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	15.5	9.4	7.5
Approach LOS	C	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	LR	LT	TR	LT	TR
Assumed Moves	LR	LT	TR	LT	TR
RT Channelized					
Lane Util	1.000	0.470	0.530	0.470	0.530
Follow-Up Headway, s	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	107	752	847	610	688
Cap Entry Lane, veh/h	370	1331	1402	1331	1402
Entry HV Adj Factor	0.972	0.971	0.972	0.971	0.971
Flow Entry, veh/h	104	730	823	592	668
Cap Entry, veh/h	359	1292	1362	1293	1362
V/C Ratio	0.289	0.565	0.604	0.458	0.491
Control Delay, s/veh	15.5	9.2	9.6	7.4	7.6
LOS	C	A	A	A	A
95th %tile Queue, veh	1	4	4	2	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	29	10	54	39	78	34	999	41	27	643	25
Future Volume (veh/h)	9	29	10	54	39	78	34	999	41	27	643	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	31	11	58	42	84	37	1074	44	29	691	27
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	22	131	111	74	55	111	59	1130	46	50	2192	86
Arrive On Green	0.01	0.07	0.07	0.04	0.10	0.10	0.03	0.64	0.64	0.03	0.63	0.63
Sat Flow, veh/h	1767	1856	1572	1767	552	1104	1767	1770	73	1767	3459	135
Grp Volume(v), veh/h	10	31	11	58	0	126	37	0	1118	29	352	366
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	0	1657	1767	0	1842	1767	1763	1831
Q Serve(g_s), s	0.5	1.5	0.6	3.0	0.0	6.9	1.9	0.0	51.6	1.5	8.5	8.5
Cycle Q Clear(g_c), s	0.5	1.5	0.6	3.0	0.0	6.9	1.9	0.0	51.6	1.5	8.5	8.5
Prop In Lane	1.00		1.00	1.00		0.67	1.00		0.04	1.00		0.07
Lane Grp Cap(c), veh/h	22	131	111	74	0	166	59	0	1177	50	1117	1161
V/C Ratio(X)	0.46	0.24	0.10	0.78	0.00	0.76	0.63	0.00	0.95	0.58	0.32	0.32
Avail Cap(c_a), veh/h	95	521	442	95	0	465	130	0	1266	95	1177	1222
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.4	40.7	40.3	43.9	0.0	40.5	44.2	0.0	15.4	44.4	7.8	7.8
Incr Delay (d2), s/veh	14.6	0.9	0.4	26.5	0.0	6.8	10.7	0.0	14.5	10.1	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.7	0.2	1.8	0.0	2.9	1.0	0.0	19.8	0.8	2.4	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.0	41.6	40.6	70.4	0.0	47.4	54.9	0.0	29.9	54.5	7.9	7.9
LnGrp LOS	E	D	D	E	A	D	D	A	C	D	A	A
Approach Vol, veh/h		52			184			1155			747	
Approach Delay, s/veh		44.9			54.7			30.7			9.7	
Approach LOS		D			D			C			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	65.1	8.1	12.6	7.3	64.7	5.3	15.3
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	6.0	* 4.2	6.0	* 4.2	6.0
Max Green Setting (Gmax), s	* 5	63.6	* 5	26.0	* 6.8	61.8	* 5	26.0
Max Q Clear Time (g_c+I1), s	3.5	53.6	5.0	3.5	3.9	10.5	2.5	8.9
Green Ext Time (p_c), s	0.0	5.5	0.0	0.1	0.0	4.1	0.0	0.5

Intersection Summary		
HCM 6th Ctrl Delay		25.8
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	357	362	40	105	272	41	23	705	158	67	507	260
Future Volume (veh/h)	357	362	40	105	272	41	23	705	158	67	507	260
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	388	393	43	114	296	45	25	766	172	73	551	283
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	380	502	55	296	407	182	43	779	659	83	852	722
Arrive On Green	0.21	0.16	0.16	0.17	0.12	0.12	0.02	0.42	0.42	0.05	0.46	0.46
Sat Flow, veh/h	1767	3207	349	1767	3526	1572	1767	1856	1571	1767	1856	1572
Grp Volume(v), veh/h	388	215	221	114	296	45	25	766	172	73	551	283
Grp Sat Flow(s),veh/h/ln	1767	1763	1793	1767	1763	1572	1767	1856	1571	1767	1856	1572
Q Serve(g_s), s	22.8	12.4	12.6	6.1	8.6	2.8	1.5	43.3	7.6	4.4	24.2	5.3
Cycle Q Clear(g_c), s	22.8	12.4	12.6	6.1	8.6	2.8	1.5	43.3	7.6	4.4	24.2	5.3
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	380	276	281	296	407	182	43	779	659	83	852	722
V/C Ratio(X)	1.02	0.78	0.79	0.39	0.73	0.25	0.58	0.98	0.26	0.88	0.65	0.39
Avail Cap(c_a), veh/h	380	577	587	296	931	415	83	779	659	83	852	722
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	43.0	43.0	39.3	45.3	42.7	51.2	30.4	20.1	50.2	22.1	3.4
Incr Delay (d2), s/veh	51.7	4.7	4.9	0.8	2.5	0.7	11.5	28.1	0.2	59.5	1.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.7	5.5	5.6	2.6	3.8	1.1	0.8	23.2	2.6	3.2	9.7	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	93.3	47.7	47.9	40.1	47.8	43.4	62.6	58.6	20.3	109.8	23.8	3.8
LnGrp LOS	F	D	D	D	D	D	E	E	C	F	C	A
Approach Vol, veh/h		824			455			963			907	
Approach Delay, s/veh		69.2			45.4			51.8			24.4	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	50.5	21.9	22.6	6.8	54.7	27.0	17.5
Change Period (Y+Rc), s	6.0	* 6	4.2	* 6	* 4.2	6.0	4.2	* 5.3
Max Green Setting (Gmax), s	5.0	* 45	15.4	* 35	* 5	44.5	22.8	* 28
Max Q Clear Time (g_c+I1), s	6.4	45.3	8.1	14.6	3.5	26.2	24.8	10.6
Green Ext Time (p_c), s	0.0	0.0	0.1	2.0	0.0	3.8	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	47.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	374	148	47	76	102	42	49	2065	99	77	1496	257
Future Volume (veh/h)	374	148	47	76	102	42	49	2065	99	77	1496	257
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	386	153	48	78	105	43	51	2129	102	79	1542	265
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	311	200	170	261	148	126	66	2515	781	87	2630	816
Arrive On Green	0.18	0.11	0.11	0.15	0.08	0.08	0.04	0.50	0.50	0.05	0.52	0.52
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	5066	1572	1767	5066	1572
Grp Volume(v), veh/h	386	153	48	78	105	43	51	2129	102	79	1542	265
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1689	1572	1767	1689	1572
Q Serve(g_s), s	17.8	8.1	2.4	4.0	5.6	2.6	2.9	37.0	3.5	4.5	21.3	4.3
Cycle Q Clear(g_c), s	17.8	8.1	2.4	4.0	5.6	2.6	2.9	37.0	3.5	4.5	21.3	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	200	170	261	148	126	66	2515	781	87	2630	816
V/C Ratio(X)	1.24	0.76	0.28	0.30	0.71	0.34	0.77	0.85	0.13	0.91	0.59	0.32
Avail Cap(c_a), veh/h	311	564	478	261	458	388	87	2660	826	87	2660	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	43.9	30.2	38.5	45.4	44.1	48.3	22.1	13.7	47.9	16.8	2.7
Incr Delay (d2), s/veh	133.6	6.0	0.9	0.6	6.1	1.6	25.1	2.6	0.1	66.0	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.9	3.9	1.1	1.7	2.7	1.0	1.7	13.6	1.2	3.5	7.5	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	175.4	49.9	31.1	39.1	51.5	45.7	73.4	24.8	13.8	114.0	17.2	2.9
LnGrp LOS	F	D	C	D	D	D	E	C	B	F	B	A
Approach Vol, veh/h		587			226			2282			1886	
Approach Delay, s/veh		130.9			46.1			25.4			19.2	
Approach LOS		F			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	55.6	19.2	16.2	8.0	57.9	22.0	13.4
Change Period (Y+Rc), s	5.3	* 5.3	4.2	* 5.3	* 4.2	5.3	4.2	* 5.3
Max Green Setting (Gmax), s	5.0	* 53	12.0	* 31	* 5	53.2	17.8	* 25
Max Q Clear Time (g_c+I1), s	6.5	39.0	6.0	10.1	4.9	23.3	19.8	7.6
Green Ext Time (p_c), s	0.0	11.3	0.1	0.8	0.0	14.3	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	36.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	550	357	24	59	224	132	115	354	125	86	379	199
Future Volume (veh/h)	550	357	24	59	224	132	115	354	125	86	379	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	585	380	26	63	238	140	122	377	133	91	403	212
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	535	721	608	81	464	207	152	544	458	108	463	869
Arrive On Green	0.30	0.39	0.39	0.05	0.13	0.13	0.09	0.29	0.29	0.06	0.25	0.25
Sat Flow, veh/h	1767	1856	1564	1767	3526	1572	1767	1856	1562	1767	1856	1572
Grp Volume(v), veh/h	585	380	26	63	238	140	122	377	133	91	403	212
Grp Sat Flow(s),veh/h/ln	1767	1856	1564	1767	1763	1572	1767	1856	1562	1767	1856	1572
Q Serve(g_s), s	28.8	15.0	0.6	3.4	6.0	8.1	6.4	17.1	6.3	4.8	19.8	2.8
Cycle Q Clear(g_c), s	28.8	15.0	0.6	3.4	6.0	8.1	6.4	17.1	6.3	4.8	19.8	2.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	535	721	608	81	464	207	152	544	458	108	463	869
V/C Ratio(X)	1.09	0.53	0.04	0.78	0.51	0.68	0.80	0.69	0.29	0.84	0.87	0.24
Avail Cap(c_a), veh/h	535	948	799	184	1086	484	201	702	591	108	605	989
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	22.4	7.8	44.9	38.5	39.4	42.7	29.8	26.0	44.2	34.2	3.2
Incr Delay (d2), s/veh	66.8	0.6	0.0	14.5	0.9	3.8	15.9	2.0	0.3	42.6	10.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.3	6.1	0.3	1.7	2.5	3.2	3.3	7.2	2.2	3.3	9.5	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	99.9	23.0	7.9	59.4	39.4	43.2	58.6	31.8	26.3	86.8	44.7	3.4
LnGrp LOS	F	C	A	E	D	D	E	C	C	F	D	A
Approach Vol, veh/h		991			441			632			706	
Approach Delay, s/veh		68.0			43.4			35.8			37.7	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	33.9	8.6	42.6	14.2	29.7	33.0	18.2
Change Period (Y+Rc), s	* 4.2	6.0	* 4.2	* 5.7	6.0	* 6	* 4.2	5.7
Max Green Setting (Gmax), s	* 5.8	36.0	* 9.9	* 49	10.8	* 31	* 29	29.3
Max Q Clear Time (g_c+I1), s	16.8	19.1	5.4	17.0	8.4	21.8	30.8	10.1
Green Ext Time (p_c), s	0.0	2.1	0.0	2.2	0.1	1.9	0.0	1.6

Intersection Summary	
HCM 6th Ctrl Delay	49.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	392	42	181	213	165	35	1658	53	74	1455	145
Future Volume (veh/h)	230	392	42	181	213	165	35	1658	53	74	1455	145
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	240	408	44	189	222	172	36	1727	55	77	1516	151
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	230	432	366	207	432	366	120	2123	659	78	1953	606
Arrive On Green	0.13	0.23	0.23	0.12	0.23	0.23	0.07	0.42	0.42	0.04	0.39	0.39
Sat Flow, veh/h	1767	1856	1572	1767	1856	1572	1767	5066	1572	1767	5066	1572
Grp Volume(v), veh/h	240	408	44	189	222	172	36	1727	55	77	1516	151
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1689	1572	1767	1689	1572
Q Serve(g_s), s	14.8	24.6	2.5	12.0	11.9	10.7	2.2	34.2	1.5	5.0	29.9	4.8
Cycle Q Clear(g_c), s	14.8	24.6	2.5	12.0	11.9	10.7	2.2	34.2	1.5	5.0	29.9	4.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	432	366	207	432	366	120	2123	659	78	1953	606
V/C Ratio(X)	1.04	0.94	0.12	0.92	0.51	0.47	0.30	0.81	0.08	0.99	0.78	0.25
Avail Cap(c_a), veh/h	230	432	366	207	432	366	120	2466	766	78	2484	771
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	42.9	34.4	49.7	38.0	37.6	50.5	29.1	7.8	54.4	30.7	10.1
Incr Delay (d2), s/veh	71.4	29.5	0.1	39.8	1.0	0.9	1.4	1.9	0.1	99.2	1.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	14.2	0.9	7.4	5.3	4.0	1.0	13.1	0.8	4.3	11.7	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	120.9	72.5	34.6	89.5	39.1	38.5	51.9	31.0	7.9	153.5	31.9	10.3
LnGrp LOS	F	E	C	F	D	D	D	C	A	F	C	B
Approach Vol, veh/h		692			583			1818			1744	
Approach Delay, s/veh		86.8			55.3			30.8			35.4	
Approach LOS		F			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	53.4	19.0	32.2	13.4	49.2	19.0	32.2
Change Period (Y+Rc), s	* 4.2	5.7	5.7	* 5.7	5.7	* 5.3	* 4.2	5.7
Max Green Setting (Gmax), s	* 5	55.4	13.3	* 27	5.0	* 56	* 15	25.0
Max Q Clear Time (g_c+I1), s	7.0	36.2	14.0	26.6	4.2	31.9	16.8	13.9
Green Ext Time (p_c), s	0.0	11.5	0.0	0.0	0.0	12.0	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	43.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: Armstrong Ave & Clinton Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	96	248	369	446	139	154	158	139	228	268
Average Queue (ft)	46	103	94	249	70	66	83	57	149	156
95th Queue (ft)	90	169	230	414	122	118	146	99	222	228
Link Distance (ft)		1218		2579		1261	1261		1256	1256
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)		0		13						
Queuing Penalty (veh)		0		18						

Intersection: 2: Temperance Ave & Clinton Ave

Movement	EB	EB	WB	WB	WB	B28	NB	NB	NB	NB	NB	SB
Directions Served	L	TR	L	T	R	T	L	T	T	T	R	L
Maximum Queue (ft)	120	289	300	1182	370	1426	262	300	361	412	210	300
Average Queue (ft)	95	169	295	960	270	540	137	192	233	250	124	247
95th Queue (ft)	147	282	316	1497	503	1527	222	296	352	380	258	369
Link Distance (ft)		2579		1074		1374		5264	5264	5264		
Upstream Blk Time (%)				41		23						
Queuing Penalty (veh)				0		0						
Storage Bay Dist (ft)	60		200		250		250				150	150
Storage Blk Time (%)	36	33	68	7			1	2		29	0	31
Queuing Penalty (veh)	64	32	373	43			3	3		60	0	174

Intersection: 2: Temperance Ave & Clinton Ave

Movement	SB	SB	SB
Directions Served	T	T	TR
Maximum Queue (ft)	647	613	653
Average Queue (ft)	465	466	451
95th Queue (ft)	666	645	640
Link Distance (ft)	1261	1261	1261
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)	50		
Queuing Penalty (veh)	115		

Intersection: 3: Fowler Ave & Kerry Ave

Movement	WB	SB
Directions Served	R	LT
Maximum Queue (ft)	207	578
Average Queue (ft)	90	159
95th Queue (ft)	159	426
Link Distance (ft)	2557	1222
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Armstrong Ave & Kerry Ave

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	90	323	41
Average Queue (ft)	35	53	2
95th Queue (ft)	59	160	18
Link Distance (ft)	2557	1208	1261
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Armstrong Ave & McKinley Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	TR
Maximum Queue (ft)	114	162	227	297	254	324	50	95	230	258
Average Queue (ft)	53	73	125	132	138	136	17	41	125	138
95th Queue (ft)	101	135	214	251	240	261	44	82	199	215
Link Distance (ft)		2562		2541		1344			1208	1208
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250		250	250		
Storage Blk Time (%)				1	0	1			0	
Queuing Penalty (veh)				3	1	2			0	

Intersection: 6: Fowler Ave & Floradora Ave

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	TR	LT	T
Maximum Queue (ft)	102	283	296	166	146
Average Queue (ft)	30	136	87	56	18
95th Queue (ft)	70	229	237	119	85
Link Distance (ft)	2488	1214	1214	824	824
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: Armstrong Ave & Floradora Ave

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	T	TR
Maximum Queue (ft)	27	30	29	162	53	67	260	86	272	285
Average Queue (ft)	7	9	14	70	27	34	105	27	116	110
95th Queue (ft)	24	29	34	113	54	64	205	61	230	196
Link Distance (ft)		2488			2565		1228		1344	1344
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		100	250		170		250		
Storage Blk Time (%)							2		0	
Queuing Penalty (veh)							1		0	

Intersection: 8: Armstrong Ave & Olive Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	175	130	119	229	282	153	83	160	412	74	92	358
Average Queue (ft)	86	56	35	150	119	91	24	68	202	38	28	243
95th Queue (ft)	158	108	91	247	252	157	54	137	338	64	61	361
Link Distance (ft)		1323	1323		1247	1247			1237			1228
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150			130			250	250		250	250	
Storage Blk Time (%)	5	0		33	1				4			8
Queuing Penalty (veh)	4	0		69	3				12			4

Intersection: 8: Armstrong Ave & Olive Ave

Movement	SB
Directions Served	R
Maximum Queue (ft)	308
Average Queue (ft)	177
95th Queue (ft)	292
Link Distance (ft)	1228
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: Temperance Ave & Olive Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	209	170	65	245	255	43	133	110	118	162	43	131
Average Queue (ft)	108	63	27	106	125	10	37	50	59	68	11	59
95th Queue (ft)	178	121	62	186	220	28	89	94	102	129	30	100
Link Distance (ft)		1220			2540			2528	2528	2528		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250		250	250		250	250				250	250
Storage Blk Time (%)				0	0							
Queuing Penalty (veh)				0	0							

Intersection: 9: Temperance Ave & Olive Ave

Movement	SB	SB	SB	SB
Directions Served	T	T	T	R
Maximum Queue (ft)	325	334	423	370
Average Queue (ft)	172	191	225	124
95th Queue (ft)	312	326	356	272
Link Distance (ft)	5264	5264	5264	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				250
Storage Blk Time (%)	3		7	1
Queuing Penalty (veh)	2		31	3

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	369	584	20	44	289	238	132	174	373	197	109	265
Average Queue (ft)	279	183	6	14	139	141	51	105	137	26	51	134
95th Queue (ft)	404	462	18	35	225	209	100	167	229	102	101	222
Link Distance (ft)		2488	2488		1186	1186			1883			557
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250			250			250	300		130	250	
Storage Blk Time (%)	21	0			1	0			11			1
Queuing Penalty (veh)	53	1			0	0			27			0

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	SB
Directions Served	R
Maximum Queue (ft)	281
Average Queue (ft)	125
95th Queue (ft)	224
Link Distance (ft)	557
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Temperance Ave & Belmont Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	200	126	100	221	268	86	241	258	237	222	68	149
Average Queue (ft)	100	62	35	116	148	29	70	169	172	135	16	79
95th Queue (ft)	154	117	70	198	237	63	151	227	225	209	44	141
Link Distance (ft)		1284			2559			2232	2232	2232		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250		250	250		250	250				250	250
Storage Blk Time (%)					1		0	0				
Queuing Penalty (veh)					3		0	0				

Intersection: 11: Temperance Ave & Belmont Ave

Movement	SB	SB	SB	SB
Directions Served	T	T	T	R
Maximum Queue (ft)	231	240	260	228
Average Queue (ft)	112	134	144	85
95th Queue (ft)	207	232	233	184
Link Distance (ft)	2528	2528	2528	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				250
Storage Blk Time (%)	0		0	
Queuing Penalty (veh)	0		1	

Zone Summary

Zone wide Queuing Penalty: 1108

Intersection: 1: Armstrong Ave & Clinton Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	370	737	236	199	98	338	344	158	244	279
Average Queue (ft)	204	472	97	91	40	208	232	76	145	146
95th Queue (ft)	431	697	191	163	79	325	339	130	225	233
Link Distance (ft)		1218		2579		1261	1261		1256	1256
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)		41	0			5			0	
Queuing Penalty (veh)		55	0			3			0	

Intersection: 2: Temperance Ave & Clinton Ave

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	T	T	T	R	L	T
Maximum Queue (ft)	120	2590	299	338	170	350	602	714	701	210	299	343
Average Queue (ft)	116	1377	155	96	60	132	391	426	449	185	135	250
95th Queue (ft)	127	2365	246	220	124	305	567	617	645	265	245	338
Link Distance (ft)		2579		1074			5264	5264	5264			1261
Upstream Blk Time (%)		0										
Queuing Penalty (veh)		3										
Storage Bay Dist (ft)	60		200		250	250				150	150	
Storage Blk Time (%)	65	43	10	1			28		45	4	6	29
Queuing Penalty (veh)	271	65	32	3			27		169	22	27	39

Intersection: 2: Temperance Ave & Clinton Ave

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	371	351
Average Queue (ft)	247	233
95th Queue (ft)	342	328
Link Distance (ft)	1261	1261
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Fowler Ave & Kerry Ave

Movement	WB	SB
Directions Served	R	LT
Maximum Queue (ft)	74	249
Average Queue (ft)	32	59
95th Queue (ft)	60	174
Link Distance (ft)	2557	1222
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Armstrong Ave & Kerry Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	53	528
Average Queue (ft)	30	23
95th Queue (ft)	53	179
Link Distance (ft)	2557	1208
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Armstrong Ave & McKinley Ave

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	T	TR
Maximum Queue (ft)	356	334	129	138	369	491	370	310	264	216
Average Queue (ft)	95	135	51	49	94	235	78	134	138	130
95th Queue (ft)	192	270	101	106	226	387	214	262	238	220
Link Distance (ft)		2562		2541		1344			1208	1208
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250		250	250		
Storage Blk Time (%)		5				5		4	0	
Queuing Penalty (veh)		7				19		8	1	

Intersection: 6: Fowler Ave & Floradora Ave

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	TR	LT	T
Maximum Queue (ft)	74	381	379	96	102
Average Queue (ft)	27	234	214	46	6
95th Queue (ft)	65	354	343	92	43
Link Distance (ft)	2488	1214	1214	824	824
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 7: Armstrong Ave & Floradora Ave

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	L	T	TR
Maximum Queue (ft)	51	74	27	116	133	269	741	53	219	183
Average Queue (ft)	10	31	3	53	59	40	275	22	96	72
95th Queue (ft)	33	65	18	101	121	144	545	45	212	181
Link Distance (ft)		2488			2565		1228		1344	1344
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		100	250		170		250		
Storage Blk Time (%)							13			
Queuing Penalty (veh)							5			

Intersection: 8: Armstrong Ave & Olive Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	224	433	375	139	133	153	41	69	652	370	131	333
Average Queue (ft)	207	267	186	65	76	84	15	17	347	104	60	161
95th Queue (ft)	265	433	339	115	128	138	37	47	528	302	122	299
Link Distance (ft)		1323	1323		1247	1247			1237			1228
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150			130			250	250		250	250	
Storage Blk Time (%)	39	12		0	1				24			3
Queuing Penalty (veh)	70	42		0	1				44			2

Intersection: 8: Armstrong Ave & Olive Ave

Movement	SB
Directions Served	R
Maximum Queue (ft)	119
Average Queue (ft)	43
95th Queue (ft)	91
Link Distance (ft)	1228
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: Temperance Ave & Olive Ave

Movement	EB	EB	EB	B34	B34	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	R	T		L	T	R	L	T	T	T
Maximum Queue (ft)	370	1329	64	1255	1251	110	150	42	369	481	443	491
Average Queue (ft)	346	1013	16	395	206	43	68	16	65	207	218	230
95th Queue (ft)	435	1774	44	1175	849	94	123	37	212	417	426	446
Link Distance (ft)		1220		1247	1247		2540			2528	2528	2528
Upstream Blk Time (%)		49		2	1							
Queuing Penalty (veh)		288		6	3							
Storage Bay Dist (ft)	250		250			250		250	250			
Storage Blk Time (%)	72									5		7
Queuing Penalty (veh)	141									3		7

Intersection: 9: Temperance Ave & Olive Ave

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	T	T	T	R
Maximum Queue (ft)	370	369	389	352	404	370
Average Queue (ft)	54	86	158	174	188	66
95th Queue (ft)	228	200	300	316	341	205
Link Distance (ft)			5264	5264	5264	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	250	250				250
Storage Blk Time (%)			1		4	
Queuing Penalty (veh)			1		11	

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	370	2075	1948	132	112	126	125	136	343	205	134	343
Average Queue (ft)	358	979	125	48	57	55	45	78	163	53	71	200
95th Queue (ft)	400	2063	852	94	105	100	92	125	268	156	116	314
Link Distance (ft)		2488	2488		1186	1186			1883			557
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250			250			250	300		130	250	
Storage Blk Time (%)	59	1							18			3
Queuing Penalty (veh)	210	6							43			3

Intersection: 10: Armstrong Ave & Belmont Ave

Movement	SB
Directions Served	R
Maximum Queue (ft)	82
Average Queue (ft)	33
95th Queue (ft)	67
Link Distance (ft)	557
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Temperance Ave & Belmont Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	T	R	L	T	R	L	T	T	T	R	L
Maximum Queue (ft)	370	1124	370	255	290	143	47	307	303	298	41	292
Average Queue (ft)	307	525	58	149	143	44	23	234	233	208	12	164
95th Queue (ft)	465	929	232	231	236	97	48	302	292	275	32	303
Link Distance (ft)		1284			2559			2232	2232	2232		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250		250	250		250	250				250	250
Storage Blk Time (%)	54	23		0	0			4		2		9
Queuing Penalty (veh)	235	63		1	1			2		1		43

Intersection: 11: Temperance Ave & Belmont Ave

Movement	SB	SB	SB	SB
Directions Served	T	T	T	R
Maximum Queue (ft)	400	385	405	370
Average Queue (ft)	193	194	194	51
95th Queue (ft)	364	357	367	194
Link Distance (ft)	2528	2528	2528	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				250
Storage Blk Time (%)	5		10	
Queuing Penalty (veh)	4		14	

Zone Summary

Zone wide Queuing Penalty: 2002

Appendix K: Signal Warrants

Signal Warrant Analysis

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet

006	FRESNO	n/a	n/a
DIST	CO	RTE	KPM

COUNT DATE 9/13/2018
CALC JB DATE 7/11/2019
CHK MA DATE 7/11/2019

Major St: **Armstrong Ave** — Critical Approach Speed 55 MPH
Minor St: **Clinton Ave** — Critical Approach Speed 45 MPH

Critical speed of major street traffic > 64 km/h (40 mph)................. ☑
or — RURAL (R)
In built up area of isolated community of < 10,000 population .... ☐
☐ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume

100% SATISFIED **YES** ☐ **NO** ☑
80 % SATISFIED **YES** ☐ **NO** ☑

APPROACH / LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) 1 U	1 R	2 or More U	2 or More R	6:00 a.m.	7:00 a.m.	8:00 a.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.
Both Approaches	500	350	600	420	365	746	390	340	444	478	532	313
Major Street	(400)	(280)	(480)	(336)	365	746	390	340	444	478	532	313
Highest Approach	150	105	200	140	96	235	118	113	117	155	197	76
Minor Street	(120)	(84)	(160)	(112)	96	235	118	113	117	155	197	76

Condition B - Interruption of Continuous Traffic

100% SATISFIED **YES** ☐ **NO** ☑
80 % SATISFIED **YES** ☐ **NO** ☑

APPROACH / LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) 1 U	1 R	2 or More U	2 or More R	6:00 a.m.	7:00 a.m.	8:00 a.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.
Both Approaches	750	525	900	630	365	746	390	340	444	478	532	313
Major Street	(600)	(420)	(720)	(504)	365	746	390	340	444	478	532	313
Highest Approach	75	53	100	70	96	235	118	113	117	155	197	76
Minor Street	(60)	(42)	(80)	(56)	96	235	118	113	117	155	197	76

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Combination of Conditions A & B **SATISFIED** **YES** ☐ **NO** ☑

REQUIREMENT	WARRANT	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME 2. INTERRUPTION OF CONTINUOUS TRAFFIC	Yes ☐ No ☑

JLB TRAFFIC ENGINEERING, INC.
www.JLBtraffic.com
info@JLBtraffic.com
516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
(559) 570 - 8991

Signal Warrant Analysis

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet

DIST	CO	RTE	KPM
006	FRESNO	n/a	n/a

COUNT DATE 5/21/2018
CALC JB DATE 7/11/2019
CHK MA DATE 7/11/2019

Major St: **Fowler Ave** Critical Approach Speed 45 MPH
Minor St: **Floradora Ave** Critical Approach Speed 55 MPH

Critical speed of major street traffic > 64 km/h (40 mph)……………… ☑
or — RURAL (R)
In built up area of isolated community of < 10,000 population ……….. ☐
☐ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume

100% SATISFIED **YES** ☐ **NO** ☑
80 % SATISFIED **YES** ☐ **NO** ☑

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) 1 U	1 R	2 or More U	2 or More R	7:00 a.m.	8:00 a.m.	12:00 a.m.	1:00 p.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	Hour
Both Approaches Major Street	500	350	600	420	806	761	819	796	878	944	951	888	
	(400)	(280)	(480)	(336)	806	761	819	796	878	944	951	888	
Highest Approach Minor Street	150	105	200	140	8	8	5	3	6	8	8	1	
	(120)	(84)	(160)	(112)	8	8	5	3	6	8	8	1	

Condition B - Interruption of Continuous Traffic

100% SATISFIED **YES** ☐ **NO** ☑
80 % SATISFIED **YES** ☐ **NO** ☑

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) 1 U	1 R	2 or More U	2 or More R	7:00 a.m.	8:00 a.m.	12:00 a.m.	1:00 p.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	Hour
Both Approaches Major Street	750	525	900	630	806	761	819	796	878	944	951	888	
	(600)	(420)	(720)	(504)	806	761	819	796	878	944	951	888	
Highest Approach Minor Street	75	53	100	70	8	8	5	3	6	8	8	1	
	(60)	(42)	(80)	(56)	8	8	5	3	6	8	8	1	

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Combination of Conditions A & B **SATISFIED** **YES** ☐ **NO** ☑

REQUIREMENT	WARRANT	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME	Yes ☐ No ☑
	2. INTERRUPTION OF CONTINUOUS TRAFFIC	

JLB TRAFFIC ENGINEERING, INC.
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516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
(559) 570 - 8991

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet

COUNT DATE 9/13/2018
CALC JB DATE 7/11/2019
CHK MA DATE 7/11/2019

DIST	CO	RTE	KPM
006	FRESNO	n/a	n/a

Major St: **Armstrong Ave** Critical Approach Speed 55 MPH
Minor St: **Floradora Ave** Critical Approach Speed 55 MPH

Critical speed of major street traffic > 64 km/h (40 mph)................. ☑ RURAL (R)
or
In built up area of isolated community of < 10,000 population .... ☐ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume

100% SATISFIED YES ☐ NO ☑
80 % SATISFIED YES ☐ NO ☑

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) 1 U	1 R	2 or More U	2 or More R	6:00 a.m.	7:00 a.m.	8:00 a.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.
Both Approaches Major Street	500	350	600	420	349	743	422	363	527	492	561	284
	(400)	(280)	(480)	(336)	349	743	422	363	527	492	561	284
Highest Approach Minor Street	150	105	200	140	6	29	12	6	14	8	8	5
	(120)	(84)	(160)	(112)	6	29	12	6	14	8	8	5

Condition B - Interruption of Continuous Traffic

100% SATISFIED YES ☐ NO ☑
80 % SATISFIED YES ☐ NO ☑

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) 1 U	1 R	2 or More U	2 or More R	6:00 a.m.	7:00 a.m.	8:00 a.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.
Both Approaches Major Street	750	525	900	630	349	743	422	363	527	492	561	284
	(600)	(420)	(720)	(504)	349	743	422	363	527	492	561	284
Highest Approach Minor Street	75	53	100	70	6	29	12	6	14	8	8	5
	(60)	(42)	(80)	(56)	6	29	12	6	14	8	8	5

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Combination of Conditions A & B **SATISFIED** **YES** ☐ **NO** ☑

REQUIREMENT	WARRANT	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME	Yes ☐ No ☑
	2. INTERRUPTION OF CONTINUOUS TRAFFIC	

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(FHWA'S MUTCD 2009 Edition, as amended for use in California)

Signal Warrant Analysis

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet

006	FRESNO	n/a	n/a
DIST	CO	RTE	KPM

COUNT DATE 9/13/2018
CALC JB DATE 7/11/2019
CHK MA DATE 7/11/2019

N/S St: **Armstrong Ave** Critical Approach Speed 55 MPH
E/W St: **Olive Ave** Critical Approach Speed 45 MPH

Critical speed of major street traffic > 64 km/h (40 mph)................. ☑
or } RURAL (R)
In built up area of isolated community of < 10,000 population .... ☐
☐ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume

100% SATISFIED YES ☐ NO ☑
80 % SATISFIED YES ☑ NO ☐

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) 1 U	1 R	2 or More U	2 or More R	6:00 a.m.	7:00 a.m.	8:00 a.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.
Both Approaches	500	350	600	420	357	851	455	341	464	456	464	344
Major Street	(400)	(280)	(480)	(336)	357	851	455	341	464	456	464	344
Highest Approach	150	105	200	140	165	304	186	187	235	253	316	116
Minor Street	(120)	(84)	(160)	(112)	165	304	186	187	235	253	316	116

Condition B - Interruption of Continuous Traffic

100% SATISFIED YES ☐ NO ☑
80 % SATISFIED YES ☐ NO ☑

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) 1 U	1 R	2 or More U	2 or More R	6:00 a.m.	7:00 a.m.	8:00 a.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.
Both Approaches	750	525	900	630	357	851	455	341	464	456	464	344
Major Street	(600)	(420)	(720)	(504)	357	851	455	341	464	456	464	344
Highest Approach	75	53	100	70	165	304	186	187	235	253	316	116
Minor Street	(60)	(42)	(80)	(56)	165	304	186	187	235	253	316	116

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Combination of Conditions A & B **SATISFIED** **YES** ☐ **NO** ☑

REQUIREMENT	WARRANT	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME	Yes ☐ No ☑
	2. INTERRUPTION OF CONTINUOUS TRAFFIC	

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Signal Warrant Analysis

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet

006	FRESNO	n/a	n/a
DIST	CO	RTE	KPM

COUNT DATE 9/13/2018
CALC JB DATE 7/11/2019
CHK MA DATE 7/11/2019

Major St: **Temperance Ave** — Critical Approach Speed 45 MPH
Minor St: **Olive Ave** — Critical Approach Speed 45 MPH

Critical speed of major street traffic > 64 km/h (40 mph)................. ☑
or } RURAL (R)
In built up area of isolated community of < 10,000 population .... ☐
☐ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume

100% SATISFIED YES ☑ NO ☐
80 % SATISFIED YES ☑ NO ☐

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) 1 U	1 R	2 or More U	2 or More R	6:00 a.m.	7:00 a.m.	8:00 a.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.	Hour
Both Approaches	500	350	600	420	727	908	601	698	759	832	878	734	
Major Street	(400)	(280)	(480)	(336)	727	908	601	698	759	832	878	734	
Highest Approach	150	105	200	140	158	320	166	144	205	182	211	143	
Minor Street	(120)	(84)	(160)	(112)	158	320	166	144	205	182	211	143	

Condition B - Interruption of Continuous Traffic

100% SATISFIED YES ☑ NO ☐
80 % SATISFIED YES ☑ NO ☐

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) 1 U	1 R	2 or More U	2 or More R	6:00 a.m.	7:00 a.m.	8:00 a.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.	Hour
Both Approaches	750	525	900	630	727	908	601	698	759	832	878	734	
Major Street	(600)	(420)	(720)	(504)	727	908	601	698	759	832	878	734	
Highest Approach	75	53	100	70	158	320	166	144	205	182	211	143	
Minor Street	(60)	(42)	(80)	(56)	158	320	166	144	205	182	211	143	

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Combination of Conditions A & B **SATISFIED** **YES** ☑ **NO** ☐

REQUIREMENT	WARRANT	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME	Yes ☑ No ☐
	2. INTERRUPTION OF CONTINUOUS TRAFFIC	

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Signal Warrant Analysis

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet

DIST	CO	RTE	KPM
006	FRESNO	n/a	n/a

COUNT DATE 9/13/2018
CALC JB DATE 7/11/2019
CHK MA DATE 7/11/2019

Major St: **Belmont Ave** Critical Approach Speed 50 MPH
Minor St: **Armstrong Ave** Critical Approach Speed 45 MPH

Critical speed of major street traffic > 64 km/h (40 mph)................. ☑
or } RURAL (R)
In built up area of isolated community of < 10,000 population .... ☐
☐ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume
(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume
100% SATISFIED YES ☐ NO ☑
80 % SATISFIED YES ☐ NO ☑

APPROACH LANES	1 U	1 R	2 or More U	2 or More R	6:00 a.m.	7:00 a.m.	8:00 a.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.
Both Approaches Major Street	500	350	600	420	268	544	334	337	533	523	609	332
	(400)	(280)	(480)	(336)	268	544	334	337	533	523	609	332
Highest Approach Minor Street	150	105	200	140	76	279	164	78	174	114	128	62
	(120)	(84)	(160)	(112)	76	279	164	78	174	114	128	62

Condition B - Interruption of Continuous Traffic
100% SATISFIED YES ☐ NO ☑
80 % SATISFIED YES ☐ NO ☑

APPROACH LANES	1 U	1 R	2 or More U	2 or More R	6:00 a.m.	7:00 a.m.	8:00 a.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.
Both Approaches Major Street	750	525	900	630	268	544	334	337	533	523	609	332
	(600)	(420)	(720)	(504)	268	544	334	337	533	523	609	332
Highest Approach Minor Street	75	53	100	70	76	279	164	78	174	114	128	62
	(60)	(42)	(80)	(56)	76	279	164	78	174	114	128	62

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Combination of Conditions A & B **SATISFIED** **YES** ☐ **NO** ☑

REQUIREMENT	WARRANT	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME	Yes ☐ No ☑
	2. INTERRUPTION OF CONTINUOUS TRAFFIC	

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Signal Warrant Analysis

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet

DIST	CO	RTE	KPM
006	FRESNO	n/a	n/a

COUNT DATE 06/11/15
CALC AB DATE 08/13/19
CHK DATE

Major St: **Temperance Ave** Critical Approach Speed 50 MPH
Minor St: **Belmont Ave** Critical Approach Speed 50 MPH

Critical speed of major street traffic > 64 km/h (40 mph)................. ☑
or } RURAL (R)
In built up area of isolated community of < 10,000 population .... ☐
☐ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume

(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume

100% SATISFIED YES ☑ NO ☐
80 % SATISFIED YES ☑ NO ☐

APPROACH LANES	1 (U)	1 (R)	2 or More (U)	2 or More (R)	6:00 a.m.	7:00 a.m.	8:00 a.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.
Both Approaches Major Street	500	350	600	420	659	892	654	669	691	833	878	643
	(400)	(280)	(480)	(336)	659	892	654	669	691	833	878	643
Highest Approach Minor Street	150	105	200	140	164	290	241	158	198	196	232	142
	(120)	(84)	(160)	(112)	164	290	241	158	198	196	232	142

MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS); Hour

Condition B - Interruption of Continuous Traffic

100% SATISFIED YES ☑ NO ☐
80 % SATISFIED YES ☑ NO ☐

APPROACH LANES	1 (U)	1 (R)	2 or More (U)	2 or More (R)	6:00 a.m.	7:00 a.m.	8:00 a.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.	6:00 p.m.
Both Approaches Major Street	750	525	900	630	659	892	654	669	691	833	878	643
	(600)	(420)	(720)	(504)	659	892	654	669	691	833	878	643
Highest Approach Minor Street	75	53	100	70	164	290	241	158	198	196	232	142
	(60)	(42)	(80)	(56)	164	290	241	158	198	196	232	142

MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS); Hour

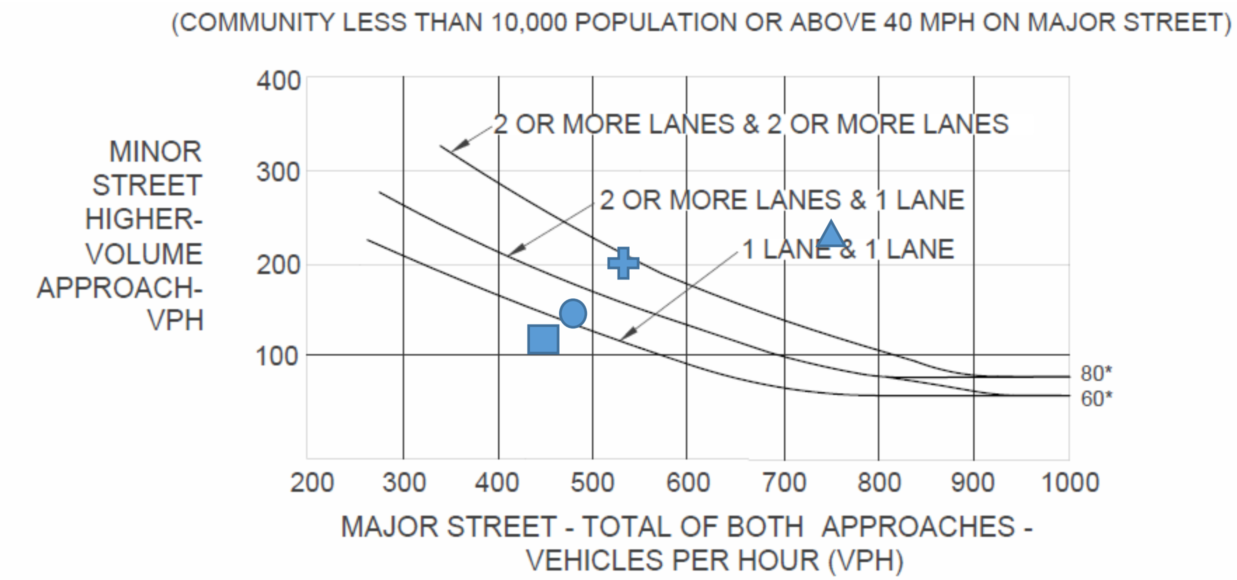
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Combination of Conditions A & B **SATISFIED** YES ☑ NO ☐

REQUIREMENT	WARRANT	FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME	Yes ☑ No ☐
	2. INTERRUPTION OF CONTINUOUS TRAFFIC	

Warrant 2: Four-Hour Vehicular Volume (Rural)

Existing Traffic Conditions
1. Armstrong Ave / Clinton Ave



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor street approach with one lane.

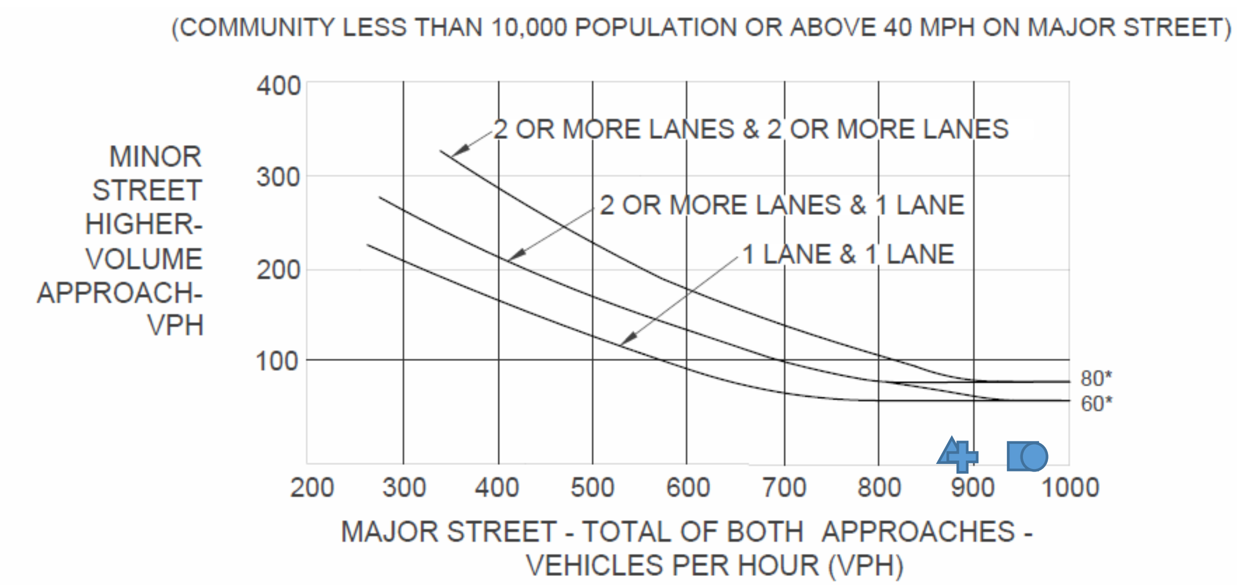
	1 Lane & 1 Lane	*2 or More Lanes & 1 Lane*	*2 or More Lanes & 2 or More Lanes*	▲ *7:00 AM Volume*	■ *3:00 PM Volume*	● *4:00 PM Volume*	✚ *5:00 PM Volume*
Major Street (Total of Both Approaches)	☒	☐	☐	746	444	478	532
Minor Street (Higher Volume Approach)				235	117	155	197

Satisfied: ☐ **Yes** ☒ **No**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 2: Four-Hour Vehicular Volume (Rural)

Existing Traffic Conditions
6. Fowler Ave / Floradora Ave



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor street approach with one lane.

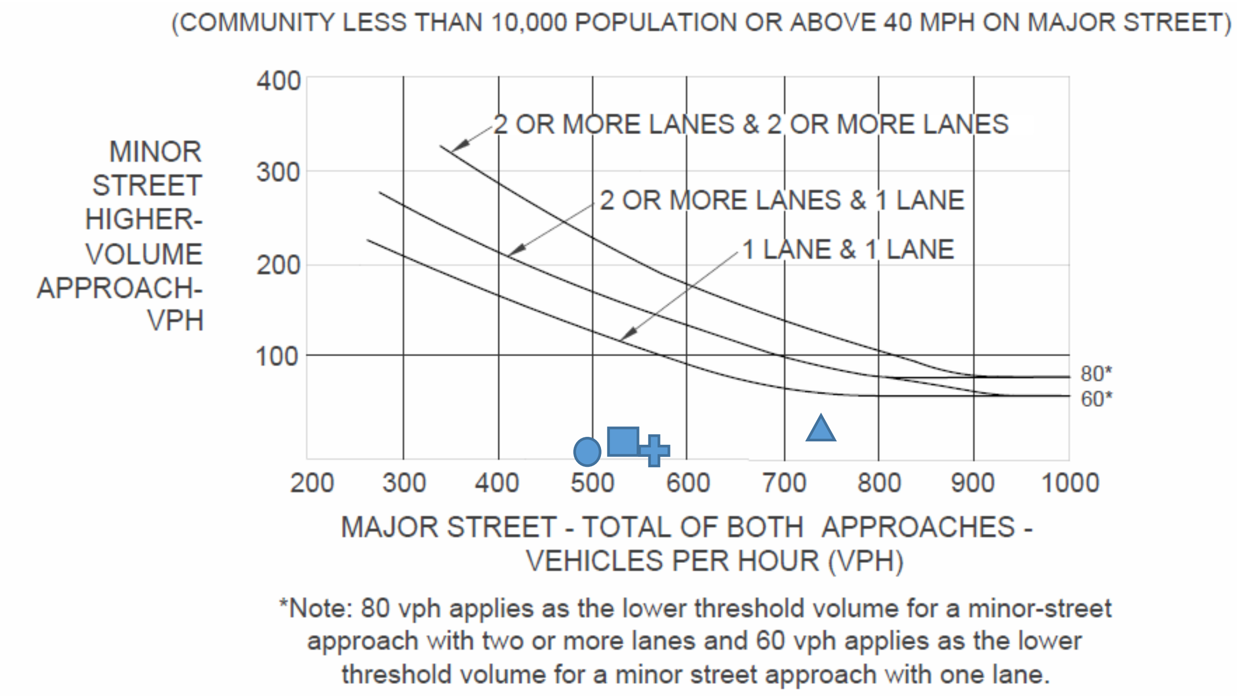
	1 Lane & 1 Lane	*2 or More Lanes & 1 Lane*	*2 or More Lanes & 2 or More Lanes*	▲ *2:00 PM Volume*	■ *3:00 PM Volume*	● *4:00 PM Volume*	✚ *5:00 PM Volume*
Major Street (Total of Both Approaches)	☒	☐	☐	878	944	951	888
Minor Street (Higher Volume Approach)				6	8	8	1

Satisfied: ☐ **Yes** ☒ **No**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 2: Four-Hour Vehicular Volume (Rural)

Existing Traffic Conditions
7. Armstrong Ave / Floradora Ave



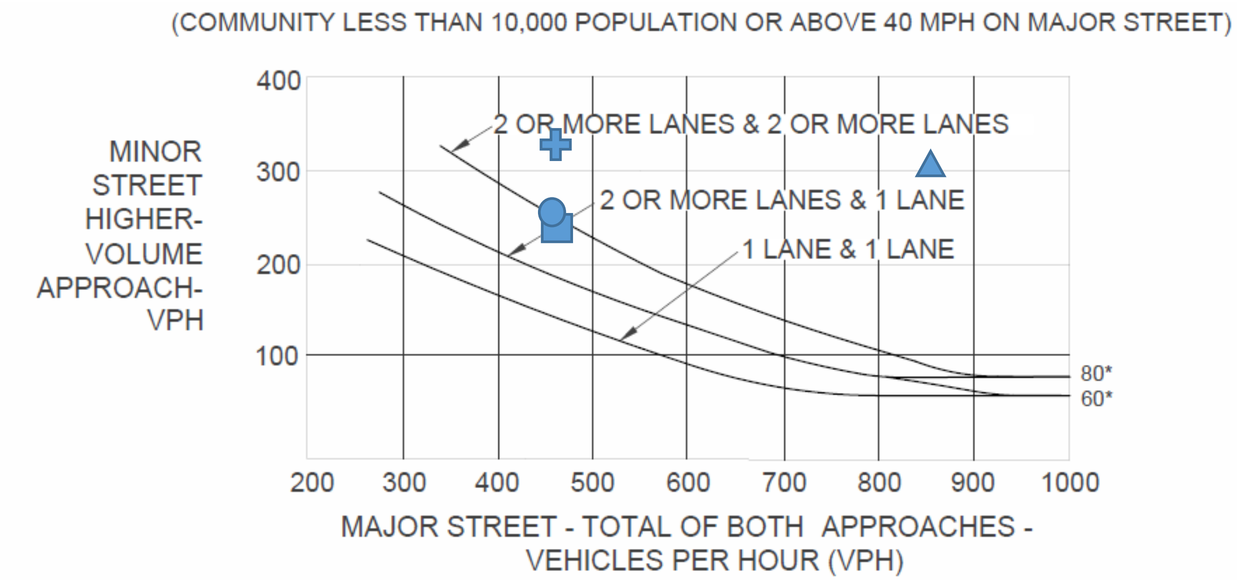
	1 Lane & 1 Lane	*2 or More Lanes & 1 Lane*	*2 or More Lanes & 2 or More Lanes*	▲ *7:00 AM Volume*	■ *3:00 PM Volume*	● *4:00 PM Volume*	✚ *5:00 PM Volume*
Major Street (Total of Both Approaches)	☒	☐	☐	743	527	492	561
Minor Street (Higher Volume Approach)				29	14	8	8

Satisfied: ☐ **Yes** ☒ **No**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 2: Four-Hour Vehicular Volume (Rural)

Existing Traffic Conditions
8. Armstrong Ave / Olive Ave



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor street approach with one lane.

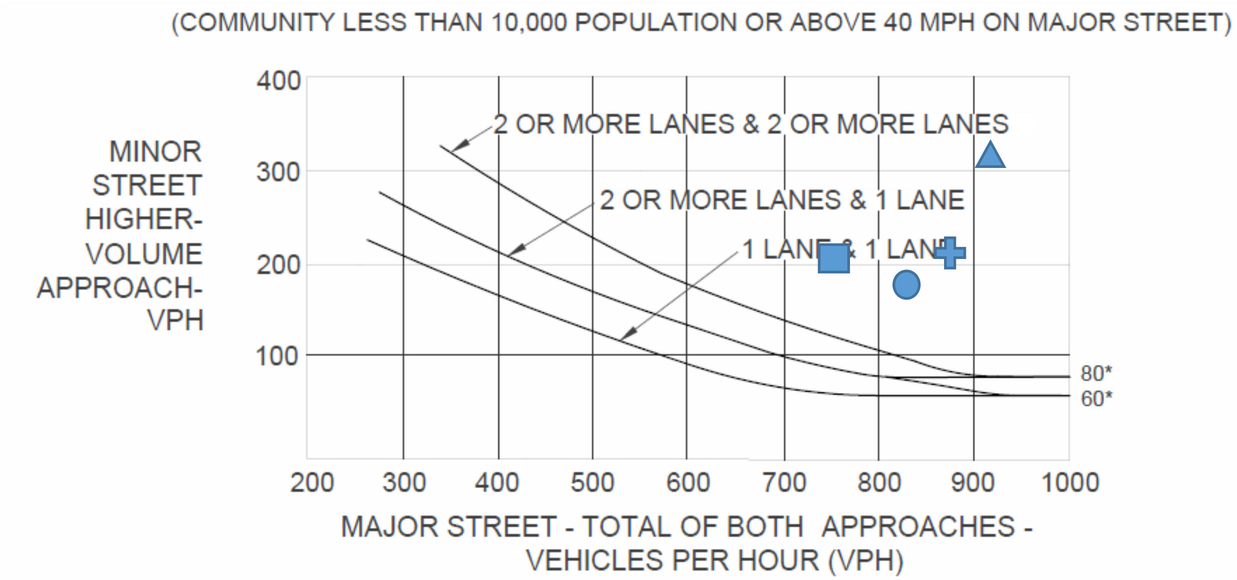
	1 Lane & 1 Lane	*2 or More Lanes & 1 Lane*	*2 or More Lanes & 2 or More Lanes*	▲ *7:00 AM Volume*	■ *3:00 PM Volume*	● *4:00 PM Volume*	✚ *5:00 PM Volume*
Major Street (Total of Both Approaches)	☒	☐	☐	851	464	456	464
Minor Street (Higher Volume Approach)				304	235	253	316

Satisfied: ☒ **Yes** ☐ **No**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 2: Four-Hour Vehicular Volume (Rural)

Existing Traffic Conditions
9. Temperance Ave / Olive Ave



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor street approach with one lane.

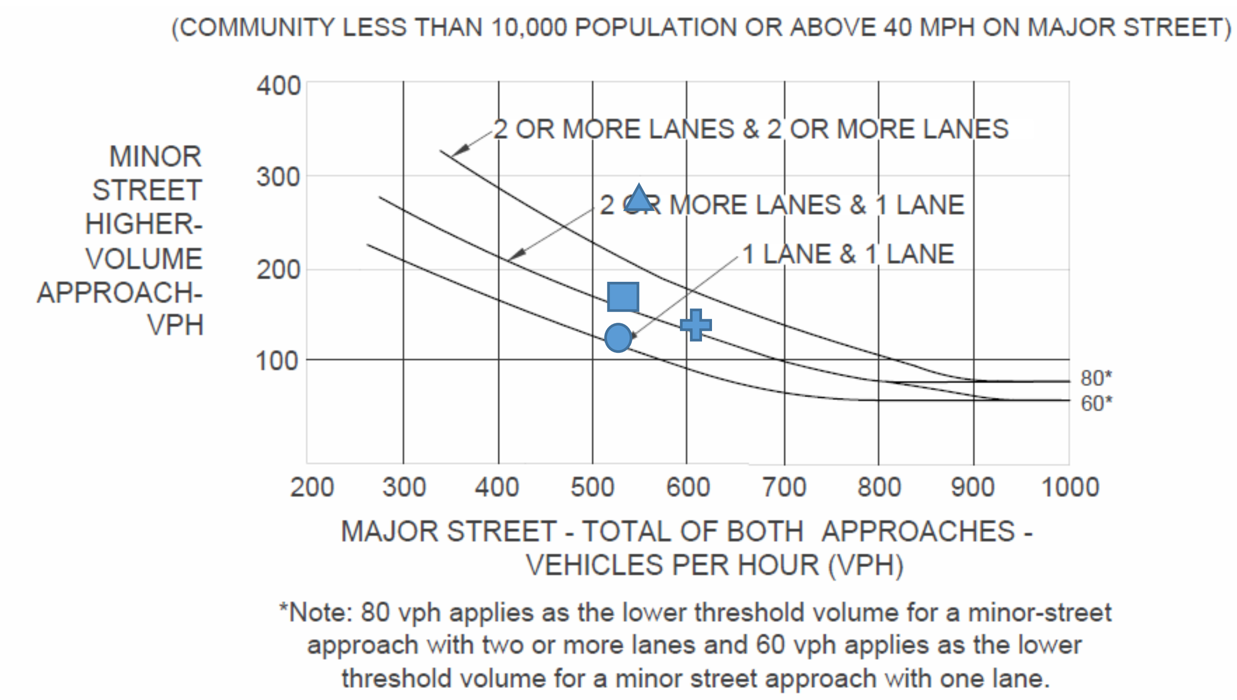
	1 Lane & 1 Lane	*2 or More Lanes & 1 Lane*	*2 or More Lanes & 2 or More Lanes*	▲ *7:00 AM Volume*	■ *3:00 PM Volume*	● *4:00 PM Volume*	✚ *5:00 PM Volume*
Major Street (Total of Both Approaches)	☒	☐	☐	908	759	832	878
Minor Street (Higher Volume Approach)				320	205	182	211

Satisfied: ☒ **Yes** ☐ **No**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 2: Four-Hour Vehicular Volume (Rural)

Existing Traffic Conditions
10. Armstrong Ave / Belmont Ave



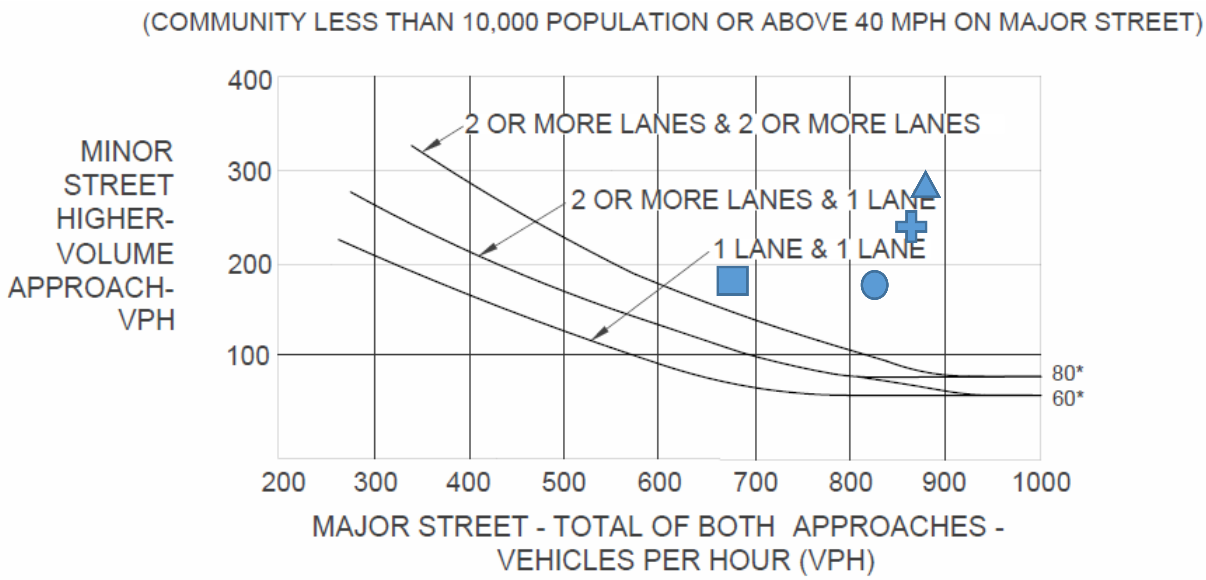
	1 Lane & 1 Lane	*2 or More Lanes & 1 Lane*	*2 or More Lanes & 2 or More Lanes*	▲ *7:00 AM Volume*	■ *3:00 PM Volume*	● *4:00 PM Volume*	✚ *5:00 PM Volume*
Major Street (Total of Both Approaches)	☒	☐	☐	544	533	523	609
Minor Street (Higher Volume Approach)				279	174	114	128

Satisfied: ☒ **Yes** ☐ **No**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 2: Four-Hour Vehicular Volume (Rural)

Existing Traffic Conditions
11. Temperance Ave / Belmont Ave



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor street approach with one lane.

	1 Lane & 1 Lane	*2 or More Lanes & 1 Lane*	*2 or More Lanes & 2 or More Lanes*	▲ *7:00 AM Volume*	■ *3:00 PM Volume*	● *4:00 PM Volume*	✚ *5:00 PM Volume*
Major Street (Total of Both Approaches)	☒	☐	☐	892	691	833	878
Minor Street (Higher Volume Approach)				290	198	196	232

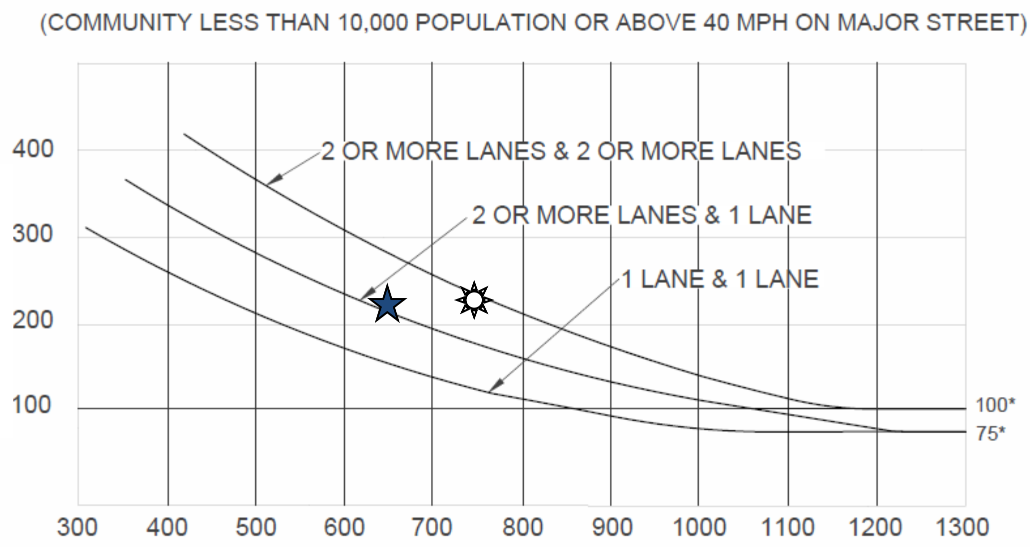
Satisfied: ☒ **Yes** ☐ **No**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions
1. Armstrong Ave / Clinton Ave
AM (PM) Peak Hour

Clinton Ave Highest Approach Volume = 231 (222) VPH



Armstrong Ave Total of Both Approaches = 747 (649) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

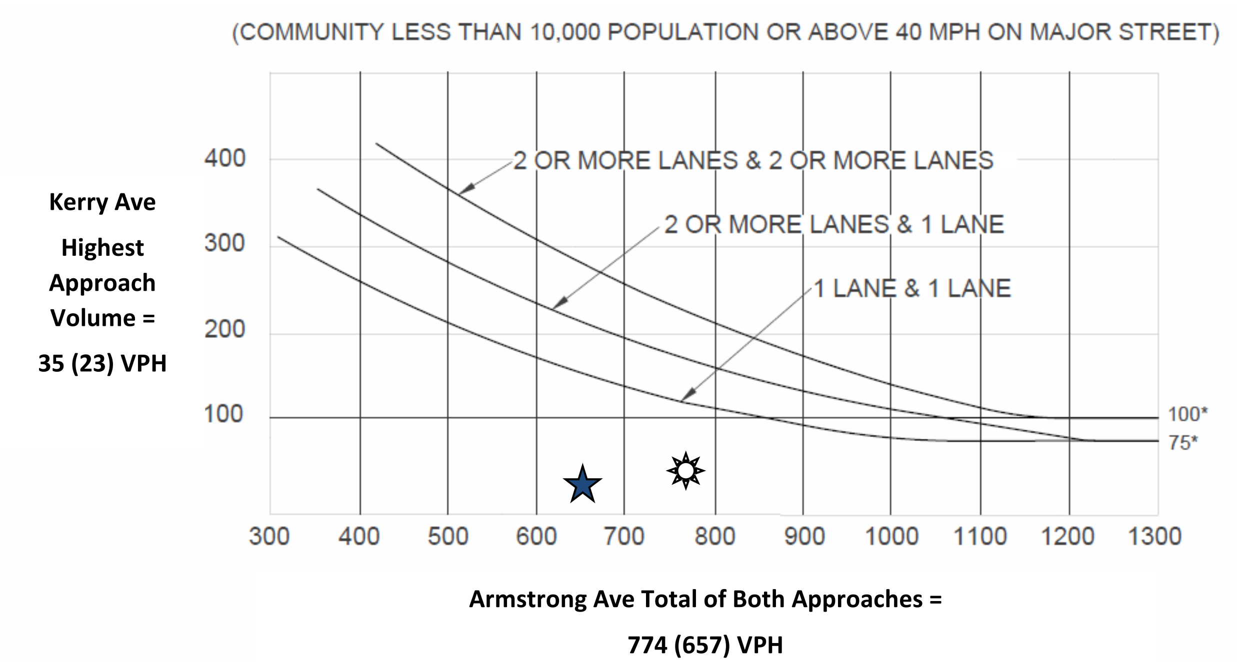
☼ **AM Peak Hour – Signal Warrant is Met**

★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions
4. Armstrong Ave / Kerry Ave
AM (PM) Peak Hour



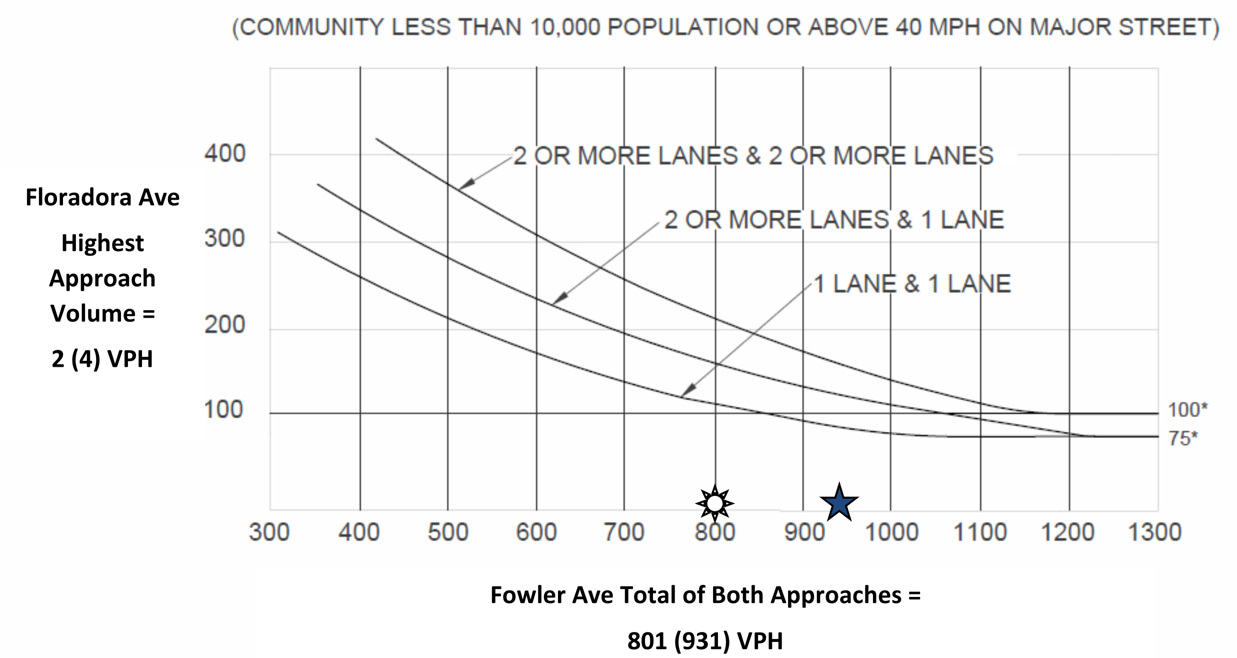
*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met
PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions
6. Fowler Ave / Floradora Ave
AM (PM) Peak Hour



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met
PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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November 7, 2014

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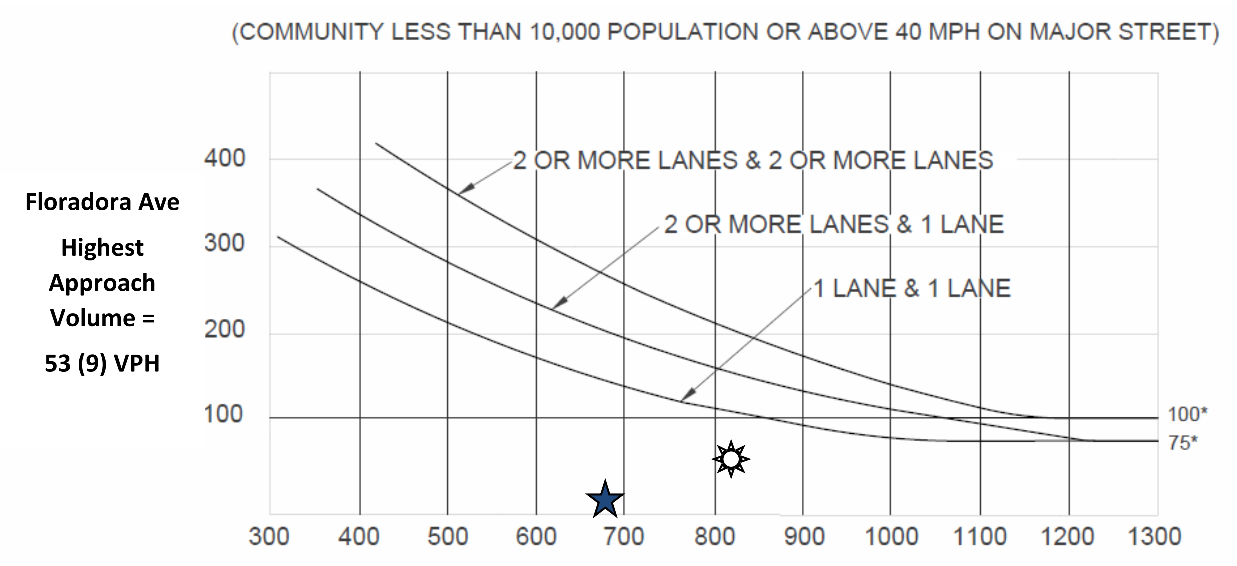
Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions
7. Armstrong Ave / Floradora Ave
AM (PM) Peak Hour



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

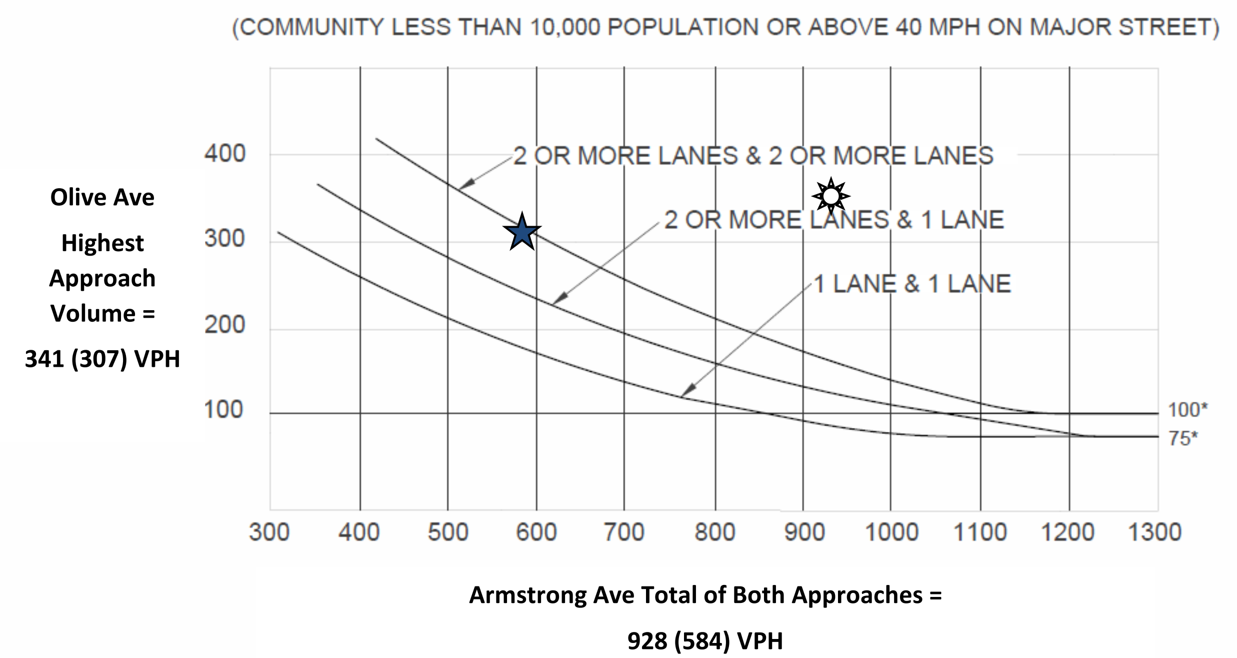
☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions
8. Armstrong Ave / Olive Ave
AM (PM) Peak Hour



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**

★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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Part 4: Highway Traffic Signals
November 7, 2014

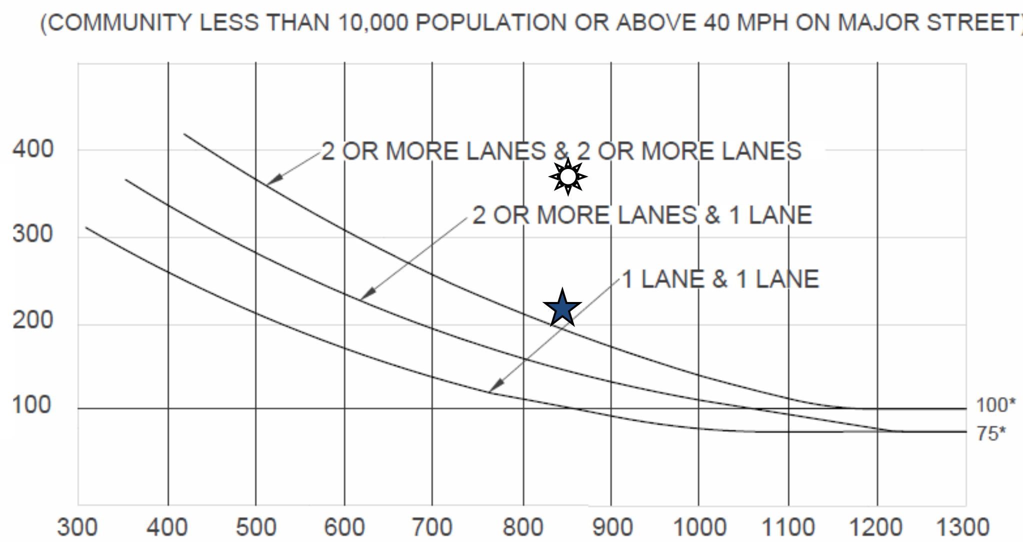
Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions
9. Temperance Ave / Olive Ave
AM (PM) Peak Hour

Olive Ave

Highest Approach Volume =

365 (212) VPH



Temperance Ave Total of Both Approaches =

852 (848) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**

★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

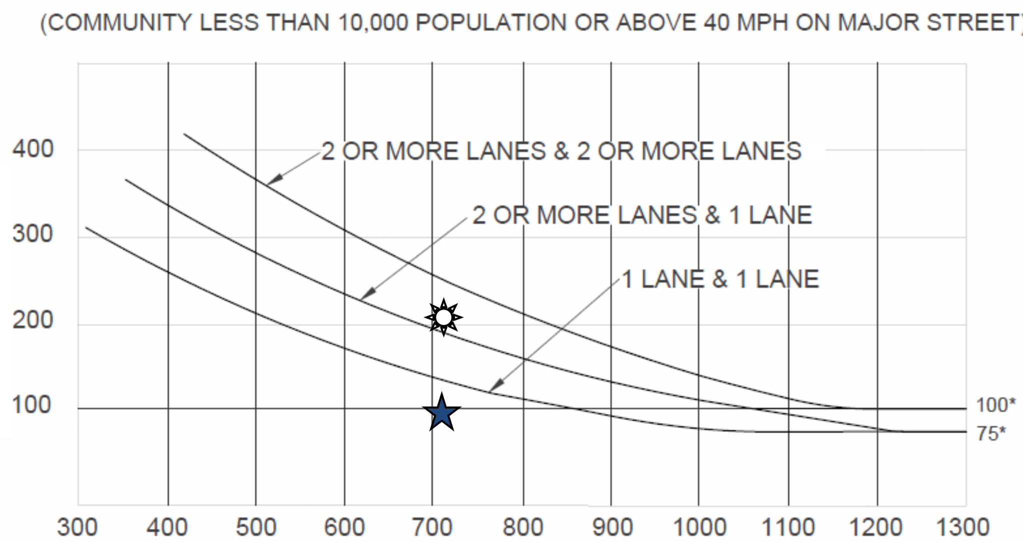
Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions
10. Armstrong Ave / Belmont Ave
AM (PM) Peak Hour

Armstrong Ave

Highest Approach Volume =

202 (92) VPH



Belmont Ave Total of Both Approaches =

706 (706) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Met

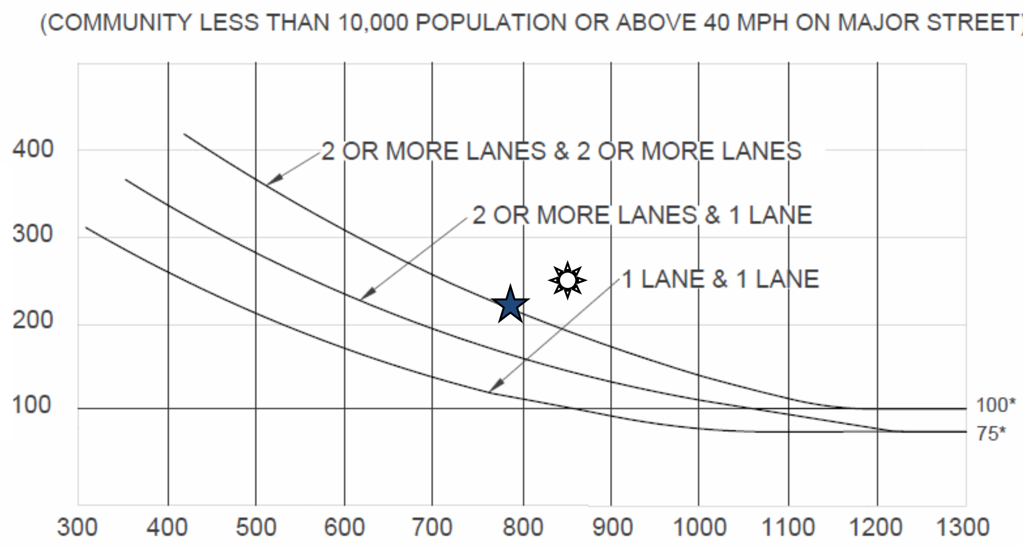
PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions
11. Temperance Ave / Belmont Ave
AM (PM) Peak Hour

Belmont Ave Highest Approach Volume = 245 (216) VPH



Temperance Ave Total of Both Approaches =

853 (793) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Met

PM Peak Hour – Signal Warrant is Met

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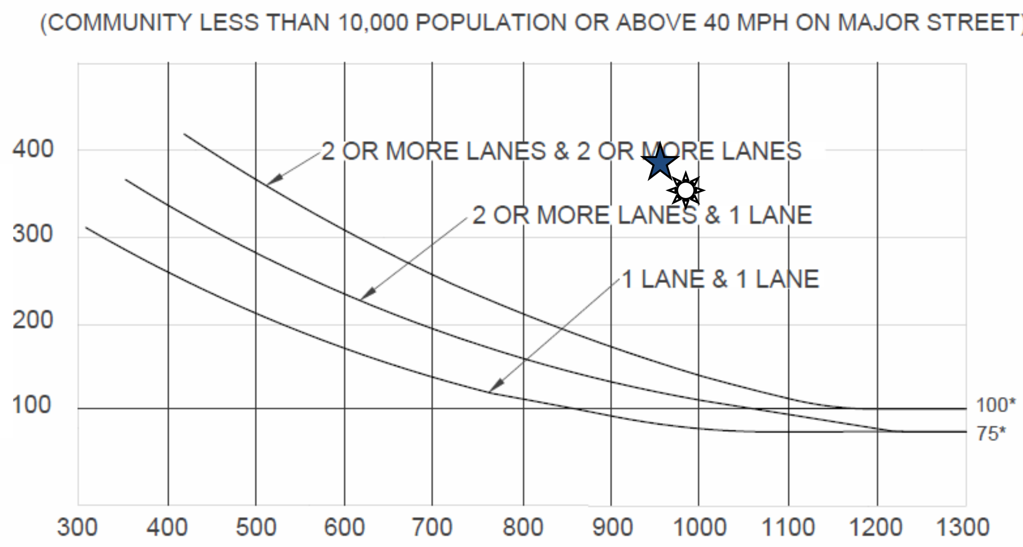
<u>Warrant 3: Peak Hour (Rural)</u>

Near Term plus Project Traffic Conditions
1. Armstrong Ave / Clinton Ave
AM (PM) Peak Hour

Clinton Ave Highest Approach Volume = 343 (382) VPH



Armstrong Ave Total of Both Approaches = 990 (961) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Met

PM Peak Hour – Signal Warrant is Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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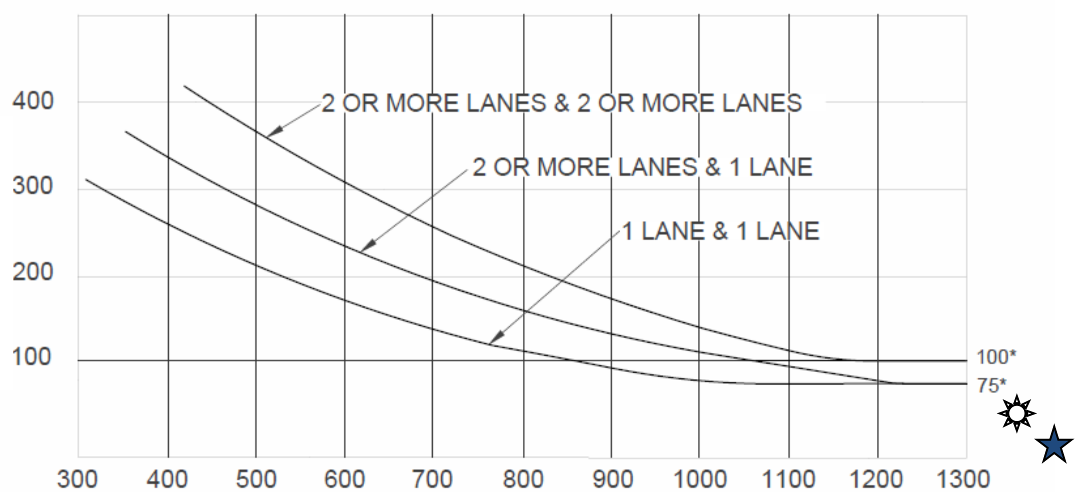
Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions
3. Fowler Ave / Kerry Ave
AM (PM) Peak Hour

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

Kerry Ave Highest Approach Volume = 56 (15) VPH



Fowler Ave Total of Both Approaches = 1549 (1626) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**
★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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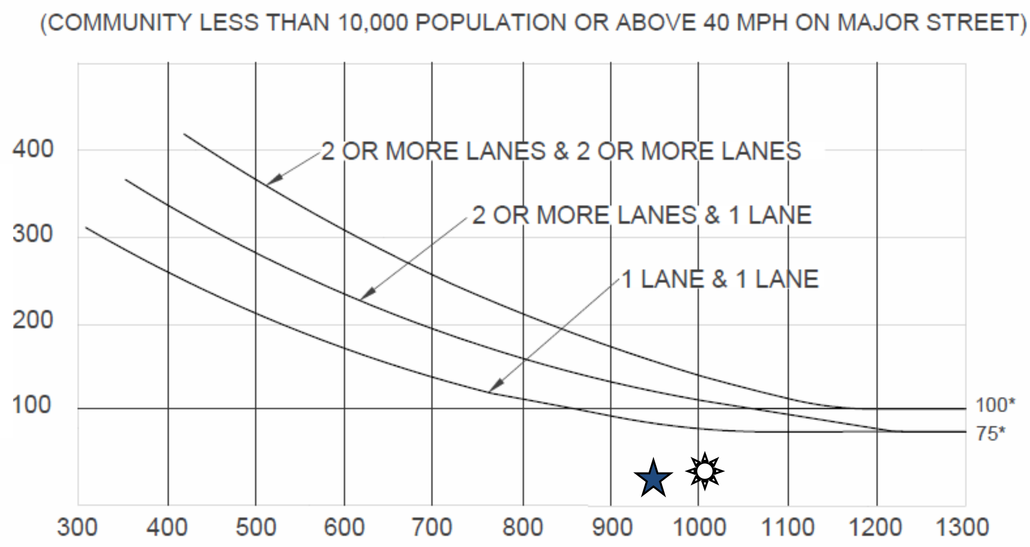
November 7, 2014

Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions
4. Armstrong Ave / Kerry Ave
AM (PM) Peak Hour

Kerry Ave Highest Approach Volume = 35 (23) VPH



Armstrong Ave Total of Both Approaches = 1007 (951) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met
PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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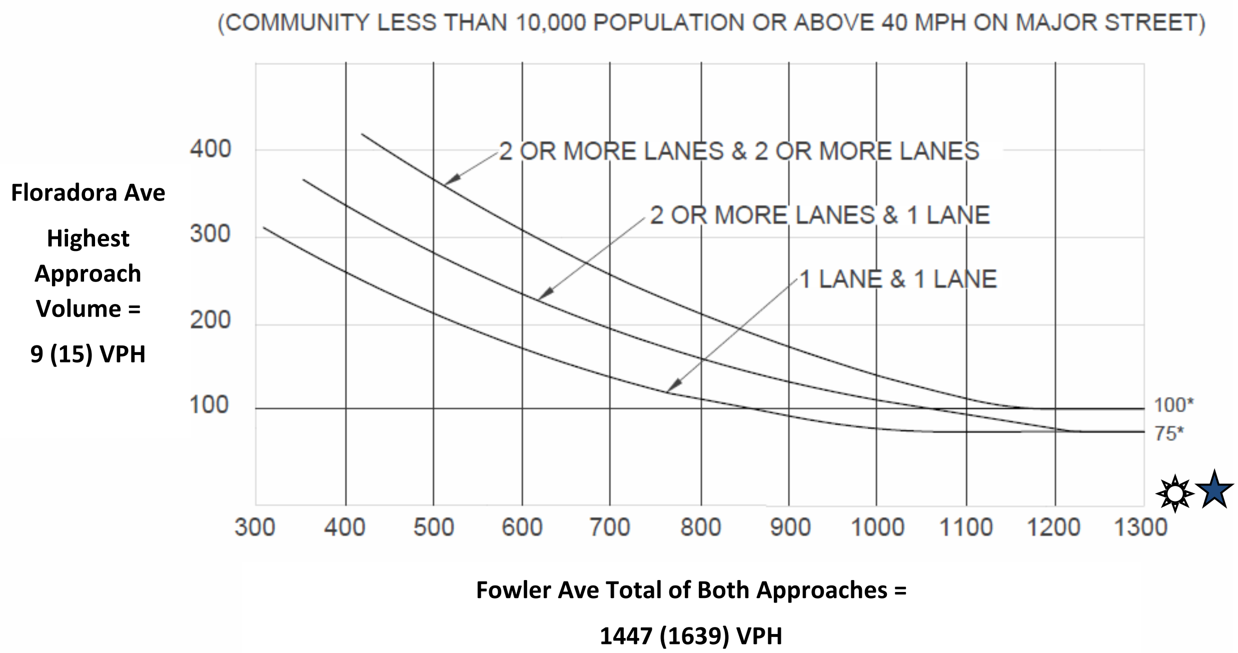
November 7, 2014

Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions
6. Fowler Ave / Floradora Ave
AM (PM) Peak Hour



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

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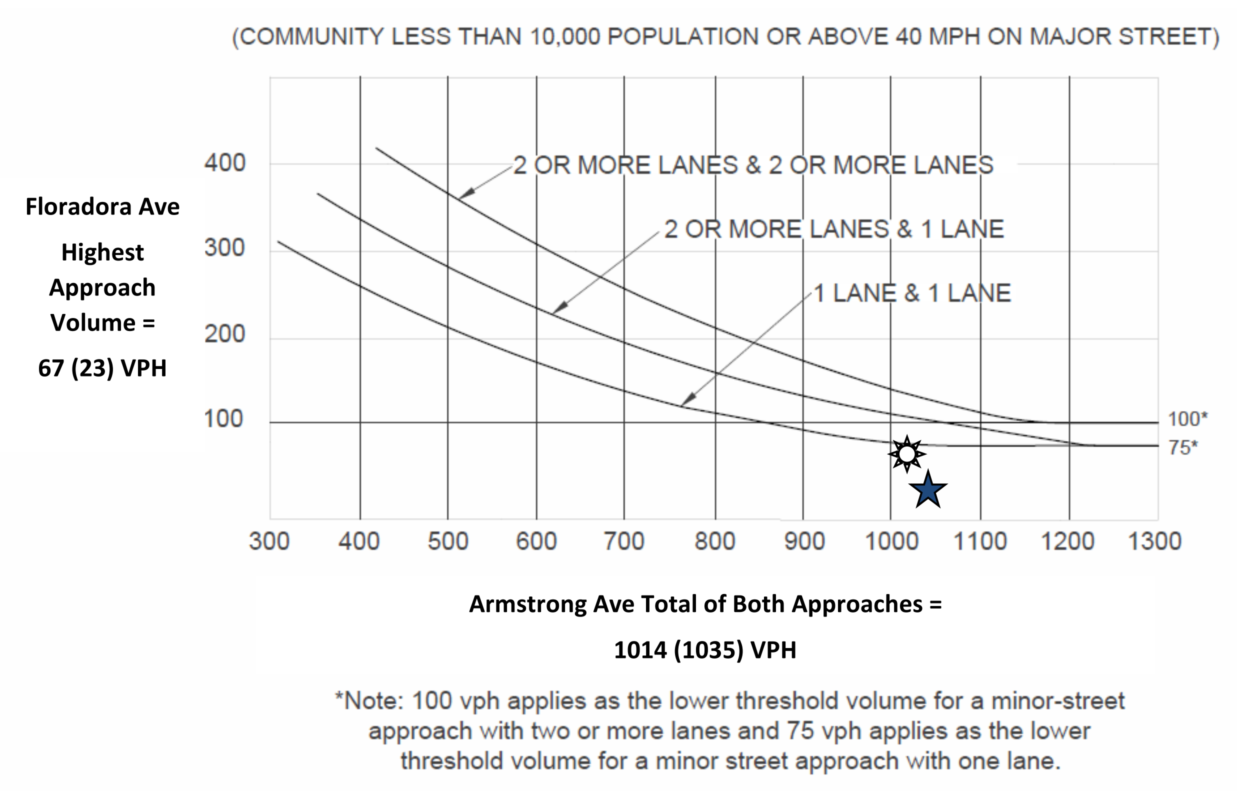
Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions
7. Armstrong Ave / Floradora Ave
AM (PM) Peak Hour



AM Peak Hour – Signal Warrant is Not Met

PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions
8. Armstrong Ave / Olive Ave
AM (PM) Peak Hour

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**
★ **PM Peak Hour – Signal Warrant is Met**

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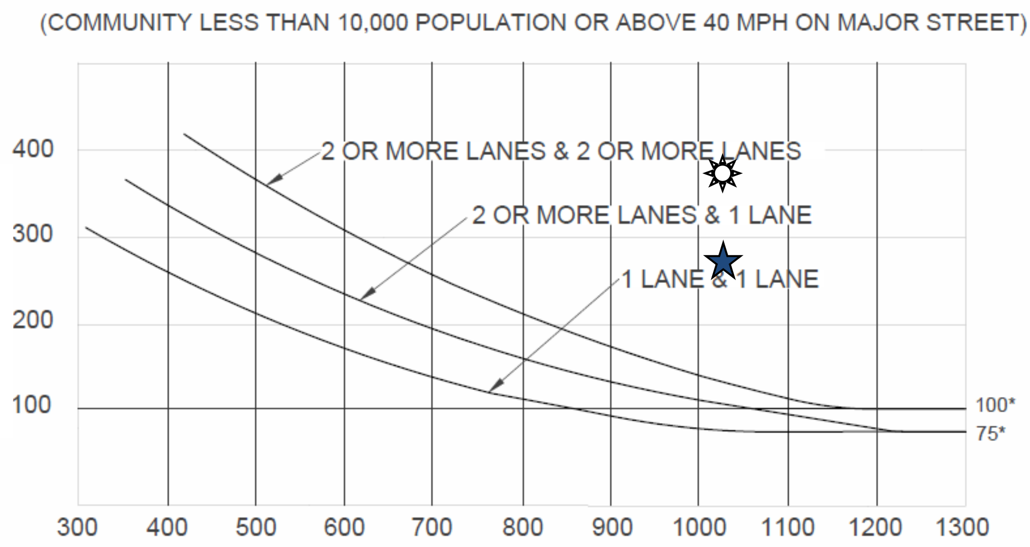
November 7, 2014

Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions
9. Temperance Ave / Olive Ave
AM (PM) Peak Hour

Olive Ave Highest Approach Volume = 375 (263) VPH



Temperance Ave Total of Both Approaches = 1024 (1021) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Met
PM Peak Hour – Signal Warrant is Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
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November 7, 2014

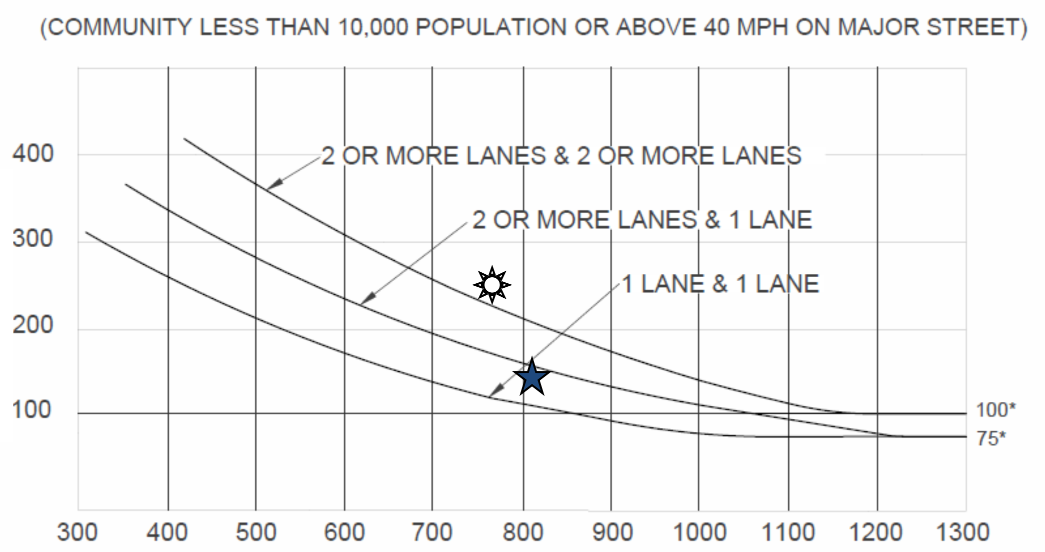
Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions
10. Armstrong Ave / Belmont Ave
AM (PM) Peak Hour

Armstrong Ave

Highest Approach Volume =

247 (134) VPH



Belmont Ave Total of Both Approaches =

763 (806) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Met

PM Peak Hour – Signal Warrant is Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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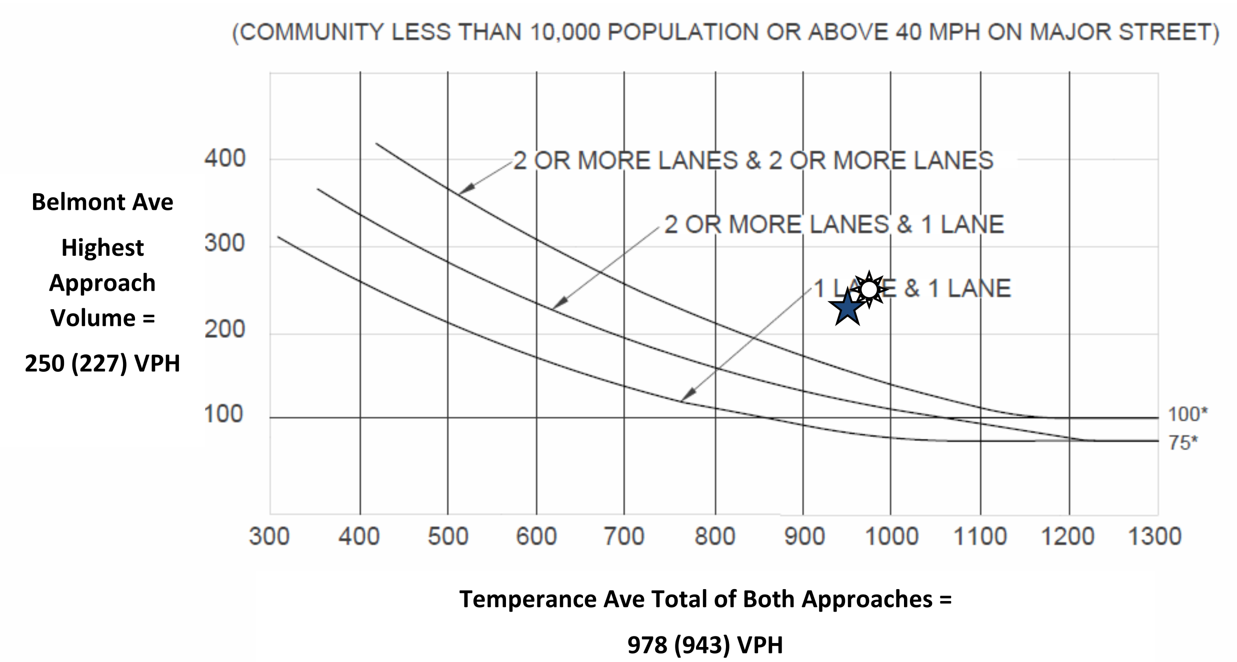
Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions
11. Temperance Ave / Belmont Ave
AM (PM) Peak Hour



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Met

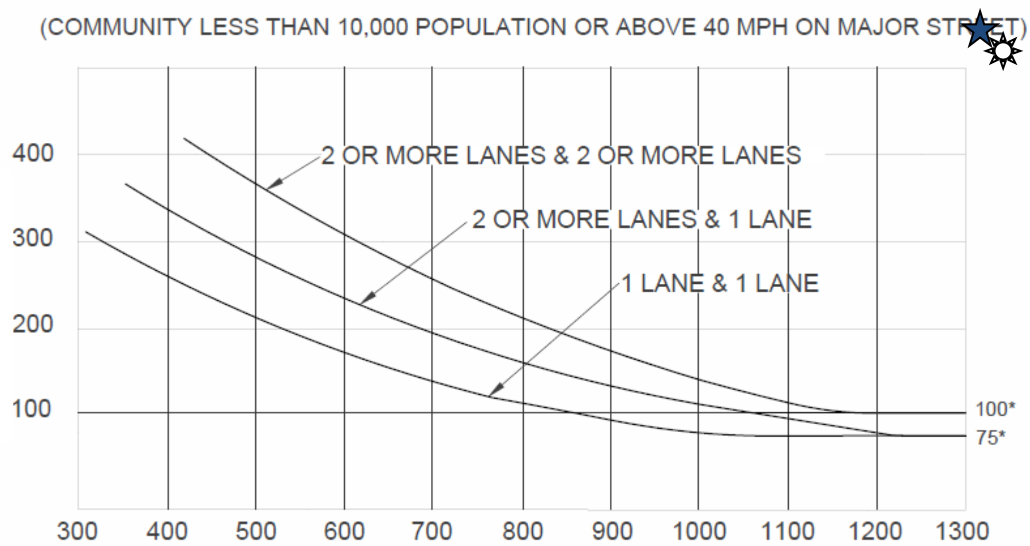
PM Peak Hour – Signal Warrant is Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 No Project Traffic Conditions
1. Armstrong Ave / Clinton Ave
AM (PM) Peak Hour

Clinton Ave Highest Approach Volume = 587 (646) VPH



Armstrong Ave Total of Both Approaches = 1573 (1568) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**

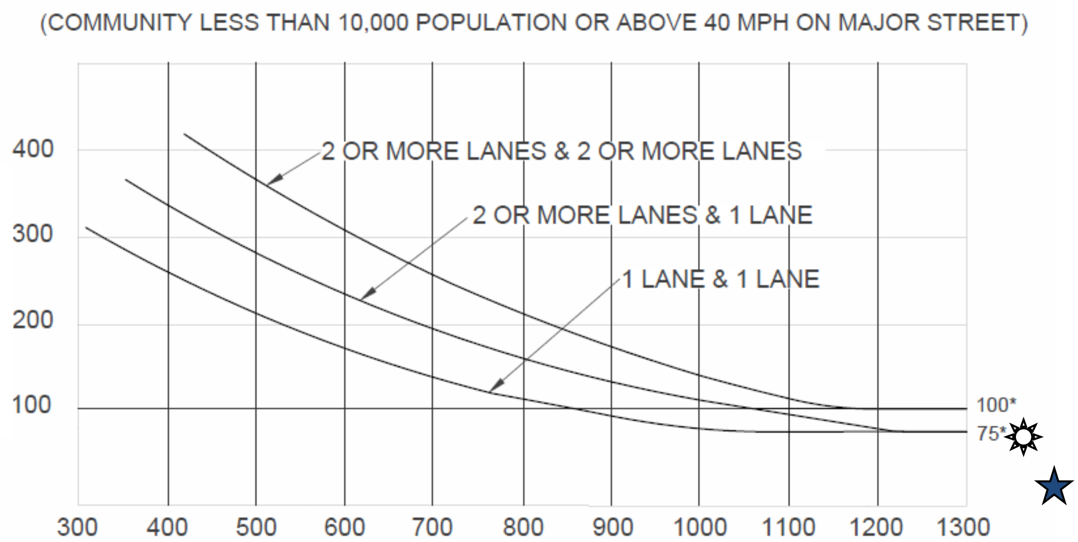
★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 No Project Traffic Conditions
3. Fowler Ave / Kerry Ave
AM (PM) Peak Hour

Kerry Ave Highest Approach Volume = 74 (26) VPH



Fowler Ave Total of Both Approaches = 1797 (1988) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

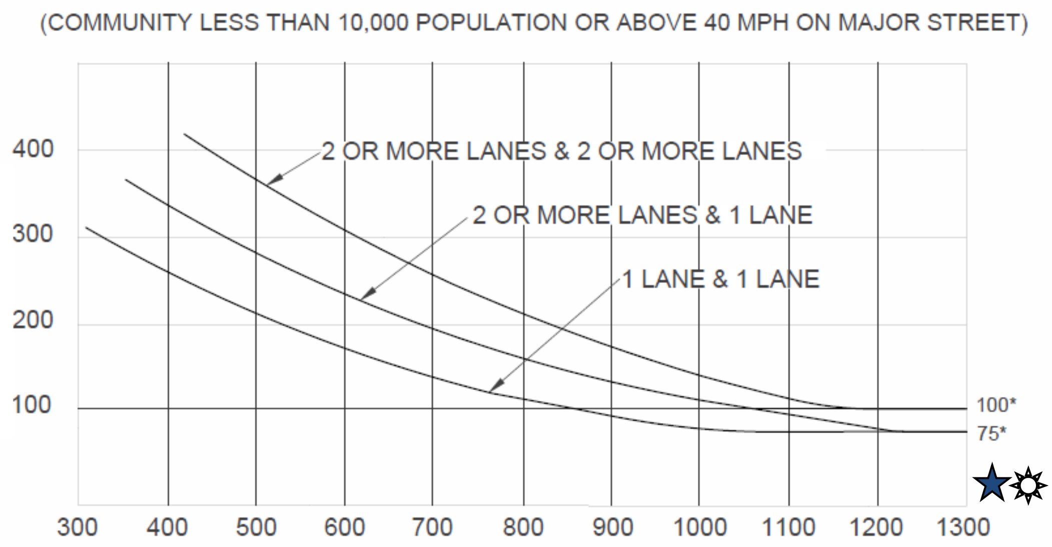
★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 No Project Traffic Conditions
4. Armstrong Ave / Kerry Ave
AM (PM) Peak Hour

Kerry Ave Highest Approach Volume = 20 (21) VPH



Armstrong Ave Total of Both Approaches = 1522 (1483) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

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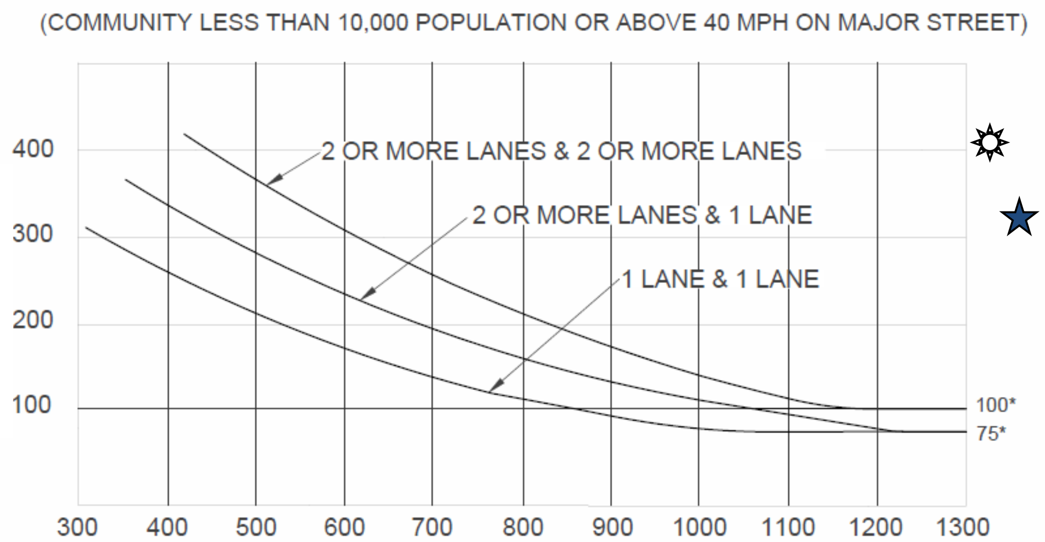
November 7, 2014

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 No Project Traffic Conditions
5. Armstrong Ave / McKinley Ave
AM (PM) Peak Hour

McKinley Ave Highest Approach Volume = 401 (307) VPH



Armstrong Ave Total of Both Approaches = 1541 (1648) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**
★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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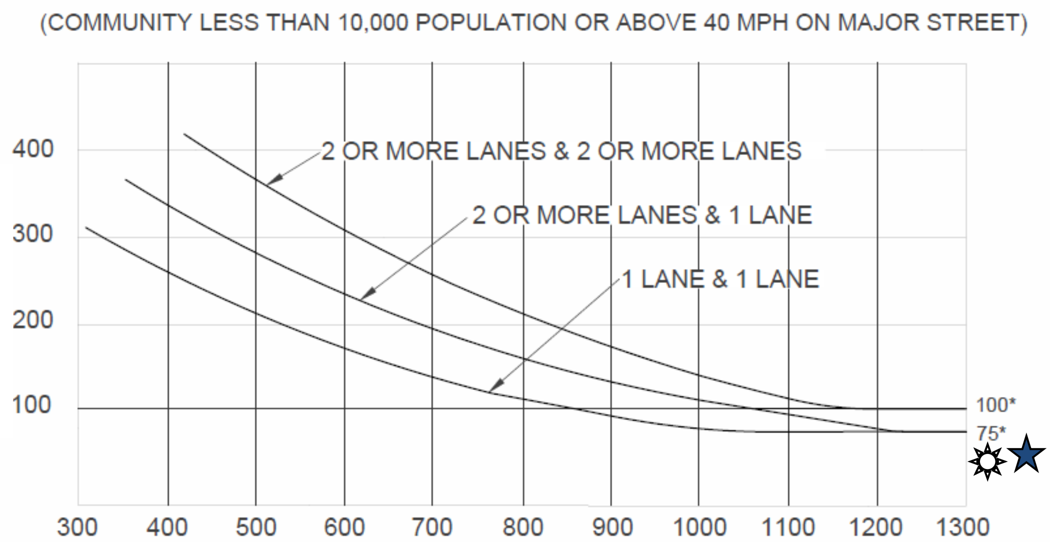
November 7, 2014

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 No Project Traffic Conditions
6. Fowler Ave / Floradora Ave
AM (PM) Peak Hour

Floradora Ave Highest Approach Volume = 54 (56) VPH



Fowler Ave Total of Both Approaches = 2432 (2587) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**

★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 No Project Traffic Conditions
7. Armstrong Ave / Floradora Ave
AM (PM) Peak Hour

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**

★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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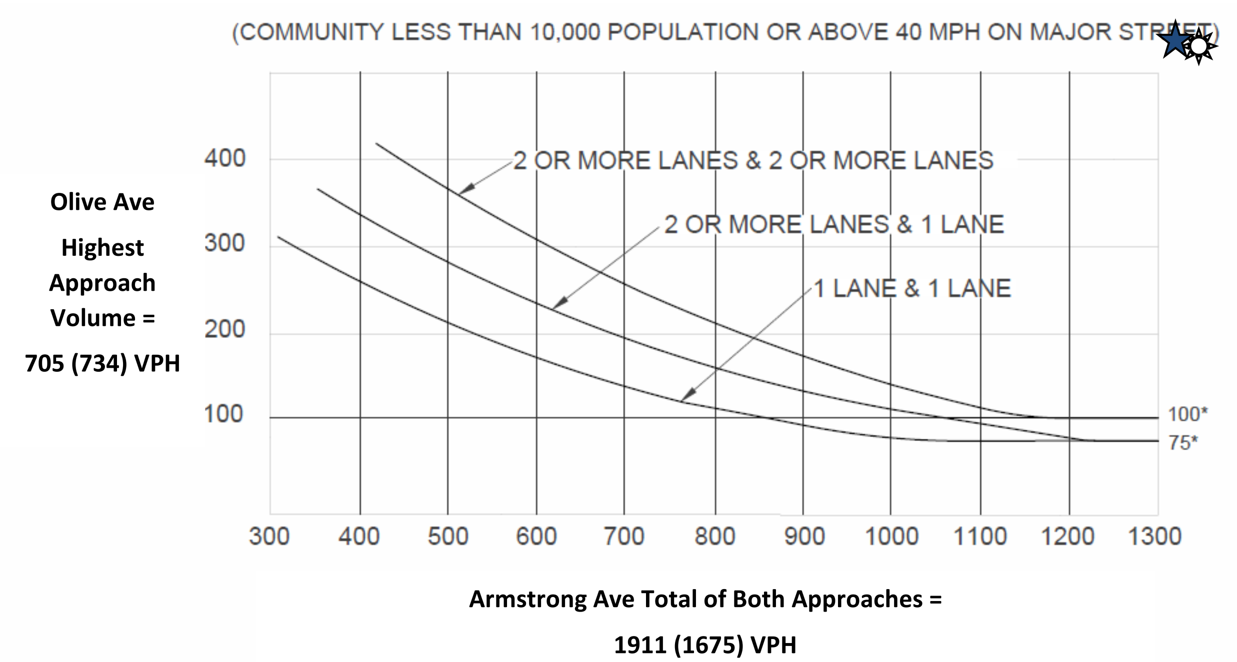
November 7, 2014

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 No Project Traffic Conditions
8. Armstrong Ave / Olive Ave
AM (PM) Peak Hour



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**

★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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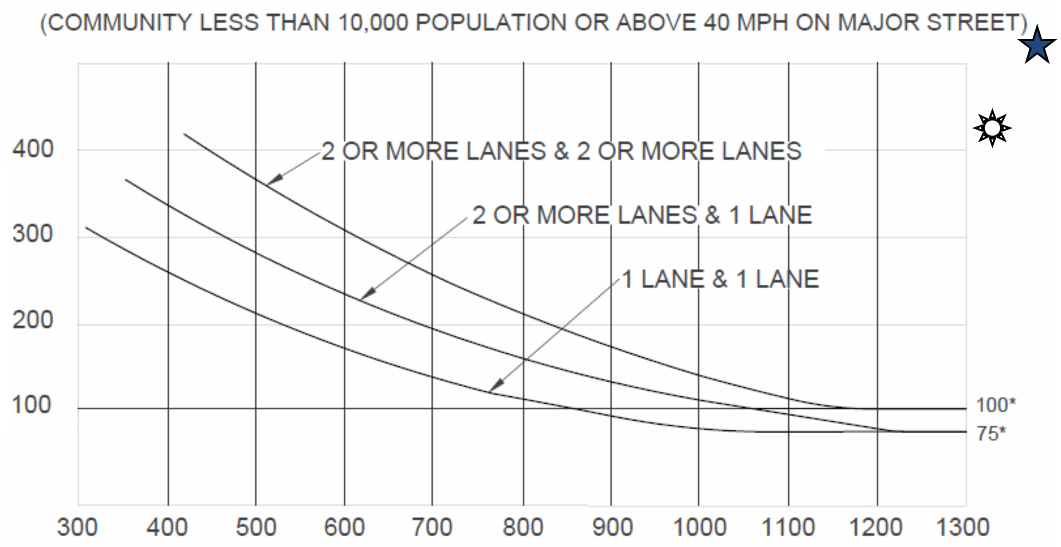
November 7, 2014

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 No Project Traffic Conditions
9. Temperance Ave / Olive Ave
AM (PM) Peak Hour

Olive Ave Highest Approach Volume = 418 (545) VPH



Temperance Ave Total of Both Approaches = 3726 (4020) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**

★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
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November 7, 2014

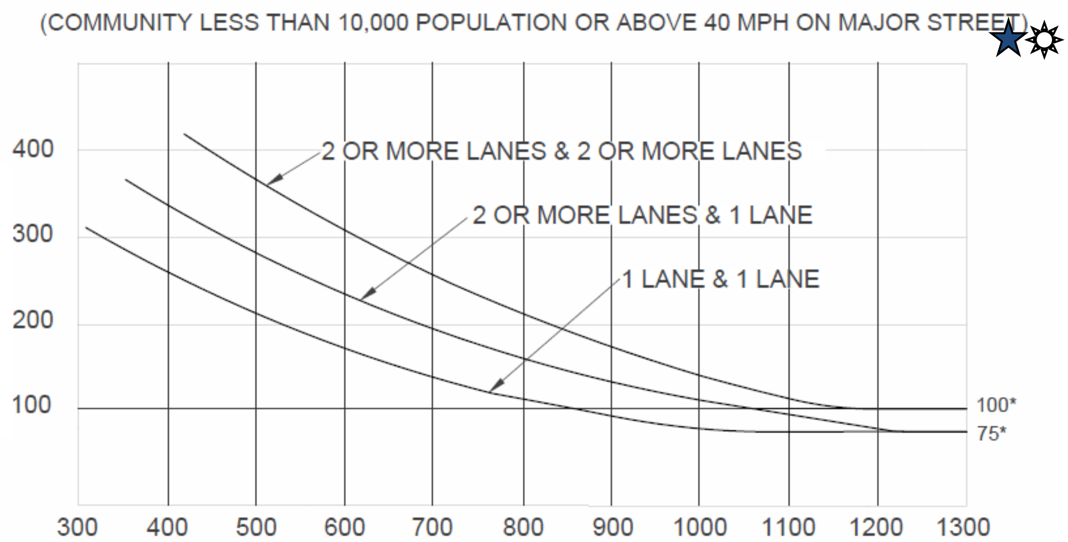
Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 No Project Traffic Conditions
10. Armstrong Ave / Belmont Ave
AM (PM) Peak Hour

Armstrong Ave

Highest Approach Volume =

544 (552) VPH



Belmont Ave Total of Both Approaches =

1467 (1336) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**

★ **PM Peak Hour – Signal Warrant is Met**

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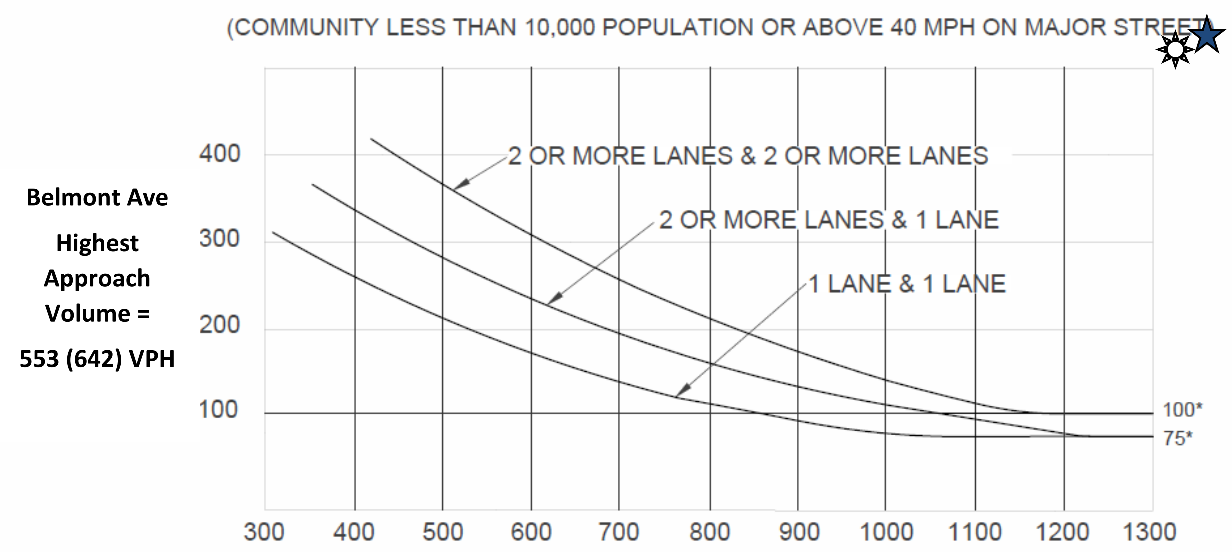
November 7, 2014

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 No Project Traffic Conditions
11. Temperance Ave / Belmont Ave
AM (PM) Peak Hour



Temperance Ave Total of Both Approaches =

3308 (3400) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

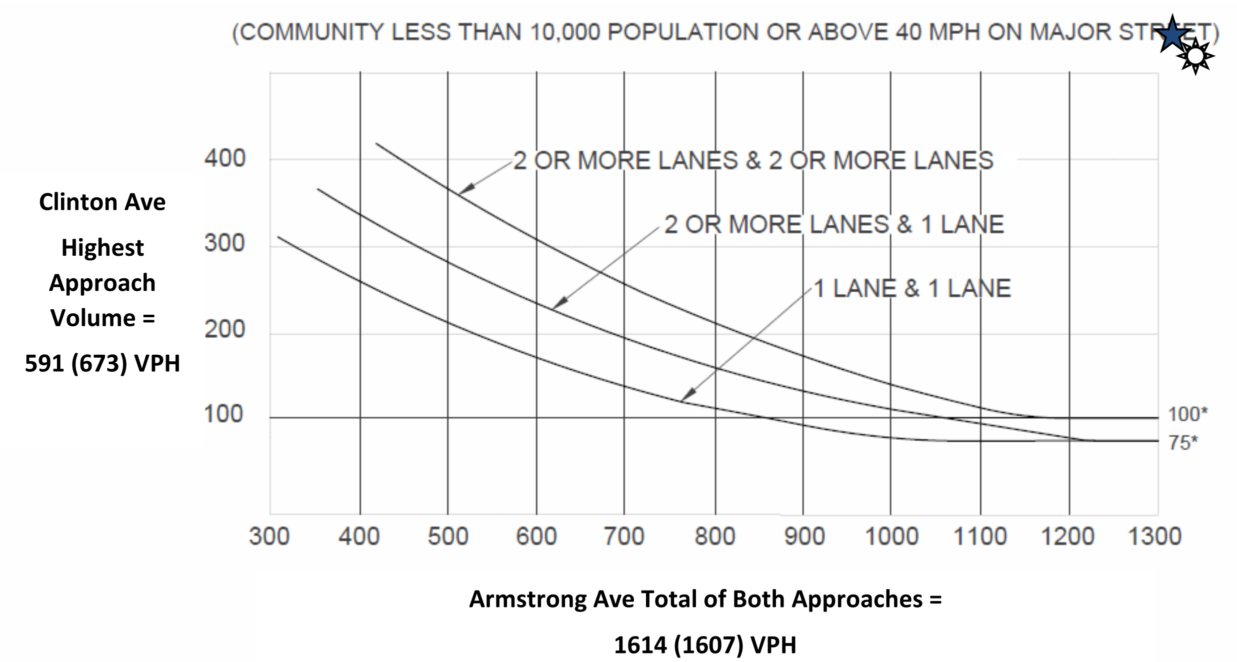
AM Peak Hour – Signal Warrant is Met

PM Peak Hour – Signal Warrant is Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 plus Project Traffic Conditions
1. Armstrong Ave / Clinton Ave
AM (PM) Peak Hour



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**

★ **PM Peak Hour – Signal Warrant is Met**

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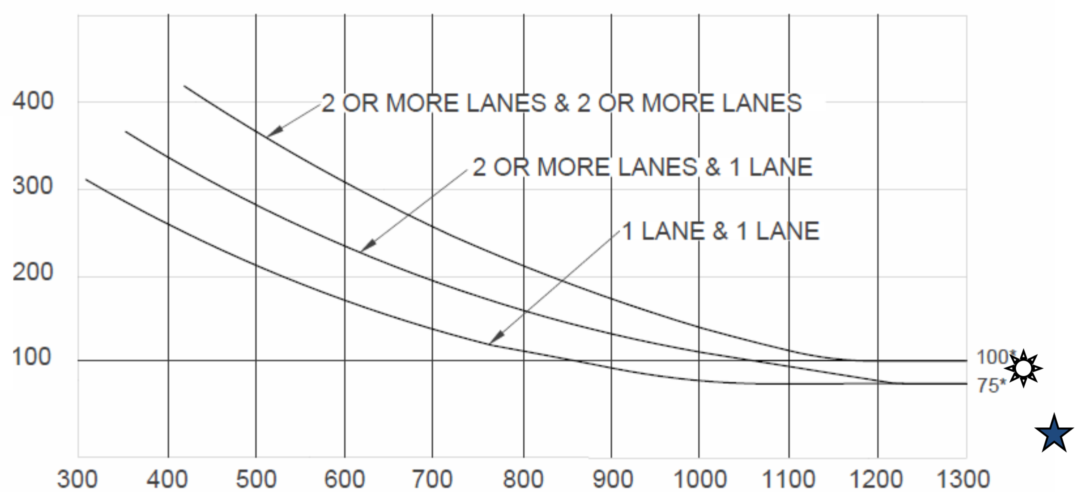
Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 plus Project Traffic Conditions
3. Fowler Ave / Kerry Ave
AM (PM) Peak Hour

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

Kerry Ave Highest Approach Volume = 88 (34) VPH



Fowler Ave Total of Both Approaches = 1799 (1997) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**
★ **PM Peak Hour – Signal Warrant is Not Met**

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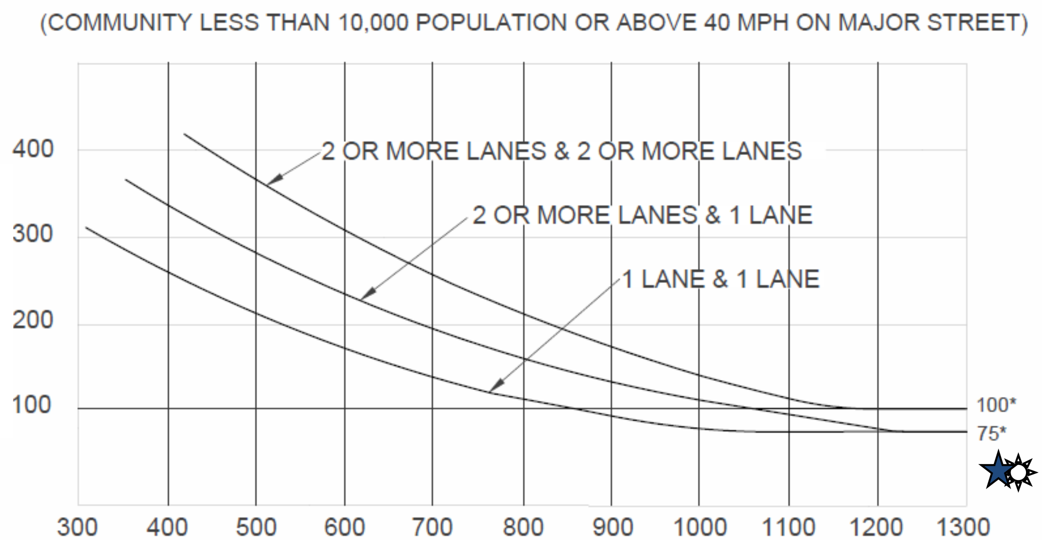
Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 plus Project Traffic Conditions
4. Armstrong Ave / Kerry Ave
AM (PM) Peak Hour

Kerry Ave Highest Approach Volume = 40 (41) VPH



Armstrong Ave Total of Both Approaches = 1564 (1557) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met

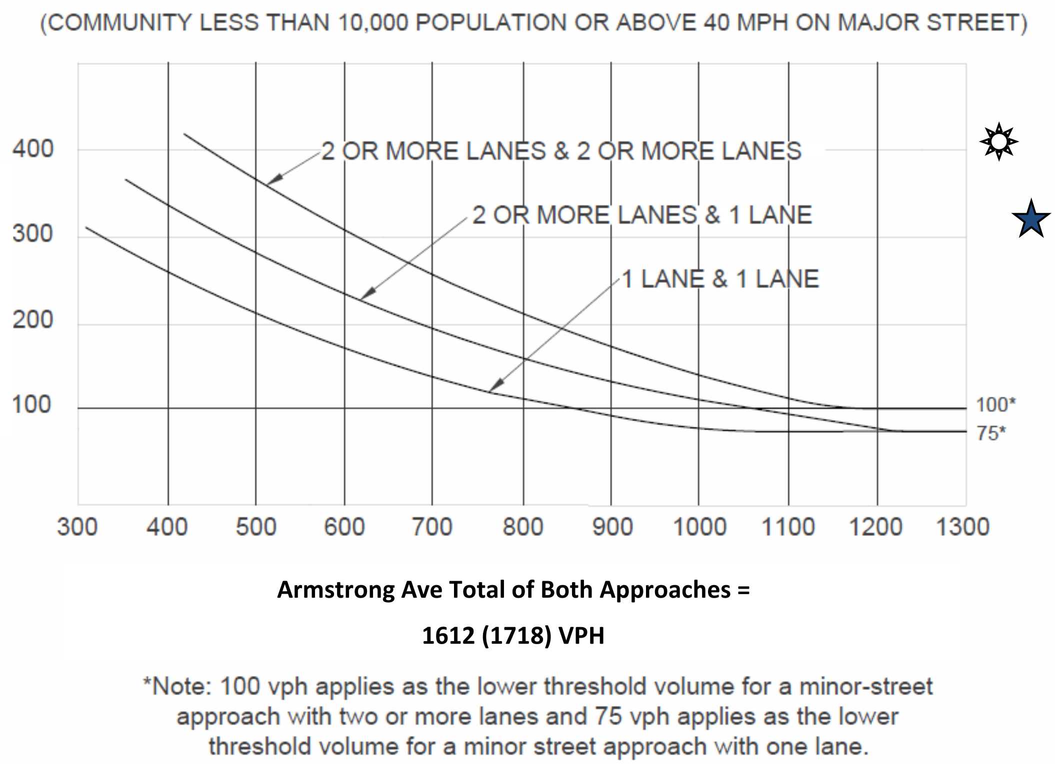
PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 plus Project Traffic Conditions
5. Armstrong Ave / McKinley Ave
AM (PM) Peak Hour

McKinley Ave Highest Approach Volume = 403 (319) VPH



Armstrong Ave Total of Both Approaches = 1612 (1718) VPH

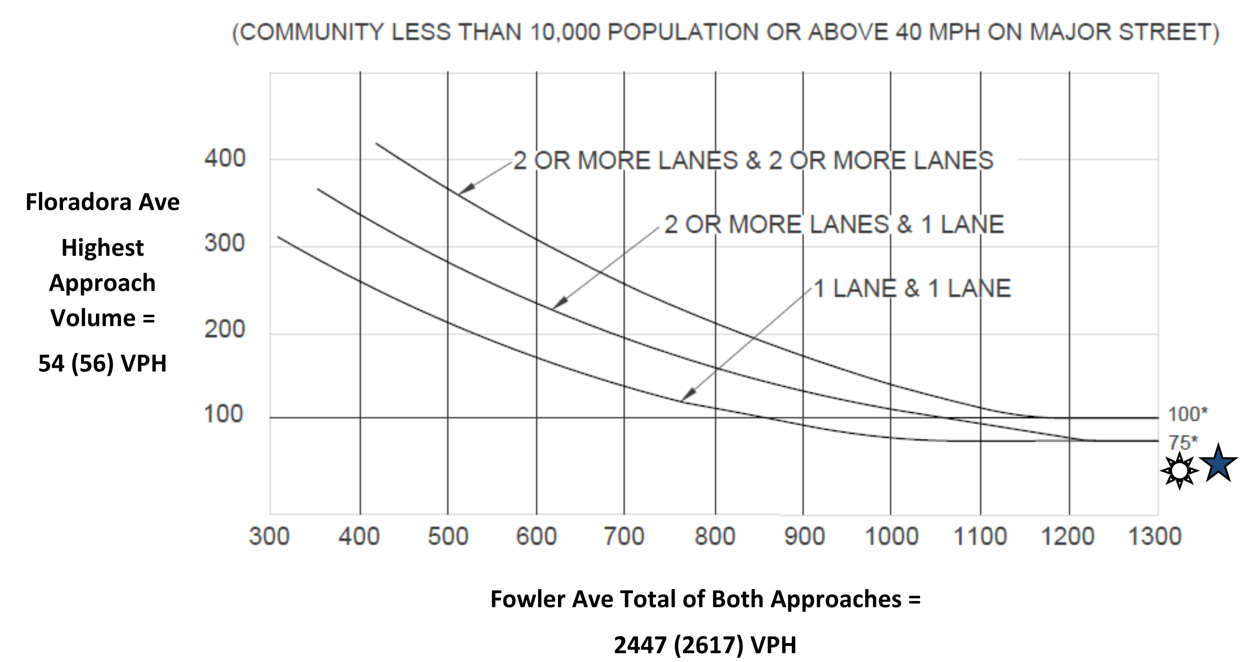
☼ **AM Peak Hour – Signal Warrant is Met**

★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 plus Project Traffic Conditions
6. Fowler Ave / Floradora Ave
AM (PM) Peak Hour



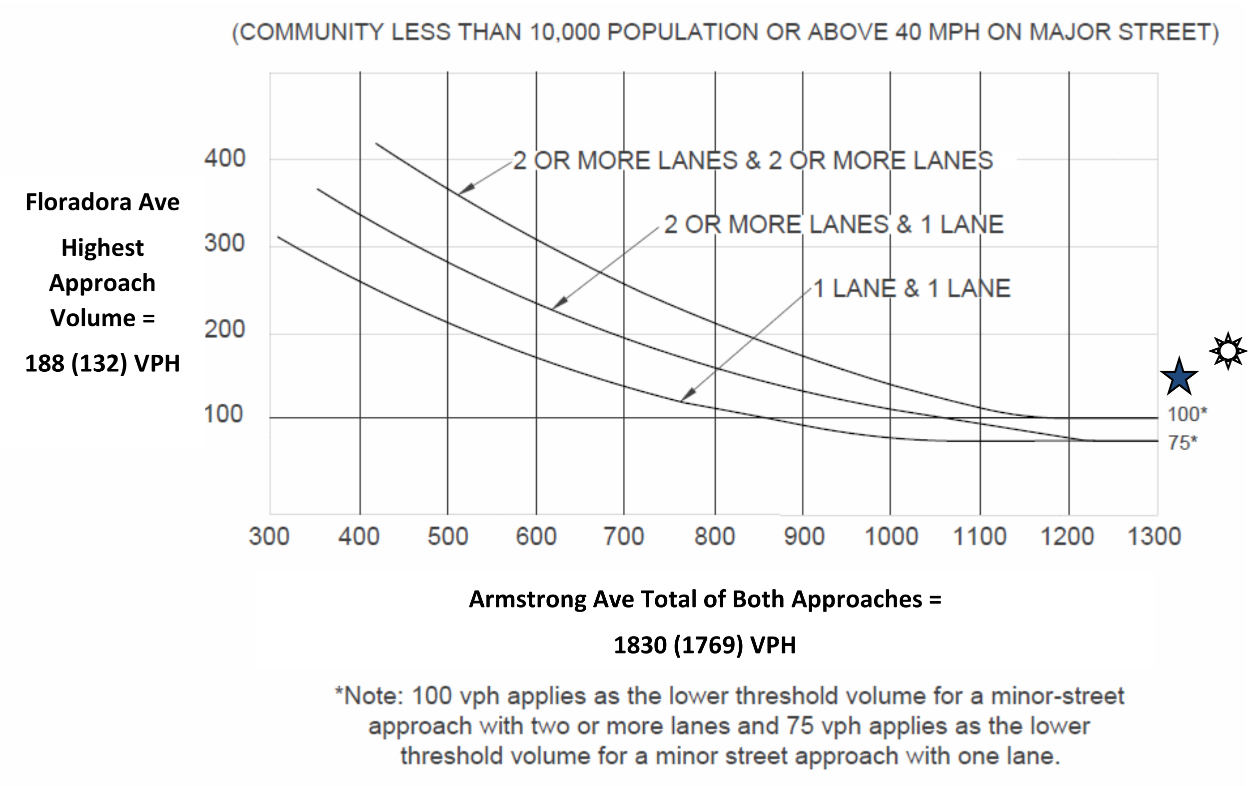
*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Not Met**
★ **PM Peak Hour – Signal Warrant is Not Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 plus Project Traffic Conditions
7. Armstrong Ave / Floradora Ave
AM (PM) Peak Hour



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**

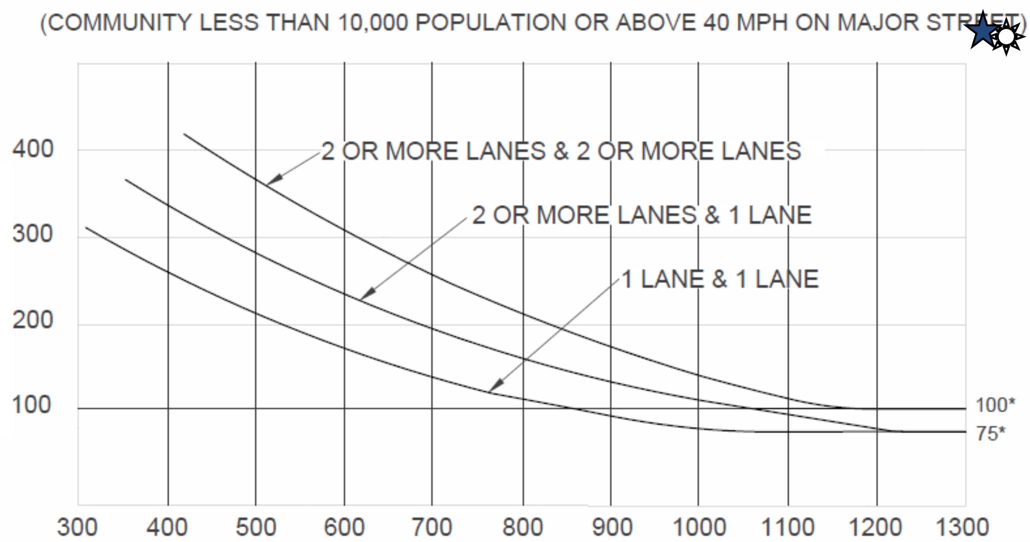
★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 plus Project Traffic Conditions
8. Armstrong Ave / Olive Ave
AM (PM) Peak Hour

Olive Ave Highest Approach Volume = 706 (739) VPH



Armstrong Ave Total of Both Approaches = 1958 (1720) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**
★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

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516 W. Shaw Ave., Ste. 103
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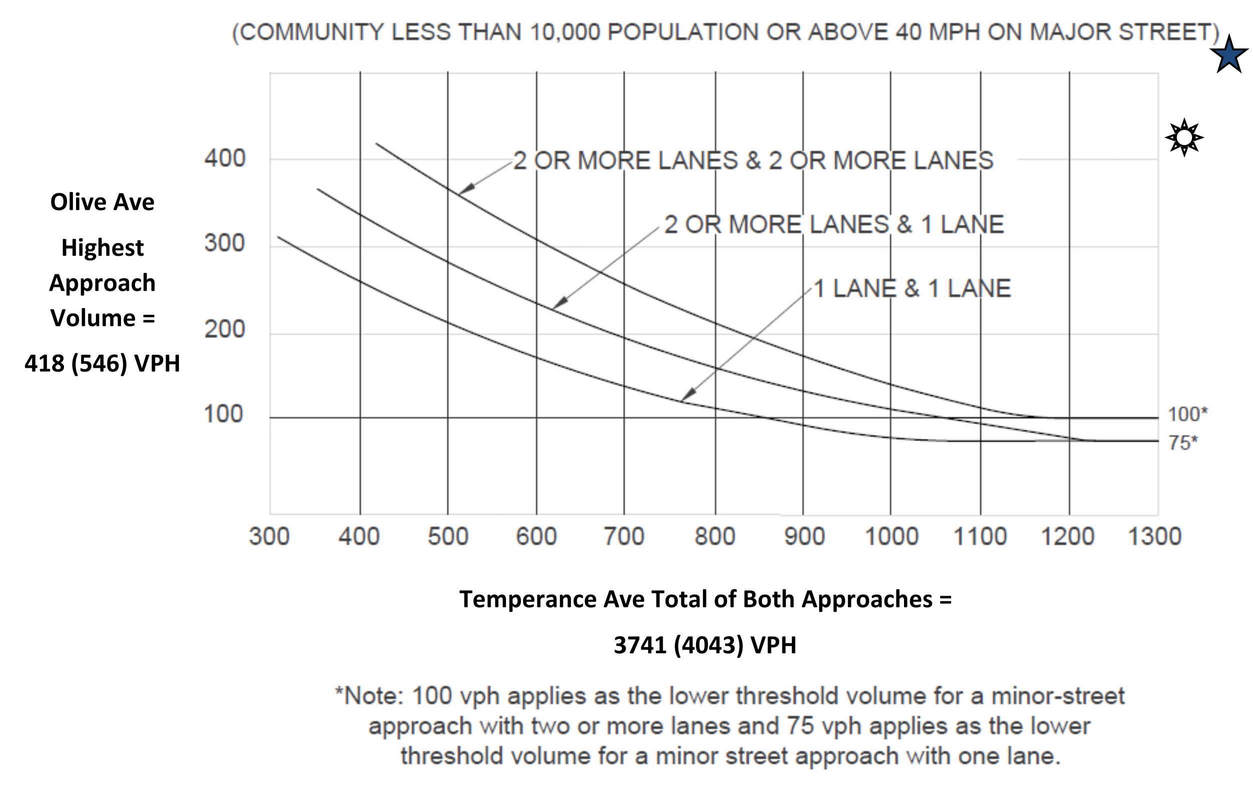
Fresno, CA 93704
info@JLBtraffic.com
(559) 570-8991

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 plus Project Traffic Conditions
9. Temperance Ave / Olive Ave
AM (PM) Peak Hour



☼ **AM Peak Hour – Signal Warrant is Met**

★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

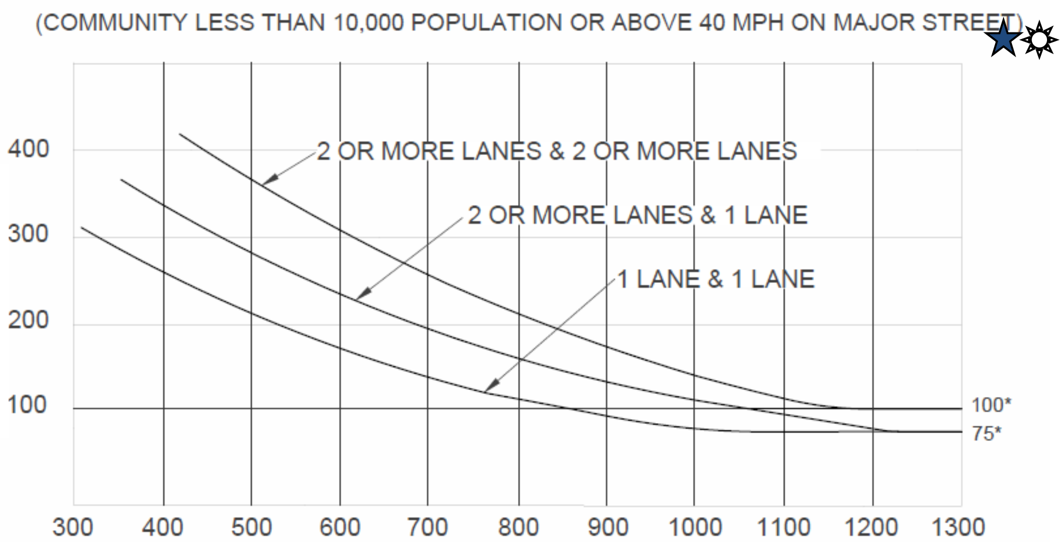
Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 plus Project Traffic Conditions
10. Armstrong Ave / Belmont Ave
AM (PM) Peak Hour

Armstrong Ave

Highest Approach Volume =

562 (564) VPH



Belmont Ave Total of Both Approaches =

1471 (1345) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**

★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

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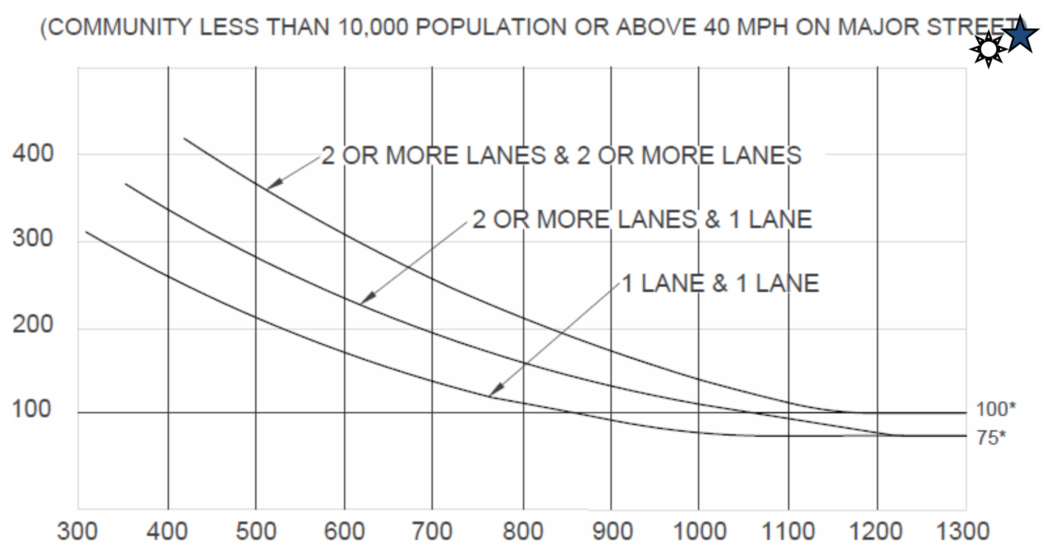
Fresno, CA 93704

(559) 570-8991

Warrant 3: Peak Hour (Rural)

Cumulative Year 2035 plus Project Traffic Conditions
11. Temperance Ave / Belmont Ave
AM (PM) Peak Hour

Belmont Ave Highest Approach Volume = 553 (643) VPH



Temperance Ave Total of Both Approaches = 3325 (3420) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

☼ **AM Peak Hour – Signal Warrant is Met**

★ **PM Peak Hour – Signal Warrant is Met**

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

MEIR Mitigation Measure Monitoring Checklist for EA No. P19-06018/P19-06286/P20-00369/T-6241

May 15, 2020

INCORPORATING MEASURES FROM THE MASTER ENVIRONMENTAL IMPACT REPORT (MEIR) CERTIFIED FOR THE CITY OF FRESNO GENERAL PLAN UPDATE (SCH No. 2012111015)

This mitigation measure monitoring and reporting checklist was prepared pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15097 and Section 21081.6 of the Public Resources Code (PRC). It was certified as part of the Fresno City Council's approval of the MEIR for the Fresno General Plan update (Fresno City Council Resolution 2014-225, adopted December 18, 2014).

Letter designations to the right of each MEIR mitigation measure listed in this Exhibit note how the mitigation measure relates to the environmental assessment of the above-listed project, according to the key found at right and at the bottoms of the following pages:

A - Incorporated into Project
B - Mitigated
C - Mitigation in Progress
D - Responsible Agency Contacted
E - Part of City-wide Program
F - Not Applicable

The timing of implementing each mitigation measure is identified in in the checklist, as well as identifies the entity responsible for verifying that the mitigation measures applied to a project are performed. Project applicants are responsible for providing evidence that mitigation measures are implemented. As lead agency, the City of Fresno is responsible for verifying that mitigation is performed/completed.

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
Aesthetics:								
AES-1. Lighting systems for street and parking areas shall include shields to direct light to the roadway surfaces and parking areas. Vertical shields on the light fixtures shall also be used to direct light away from adjacent light sensitive land uses such as residences. **Verification comments:**	Prior to issuance of building permits	Public Works Department (PW) and Development & Resource Management Dept. (P&D)	X					

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
Aesthetics *(continued)***:**								
AES-2: Lighting systems for public facilities such as active play areas shall provide adequate illumination for the activity; however, low intensity light fixtures and shields shall be used to minimize spillover light onto adjacent properties. **Verification comments:**	Prior to issuance of building permits	P&D	X					
AES-3: Lighting systems for non-residential uses, not including public facilities, shall provide shields on the light fixtures and orient the lighting system away from adjacent properties. Low intensity light fixtures shall also be used if excessive spillover light onto adjacent properties will occur. **Verification comments:**	Prior to issuance of building permits	P&D						X
AES-4: Lighting systems for freestanding signs shall not exceed 100 foot Lamberts (FT-L) when adjacent to streets which have an average light intensity of less than 2.0 horizontal footcandles and shall not exceed 500 FT-L when adjacent to streets which have an average light intensity of 2.0 horizontal footcandles or greater. **Verification comments:**	Prior to issuance of building permits	P&D						X

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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Aesthetics *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
AES-5: Materials used on building facades shall be non-reflective. **Verification comments:**	Prior to development project approval	P&D	X					

Air Quality:

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
AIR-1: Projects that include five or more heavy-duty truck deliveries per day with sensitive receptors located within 300 feet of the truck loading area shall provide a screening analysis to determine if the project has the potential to exceed criteria pollutant concentration based standards and thresholds for NO2 and PM2.5. If projects exceed screening criteria, refined dispersion modeling and health risk assessment shall be accomplished and if needed, mitigation measures to reduce impacts shall be included in the project to reduce the impacts to the extent feasible. Mitigation measures include but are not limited to: • Locate loading docks and truck access routes as far from sensitive receptors as reasonably possible considering site design limitations to comply with other City design standards. • Post signs requiring drivers to limit idling to 5 minutes or less. **Verification comments:**	Prior to development project approval	P&D						X

A - Incorporated into Project
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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Air Quality *(continued)*:

AIR-2: Projects that result in an increased cancer risk of 10 in a million or exceed criteria pollutant ambient air quality standards shall implement site-specific measures that reduce toxic air contaminant (TAC) exposure to reduce excess cancer risk to less than 10 in a million. Possible control measures include but are not limited to: • Locate loading docks and truck access routes as far from sensitive receptors as reasonably possible considering site design limitations to comply with other City design standards. • Post signs requiring drivers to limit idling to 5 minutes or less • Construct block walls to reduce the flow of emissions toward sensitive receptors • Install a vegetative barrier downwind from the TAC source that can absorb a portion of the diesel PM emissions • For projects proposing to locate a new building containing sensitive receptors near existing sources of TAC emissions, install HEPA filters in HVAC systems to reduce TAC emission levels exceeding risk thresholds. • Install heating and cooling services at truck stops to eliminate the need for idling during overnight stops to run onboard systems. *(continued on next page)*	Prior to development project approval	P&D						X

A - Incorporated into Project
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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Air Quality *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
AIR-2 *(continued from previous page)* • For large distribution centers where the owner controls the vehicle fleet, provide facilities to support alternative fueled trucks powered by fuels such as natural gas or bio-diesel • Utilize electric powered material handling equipment where feasible for the weight and volume of material to be moved. **Verification comments:**	*[see previous page]*	*[see previous page]*						
AIR-3: Require developers proposing projects on ARB's list of projects in its Air Quality and Land Use Handbook (Handbook) warranting special consideration to prepare a cumulative health risk assessment when sensitive receptors are located within the distance screening criteria of the facility as listed in the ARB Handbook. **Verification comments:**	Prior to development project approval	P&D				**X**		

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F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Air Quality *(continued)***:**

AIR-4: Require developers of projects containing sensitive receptors to provide a cumulative health risk assessment at project locations exceeding ARB Land Use Handbook distance screening criteria or newer criteria that may be developed by the San Joaquin Valley Air Pollution Control District (SJVAPCD). **Verification comments:**	Prior to development project approval	P&D				X		
AIR-5: Require developers of projects with the potential to generate significant odor impacts as determined through review of SJVAPCD odor complaint history for similar facilities and consultation with the SJVAPCD to prepare an odor impact assessment and to implement odor control measures recommended by the SJVAPCD or the City to the extent needed to reduce the impact to less than significant. **Verification comments:**	Prior to development project approval	P&D						X

A - Incorporated into Project
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D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Biological Resources:

BIO-1: Construction of a proposed project should avoid, where possible, vegetation communities that provide suitable habitat for a special-status species known to occur within the Planning Area. If construction within potentially suitable habitat must occur, the presence/absence of any special-status plant or wildlife species must be determined prior to construction, to determine if the habitat supports any special-status species. If special-status species are determined to occupy any portion of a project site, avoidance and minimization measures shall be incorporated into the construction phase of a project to avoid direct or incidental take of a listed species to the greatest extent feasible. **Verification comments:**	Prior to development project approval	P&D	X					
BIO-2: Direct or incidental take of any state or federally listed species should be avoided to the greatest extent feasible. If construction of a proposed project will result in the direct or incidental take of a listed species, consultation with the resources agencies and/or additional permitting may be required. Agency consultation through the California Department of Fish and Wildlife (CDFW) 2081 and U.S. Fish and Wildlife Service (USFWS) Section 7 or Section 10 permitting processes must take place prior to any action that *(continued on next page)*	Prior to development project approval	P&D	X					

A - Incorporated into Project
B - Mitigated
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D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Biological Resources *(continued)*:

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
BIO-2 *(continued from previous page)* may result in the direct or incidental take of a listed species. Specific mitigation measures for direct or incidental impacts to a listed species will be determined on a case-by-case basis through agency consultation. **Verification comments:**	*[see previous page]*	*[see previous page]*						
BIO-3: Development within the Planning Area should avoid, where possible, special-status natural communities and vegetation communities that provide suitable habitat for special-status species. If a proposed project will result in the loss of a special-status natural community or suitable habitat for special-status species, compensatory habitat-based mitigation is required under CEQA and the California Endangered Species Act (CESA). Mitigation will consist of preserving on-site habitat, restoring similar habitat or purchasing off-site credits from an approved mitigation bank. Compensatory mitigation will be determined through consultation with the City and/or resource agencies. An appropriate mitigation strategy and ratio will be agreed upon by the developer and lead agency to reduce project impacts to special-status natural communities to a less than significant *(continued on next page)*	Prior to development project approval	P&D	**X**					

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Biological Resources *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
BIO-3 *(continued from previous page)***:** level. Agreed-upon mitigation ratios will depend on the quality of the habitat and presence/absence of a special-status species. The specific mitigation for project level impacts will be determined on a case-by-case basis. **Verification comments:**	*[see previous page]*	*[see previous page]*						
BIO-4: Proposed projects within the Planning Area should avoid, if possible, construction within the general nesting season of February through August for avian species protected under Fish and Game Code 3500 and the Migratory Bird Treaty Act (MBTA), if it is determined that suitable nesting habitat occurs on a project site. If construction cannot avoid the nesting season, a pre-construction clearance survey must be conducted to determine if any nesting birds or nesting activity is observed on or within 500-feet of a project site. If an active nest is observed during the survey, a biological monitor must be on site to ensure that no proposed project activities would impact the active nest. A suitable buffer will be established around the active nest until the nestlings have fledged and the nest is no longer active. Project activities *(continued on next page)*	Prior to development project approval and during construction activities	P&D	**X**					

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Biological Resources *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
BIO-4 *(continued from previous page)***:** may continue in the vicinity of the nest only at the discretion of the biological monitor. **Verification comments:**	*[see previous page]*	*[see previous page]*						
BIO-5: If a proposed project will result in the removal or impact to any riparian habitat and/or a special-status natural community with potential to occur in the Planning Area, compensatory habitat-based mitigation shall be required to reduce project impacts. Compensatory mitigation must involve the preservation or restoration or the purchase of off-site mitigation credits for impacts to riparian habitat and/or a special-status natural community. Mitigation must be conducted in-kind or within an approved mitigation bank in the region. The specific mitigation ratio for habitat-based mitigation will be determined through consultation with the appropriate agency (*i.e.*, CDFW or USFWS) on a case-by-case basis. **Verification comments:**	Prior to development project approval	P&D	**X**					

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Biological Resources *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
BIO-6: Project impacts that occur to riparian habitat may also result in significant impacts to streambeds or waterways protected under Section 1600 of Fish and Wildlife Code and Section 404 of the CWA. CDFW and/or USACE consultation, determination of mitigation strategy, and regulatory permitting to reduce impacts, as required for projects that remove riparian habitat and/or alter a streambed or waterway, shall be implemented. **Verification comments:**	Prior to development project approval	P&D	X					
BIO-7: Project-related impacts to riparian habitat or a special-status natural community may result in direct or incidental impacts to special-status species associated with riparian or wetland habitats. Project impacts to special-status species associated with riparian habitat shall be mitigated through agency consultation, development of a mitigation strategy, and/or issuing incidental take permits for the specific special-status species, as determined by the CDFW and/or USFWS. **Verification comments:**	Prior to development project approval	P&D	X					

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Biological Resources *(continued)*:

BIO-8: If a proposed project will result in the significant alteration or fill of a federally protected wetland, a formal wetland delineation conducted according to U.S. Army Corps of Engineers (USACE) accepted methodology is required for each project to determine the extent of wetlands on a project site. The delineation shall be used to determine if federal permitting and mitigation strategy are required to reduce project impacts. Acquisition of permits from USACE for the fill of wetlands and USACE approval of a wetland mitigation plan would ensure a "no net loss" of wetland habitat within the Planning Area. Appropriate wetland mitigation/creation shall be implemented in a ratio according to the size of the impacted wetland. **Verification comments:**	Prior to development project approval	P&D						X
BIO-9: In addition to regulatory agency permitting, Best Management Practices (BMPs) identified from a list provided by the USACE shall be incorporated into the design and construction phase of the project to ensure that no pollutants or siltation drain into a federally protected wetland. Project design features such as fencing, appropriate drainage and *(continued on next page)*	Prior to development project approval; but for long-term operational BMPs, prior to issuance of occupancy	P&D						X

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Biological Resources *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
BIO-9 *(continued from previous page)***:** incorporating detention basins shall assist in ensuring project-related impacts to wetland habitat are minimized to the greatest extent feasible. **Verification comments:**	*[see previous page]*	*[see previous page]*						

Cultural Resources:

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
CUL-1: If previously unknown resources are encountered before or during grading activities, construction shall stop in the immediate vicinity of the find and a qualified historical resources specialist shall be consulted to determine whether the resource requires further study. The qualified historical resources specialist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines and the City's Historic Preservation Ordinance. If the resources are determined to be unique historical resources as defined under Section 15064.5 of the CEQA Guidelines, measures shall be identified by the monitor and *(continued on next page)*	Prior to commencement of, and during, construction activities	P&D	X					

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Cultural Resources *(continued)*:

CUL-1 *(continued from previous page)* recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these. Any historical artifacts recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-germ preservation to allow future scientific study. **Verification comments:**	*[see previous page]*	*[see previous page]*						
CUL-2: Subsequent to a preliminary City review of the project grading plans, if there is evidence that a project will include excavation or construction activities within previously undisturbed soils, a field survey and literature search for prehistoric archaeological resources shall be conducted. The following procedures shall be followed. If prehistoric resources are not found during either the field survey or literature search, excavation and/or construction activities can commence. In the event that buried prehistoric *(continued on next page)*	Prior to commencement of, and during, construction activities	P&D	X					

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Cultural Resources *(continued)*:

CUL-2 *(continued from previous page)* archaeological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified archaeologist shall be consulted to determine whether the resource requires further study. The qualified archaeologist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with CEQA Guidelines Section 15064.5. If the resources are determined to be unique prehistoric archaeological resources as defined under Section 15064.5 of the CEQA Guidelines, mitigation measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any prehistoric archaeological artifacts recovered as a result of mitigation shall be provided *(continued on next page)*	*[see previous page]*	*[see previous page]*	

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Cultural Resources *(continued)***:**

CUL-2 *(further continued from previous two pages)* to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study. If prehistoric resources are found during the field survey or literature review, the resources shall be inventoried using appropriate State record forms and submit the forms to the Southern San Joaquin Valley Information Center. The resources shall be evaluated for significance. If the resources are found to be significant, measures shall be identified by the qualified archaeologist. Similar to above, appropriate mitigation measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. In addition, appropriate mitigation for excavation and construction activities in the vicinity of the resources found during the field survey or literature review shall include an archaeological monitor. The monitoring period shall be determined by the qualified archaeologist. If additional prehistoric archaeological resources are found during *(continued on next page)*	*[see Page 14]*	*[see Page 14]*	

Cultural Resources *(continued)*:

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
CUL-2 *(further continued from previous three pages)* excavation and/or construction activities, the procedure identified above for the discovery of unknown resources shall be followed. **Verification comments:**	*[see Page 14]*	*[see Page 14]*						
CUL-3: Subsequent to a preliminary City review of the project grading plans, if there is evidence that a project will include excavation or construction activities within previously undisturbed soils, a field survey and literature search for unique paleontological/geological resources shall be conducted. The following procedures shall be followed: If unique paleontological/geological resources are not found during either the field survey or literature search, excavation and/or construction activities can commence. In the event that unique paleontological/geological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified paleontologist shall be consulted to determine whether the resource requires further study. The qualified paleontologist shall make recommendations to the City on the measures that shall be implemented to protect the discovered *(continued on next page)*	Prior to commencement of, and during, construction activities	P&D	X					

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
CUL-3 *(continued from previous page)* resources, including but not limited to, excavation of the finds and evaluation of the finds. If the resources are determined to be significant, mitigation measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate mitigation measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any paleontological/geological resources recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study. If unique paleontological/geological resources are found during the field survey or literature review, the resources shall be inventoried and evaluated for significance. If the resources are found to be significant, mitigation measures shall be identified by the qualified paleontologist. Similar to above, appropriate mitigation measures for significant resources could include avoidance or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds. In addition, appropriate mitigation for excavation and construction activities in the vicinity of the *(continued on next page)*	*[see previous page]*	*[see previous page]*						

A - Incorporated into Project
B - Mitigated
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D - Responsible Agency Contacted
E - Part of City-Wide Program
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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Cultural Resources *(continued)*:

CUL-3 *(further continued from previous two pages)* resources found during the field survey or literature review shall include a paleontological monitor. The monitoring period shall be determined by the qualified paleontologist. If additional paleontological/geological resources are found during excavation and/or construction activities, the procedure identified above for the discovery of unknown resources shall be followed. **Verification comments:**	*[see Page 17]*	*[see Page 17]*						
CUL-4: In the event that human remains are unearthed during excavation and grading activities of any future development project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most *(continued on next page)*	Prior to commencement of, and during, construction activities	P&D	**X**					

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
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F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Cultural Resources *(continued)***:**

CUL-4 *(continued from previous page)* likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the landowner has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment. **Verification comments:**	*[see previous page]*	*[see previous page]*	

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Hazards and Hazardous Materials

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
HAZ-1: Re-designate the existing vacant land proposed for low density residential located northwest of the intersection of East Garland Avenue and North Dearing Avenue and located within Fresno Yosemite International Airport Zone 1-RPZ, to Open Space. **Verification comments:**	Prior to development approvals	P&D						**X**
HAZ-2: Limit the proposed low density residential (1 to 3 dwelling units per acre) located northwest of the airport, and located within Fresno Yosemite International Airport Zone 3-Inner Turning Area, to 2 dwelling units per acre or less. **Verification comments:**	Prior to development approvals	P&D						**X**
HAZ-3: Re-designate the current area within Fresno Yosemite International Airport Zone 5-Sideline located northeast of the airport to Public Facilities-Airport or Open Space. **Verification comments:**	Prior to development approvals	P&D						**X**

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Hazards and Hazardous Materials *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
HAZ-4: Re-designate the current vacant lots at the northeast corner of Kearney Boulevard and South Thorne Avenue to Public Facilities-Airport or Open Space. **Verification comments:**	Prior to development approvals	P&D						X
HAZ-5: Prohibit residential uses within Safety Zone 1 northwest of the Hawes Avenue and South Thorne Avenue intersection. **Verification comments:**	Prior to development approvals	P&D						X
HAZ-6: Establish an alternative Emergency Operations Center in the event the current Emergency Operations Center is under redevelopment or blocked. **Verification comments:**	Prior to redevelopment of the current Emergency Operations Center	Fresno Fire Department and Mayor/ City Manager's Office						X

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Hydrology and Water Quality

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
HYD-1: The City shall develop and implement water conservation measures to reduce the per capita water use to 215 gallons per capita per day. **Verification comments:**	Prior to water demand exceeding water supply	Department of Public Utilities (DPU)					X	
HYD-2: The City shall continue to be an active participant in the Kings Water Authority and the implementation of the Kings Basin IRWMP. **Verification comments:**	Ongoing	DPU					X	
HYD-5.1: The City and partnering agencies shall implement the following measures to reduce the impacts on the capacity of existing or planned storm drainage Master Plan collection systems to less than significant. • Implement the existing Storm Drainage Master Plan (SDMP) for collection systems in drainage areas where the amount of imperviousness is unaffected by the change in land uses. *(continued on next page)*	Prior to exceedance of capacity of existing stormwater drainage facilities	Fresno Metropolitan Flood Control District (FMFCD), P&D, and PW				X	X	

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Hydrology and Water Quality *(continued)***:**

HYD-5.1 *(continued from previous page)* • Update the SDMP in those drainage areas where the amount of imperviousness increased due to the change in land uses to determine the changes in the collection systems that would need to occur to provide adequate capacity for the stormwater runoff from the increased imperviousness. • Implement the updated SDMP to provide stormwater collection systems that have sufficient capacity to convey the peak runoff rates from the areas of increased imperviousness. Require developments that increase site imperviousness to install, operate, and maintain FMFCD approved on-site detention systems to reduce the peak runoff rates resulting from the increased imperviousness to the peak runoff rates that will not exceed the capacity of the existing stormwater collection systems. **Verification comments:**	*[see previous page]*	*[see previous page]*	

Hydrology and Water Quality *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
HYD-5.2: The City and partnering agencies shall implement the following measures to reduce the impacts on the capacity of existing or planned storm drainage Master Plan retention basins to less than significant: Consult the SDMP to analyze the impacts to existing and planned retention basins to determine remedial measures required to reduce the impact on retention basin capacity to less than significant. Remedial measures would include: • Increase the size of the retention basin through the purchase of more land or deepening the basin or a combination for planned retention basins. • Increase the size of the emergency relief pump capacity required to pump excess runoff volume out of the basin and into adjacent canal that convey the stormwater to a disposal facility for existing retention basins. • Require developments that increase runoff volume to install, operate, and maintain, Low Impact Development (LID) measures to reduce runoff volume to the runoff volume that will not exceed the capacity of the existing retention basins. **Verification comments:**	Prior to exceedance of capacity of existing retention basin facilities	FMFCD, P&D, and PW				X	X	

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Hydrology and Water Quality *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
HYD-5.3: The City and partnering agencies shall implement the following measures to reduce the impacts on the capacity of existing or planned storm drainage Master Plan urban detention (stormwater quality) basins to less than significant. Consult the SDMP to determine the impacts to the urban detention basin weir overflow rates and determine remedial measures required to reduce the impact on the detention basin capacity to less than significant. Remedial measures would include: • Modify overflow weir to maintain the suspended solids removal rates adopted by the FMFCD Board of Directors. • Increase the size of the urban detention basin to increase residence time by purchasing more land. The existing detention basins are already at the adopted design depth. • Require developments that increase runoff volume to install, operate, and maintain, Low Impact Development (LID) measures to reduce peak runoff rates and runoff volume to the runoff rates and volumes that will not exceed the weir overflow rates of the existing urban detention basins. **Verification comments:**	Prior to exceedance of capacity of existing urban detention basin (stormwater quality) facilities	FMFCD, P&D, and PW				X	X	

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Hydrology and Water Quality *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
HYD-5.4: The City shall implement the following measures to reduce the impacts on the capacity of existing or planned storm drainage Master Plan pump disposal systems to less than significant. • Consult the SDMP to determine the extent and degree to which the capacity of the existing pump system will be exceeded. • Require new developments to install, operate, and maintain FMFCD design standard on-site detention facilities to reduce peak stormwater runoff rates to existing planned peak runoff rates. • Provide additional pump system capacity to maximum allowed by existing permitting to increase the capacity to match or exceed the peak runoff rates determined by the SDMP. **Verification comments:**	Prior to exceedance of capacity of existing pump disposal systems	FMFCD, P&D, and PW				X	X	

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Hydrology and Water Quality *(continued)*:

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
• **HYD-5.5:** The City shall work with FMFCD to develop and adopt an update to the SDMP for the Southeast Development Area that would be adequately designed to collect, convey and dispose of runoff at the rates and volumes which would be generated by the planned land uses in that area. **Verification comments:**	Prior to development approvals in the Southeast Development Area	FMFCD, P&D, and PW				X		

Public Services:

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
PS-1: As future fire facilities are planned, the fire department shall evaluate if specific environmental effects would occur. Typical impacts from fire facilities include noise, traffic, and lighting. Typical mitigation to reduce these impacts includes: • *Noise:* Barriers and setbacks on the fire department sites. • *Traffic:* Traffic devices for circulation and a "keep clear zone" during emergency responses. • *Lighting:* Provision of hoods and deflectors on lighting fixtures on the fire department sites. **Verification comments:**	During the planning process for future fire department facilities	P&D						X

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Public Services *(continued)*:

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
PS-2: As future police facilities are planned, the police department shall evaluate if specific environmental effects would occur. Typical impacts from police facilities include noise, traffic, and lighting. Typical mitigation to reduce potential impacts from police department facilities includes: • *Noise:* Barriers and setbacks on the police department sites. • *Traffic:* Traffic devices for circulation. • *Lighting:* Provision of hoods and deflectors on lighting fixtures on the police department sites. **Verification comments:**	During the planning process for future Police Department facilities	P&D						X
PS-3: As future public and private school facilities are planned, school districts shall evaluate if specific environmental effects would occur with regard to public schools, and P&D shall evaluate other school facilities. Typical impacts from school facilities include noise, traffic, and lighting. Typical mitigation to reduce potential impacts from school facilities includes: *(continued on next page)*	During the planning process for future school facilities	P&D, local school districts, and the Division of the State Architect						X

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

Public Services *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
PS-3 *(continued from previous page)* • *Noise*: Barriers and setbacks placed on school sites. • *Traffic*: Traffic devices for circulation. • *Lighting*: Provision of hoods and deflectors on lighting fixtures for stadium lights. **Verification comments:**	*[see previous page]*	*[see previous page]*						
PS-4: As future parks and recreational facilities are planned, the City shall evaluate if specific environmental effects would occur. Typical impacts from school facilities include noise, traffic, and lighting. Typical mitigation to reduce potential impacts from park and recreational facilities includes: • *Noise*: Barriers and setbacks placed on school sites. • *Traffic*: Traffic devices for circulation. • *Lighting*: Provision of hoods and deflectors on lighting fixtures for outdoor play area/field lights. **Verification comments:**	During the planning process for future park and recreation facilities	P&D	X					

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Public Services *(continued)***:**

PS-5: As future detention, court, library, and hospital facilities are planned, the appropriate agencies shall evaluate if specific environmental effects would occur. Typical impacts from court, library, and hospital facilities include noise, traffic, and lighting. Typical mitigation to reduce potential impacts includes: • *Noise:* Barriers and setbacks placed on school sites. • *Traffic:* Traffic devices for circulation. • *Lighting:* Provision of hoods and deflectors on outdoor lighting fixtures. **Verification comments:**	During the planning process for future detention, court, library, and hospital facilities	P&D, to the extent that agencies constructing these facilities are subject to City of Fresno regulation						X

Utilities and Service Systems

USS-1: The City shall develop and implement a wastewater master plan update. **Verification comments:**	Prior to wastewater conveyance and treatment demand exceeding capacity	DPU				X	X	

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-2: Prior to exceeding existing wastewater treatment capacity, the City shall evaluate the wastewater system and shall not approve additional development that contributes wastewater to the wastewater treatment facility that could exceed capacity until additional capacity is provided. By approximately the year 2025, the City shall construct the following improvements: • Construct an approximately 70 MGD expansion of the Regional Wastewater Treatment and Reclamation Facility and obtain revised waste discharge permits as the generation of wastewater is increased. • Construct an approximately 0.49 MGD expansion of the North Facility and obtain revised waste discharge permits as the generation of wastewater is increased. **Verification comments:**	Prior to exceeding existing wastewater treatment capacity	DPU				X	X	
USS-3: Prior to exceeding existing wastewater treatment capacity, the City shall evaluate the wastewater system and shall not approve additional development that contributes wastewater to the wastewater treatment facility that could exceed capacity until additional capacity is provided. After *(continued on next page)*	Prior to exceeding existing wastewater treatment capacity	DPU				X	X	

A - Incorporated into Project
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E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems *(continued)*:

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-3 *(continued from previous page)* approximately the year 2025, the City shall construct the following improvements: • Construct an approximately 24 MGD wastewater treatment facility within the Southeast Development Area and obtain revised waste discharge requirements as the generation of wastewater is increased. • Construct an approximately 9.6 MGD expansion of the Regional Wastewater Treatment and Reclamation Facility and obtain revised waste discharge permits as the generation of wastewater is increased. **Verification comments:**	*[see previous page]*	*[see previous page]*						
USS-4: A Traffic Control/Traffic Management Plan to address traffic impacts during construction of water and sewer facilities shall be prepared and implemented, subject to approval by the City (and Fresno County, when work is being done in unincorporated area roadways). The plan shall identify access and parking restrictions, pavement markings and signage, and hours of construction and for deliveries. It shall include haul routes, the notification plan, and coordination with emergency service providers and schools. **Verification comments:**	Prior to construction of water and sewer facilities	PW for work in the City; PW and Fresno County Public Works and Planning when unincorporated area roadways are involved				X	X	

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F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems *(continued)*:

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-5: Prior to exceeding capacity within the existing wastewater collection system facilities, the City shall evaluate the wastewater collection system and shall not approve additional development that would generate additional wastewater and exceed the capacity of a facility until additional capacity is provided. By approximately the year 2025, the following capacity improvements shall be provided. • Orange Avenue Trunk Sewer: This facility shall be improved between Dakota and Jensen Avenues. Approximately 37,240 feet of new sewer main shall be installed and approximately 5,760 feet of existing sewer main shall be rehabilitated. The size of the new sewer main shall range from 27 inches to 42 inches in diameter. The associated project designations in the 2006 Wastewater Master Plan are RS03A, RL02, C01-REP, C02-REP, C03-REP, C04-REP, C05-REP, C06-REL and C07-REP. • Marks Avenue Trunk Sewer: This facility shall be improved between Clinton Avenue and Kearney Boulevard. Approximately 12,150 feet of new sewer main shall be installed. The size of the new sewer main shall range from 33 inches to 60 inches in diameter. The associated project designations in the 2006 Wastewater Master Plan are CM1-REP and CM2-REP. *(continued on next page)*	Prior to exceeding capacity within the existing wastewater collection system facilities	DPU				X	X	

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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems *(continued)*:

USS-5 *(continued from previous page)* • North Avenue Trunk Sewer: This facility shall be improved between Polk and Fruit Avenues and also between Orange and Maple Avenues. Approximately 25,700 feet of new sewer main shall be installed. The size of the new sewer main shall range from 48 inches to 66 inches in diameter. The associated project designations in the 2006 Wastewater Master Plan are CN1-REL1 and CN3-REL1. • Ashlan Avenue Trunk Sewer: This facility shall be improved between Hughes and West Avenues and also between Fruit and Blackstone Avenues. Approximately 9,260 feet of new sewer main shall be installed. The size of the new sewer main shall range from 24 inches to 36 inches in diameter. The associated project designations in the 2006 Wastewater Master Plan are CA1-REL and CA2-REP. **Verification comments:**	*[see previous page]*	*[see previous page]*	

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems *(continued)*:

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-6: Prior to exceeding capacity within the existing 28 pipeline segments shown in Figures 1 and 2 in Appendix J-1, the City shall evaluate the wastewater collection system and shall not approve additional development that would generate additional wastewater and exceed the capacity of one of the 28 pipeline segments until additional capacity is provided. **Verification comments:**	Prior to exceeding capacity within the existing 28 pipeline segments shown in Figures 1 and 2 in Appendix J-1 of the MEIR	DPU				X	X	
USS-7: Prior to exceeding existing water supply capacity, the City shall evaluate the water supply system and shall not approve additional development that demand additional water until additional capacity is provided. By approximately the year 2025, the following capacity improvements shall be provided. • Construct an approximately 80 million gallon per day (MGD) surface water treatment facility near the intersection of Armstrong and Olive Avenues, in accordance with Chapter 9 and Figure 9-1 of the City of Fresno Metropolitan Water Resources Management Plan Update (2014 Metro Plan Update) Phase 2 Report, dated January 2012. *(continued on next page)*	Prior to exceeding existing water supply capacity	DPU				X	X	

A - Incorporated into Project
B - Mitigated
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D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-7 *(continued from previous page)* • Construct an approximately 30 MGD expansion of the existing northeast surface water treatment facility for a total capacity of 60 MGD, in accordance with Chapter 9 and Figure 9-1 of the 2014 Metro Plan Update. • Construct an approximately 20 MGD surface water treatment facility in the southwest portion of the City, in accordance with Chapter 9 and Figure 9-1 of the 2014 Metro Plan Update. **Verification comments:**	*[see previous page]*	*[see previous page]*						
USS-8: Prior to exceeding capacity within the existing water conveyance facilities, the City shall evaluate the water conveyance system and shall not approve additional development that would demand additional water and exceed the capacity of a facility until additional capacity is provided. The following capacity improvements shall be provided by approximately 2025. • Construct 65 new groundwater wells, in accordance with Chapter 9 and Figure 9-1 of the 2014 Metro Plan Update. *(continued on next page)*	Prior to exceeding capacity within the existing water conveyance facilities	DPU				**X**	**X**	

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems *(continued)***:**

USS-8 *(continued from previous page)* • Construct a 2.0 million gallon potable water reservoir (Reservoir T2) near the intersection of Clovis and California Avenues, in accordance with Chapter 9 and Figure 9-1 of the 2014 Metro Plan Update. • Construct a 3.0 million gallon potable water reservoir (Reservoir T3) near the intersection of Temperance and Dakota Avenues, in accordance with Chapter 9 and Figure 9-1 of the 2014 Metro Plan Update. • Construct a 3.0 million gallon potable water reservoir (Reservoir T4) in the Downtown Planning Area, in accordance with Chapter 9 and Figure 9-1 of the 2014 Metro Plan Update. • Construct a 4.0 million gallon potable water reservoir (Reservoir T5) near the intersection of Ashlan and Chestnut Avenues, in accordance with Chapter 9 and Figure 9-1 of the 2014 Metro Plan Update. • Construct a 4.0 million gallon potable water reservoir (Reservoir T6) near the intersection of Ashlan Avenue and Highway 99, in accordance with Chapter 9 and Figure 9-1 of the 2014 Metro Plan Update. *(continued on next page)*	*[see previous page]*	*[see previous page]*	

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-8 *(continued from previous two pages)* • Construct 50.3 miles of regional water transmission mains ranging in size from 24-inch to 48-inch diameter, in accordance with Chapter 9 and Figure 9-1 of the 2014 Metro Plan Update. • Construct 95.9 miles of 16-inch diameter transmission grid mains, in accordance with Chapter 9 and Figure 9-1 of the 2014 Metro Plan Update. **Verification comments:**	*[see Page 37]*	*[see Page 37]*						
USS-9: Prior to exceeding capacity within the existing water conveyance facilities, the City shall evaluate the water conveyance system and shall not approve additional development that would demand additional water and exceed the capacity of a facility until additional capacity is provided. The following capacity improvements shall be provided after approximately the year 2025 and additional water conveyance facilities shall be provided prior to exceedance of capacity within the water conveyance facilities to accommodate full buildout of the General Plan Update. *(continued on next page)*	Prior to exceeding capacity within the existing water conveyance facilities	DPU				X	X	

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems *(continued)***:**

USS-9 *(continued from previous page)* • Construct a 4.0 million gallon potable water reservoir (SEDA Reservoir 1) within the northern part of the Southeast Development Area. • Construct a 4.0 million gallon potable water reservoir (SEDA Reservoir 2) within the southern part of the Southeast Development Area. Additional water conveyance facilities shall be provided prior to exceedance of capacity within the water conveyance facilities to accommodate full buildout of the General Plan Update. **Verification comments:**	*[see previous page]*	*[see previous page]*						

Utilities and Service Systems - *Hydrology and Water Quality*

USS-10: In order to maintain Fresno Irrigation District canal operability, FMFCD shall maintain operational intermittent flows during the dry season, within defined channel capacity and downstream capture capabilities, for recharge. **Verification comments:**	During the dry season	Fresno Irrigation District (FID)				X		

A - Incorporated into Project
B - Mitigated
C - Mitigation in Process
D - Responsible Agency Contacted
E - Part of City-Wide Program
F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems - *Biological Resources:*

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-11: When FMFCD proposes to provide drainage service outside of urbanized areas: (a) FMFCD shall conduct preliminary investigations on undeveloped lands outside of highly urbanized areas. These investigations shall examine wetland hydrology, vegetation and soil types. These preliminary investigations shall be the basis for making a determination on whether or not more in-depth wetland studies shall be necessary. If the proposed project site does not exhibit wetland hydrology, support a prevalence of wetland vegetation and wetland soil types then no further action is required. (b) Where proposed activities could have an impact on areas verified by the Corps as jurisdictional wetlands or waters of the U.S. (urban and rural streams, seasonal wetlands, and vernal pools), FMFCD shall obtain the necessary Clean Water Act, Section 404 permits for activities where fill material shall be placed in a wetland, obstruct the flow or circulation of waters of the United States, impair or reduce the reach of such waters. As part of FMFCD's Memorandum of Understanding with CDFG, Section 404 and 401 permits would be obtained from the U.S. Army Corps of Engineers and from the *(continued on next page)*	Prior to development approvals outside of highly urbanized areas	California Regional Water Quality Control Board (RWQCB), and USACE				X		

A - Incorporated into Project
B - Mitigated
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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems - *Biological Resources* *(continued):*

USS-11 *(continued from previous page)* Regional Water Quality Control Board for any activity involving filling of jurisdictional waters). At a minimum, to meet "no net loss policy," the permits shall require replacement of wetland habitat at a 1:1 ratio. (c) Where proposed activities could have an impact on areas verified by the Corps as jurisdictional wetlands or waters of the U.S. (urban and rural streams, seasonal wetlands, and vernal pools), FMFCD shall submit and implement a wetland mitigation plan based on the wetland acreage verified by the U.S. Army Corps of Engineers. The wetland mitigation plan shall be prepared by a qualified biologist or wetland scientist experienced in wetland creation, and shall include the following or equally effective elements: i. Specific location, size, and existing hydrology and soils within the wetland creation area. ii. Wetland mitigation techniques, seed source, planting specifications, and required buffer setbacks. In addition, the mitigation plan shall ensure adequate water supply is provided to the created wetlands in order to maintain the proper *(continued on next page)*	*[see previous page]*	*[see previous page]*	

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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems - *Biological Resources* *(continued):*

USS-11 *(continued from previous two pages)* hydrologic regimes required by the different types of wetlands created. Provisions to ensure the wetland water supply is maintained in perpetuity shall be included in the plan. iii. A monitoring program for restored, enhanced, created, and preserved wetlands on the project site. A monitoring program is required to meet three objectives; 1) establish a wetland creation success criteria to be met; 2) to specify monitoring methodology; 3) to identify as far as is possible, specific remedial actions that will be required in order to achieve the success criteria; and 4) to document the degree of success achieved in establishing wetland vegetation. (d) A monitoring plan shall be developed and implemented by a qualified biologist to monitor results of any on-site wetland restoration and creation for five years. The monitoring plan shall include specific success criteria, frequency and timing of monitoring, and assessment of whether or not maintenance activities are being carried out and how these shall be adjusted if necessary. *(continued on next page)*	*[see Page 41]*	*[see Page 41]*	

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems - *Biological Resources* *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-11 *(continued from previous three pages)* If monitoring reveals that success criteria are not being met, remedial habitat creation or restoration should be designed and implemented by a qualified biologist and subject to five years of monitoring as described above. Or (e) In lieu of developing a mitigation plan that outlines the avoidance, purchase, or creation of wetlands, FMFCD could purchase mitigation credits through a Corps approved Mitigation Bank. **Verification comments:**	*[see Page 41]*	*[see Page 41]*						
USS-12: When FMFCD proposes to provide drainage service outside in areas that support seasonal wetlands or vernal pools: (a) During facility design and prior to initiation of ground disturbing activities in areas that support seasonal wetlands or vernal pools, FMFCD shall conduct a preliminary rare plant assessment. The assessment will determine the likelihood on whether or not the project site could support rare plants. If it is determined that the project site would not support rare plants, then no further *(continued on next page)*	During facility design and prior to initiation of ground disturbing activities in areas that support seasonal wetlands or vernal pools	California Department of Fish & Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS)						X

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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems - *Biological Resources* *(continued)**:***

USS-12 *(continued from previous page)* action is required. However, if the project site has the potential to support rare plants; then a rare plant survey shall be conducted. Rare plant surveys shall be conducted by qualified biologists in accordance with the most current CDFG/USFWS guidelines or protocols and shall be conducted at the time of year when the plants in question are identifiable. (b) Based on the results of the survey, prior to design approval, FMFCD shall coordinate with CDFG and/or implement a Section 7 consultation with USFWS, shall determine whether the project facility would result in a significant impact to any special status plant species. Evaluation of project impacts shall consider the following: • The status of the species in question (*e.g.*, officially listed by the State or Federal Endangered Species Acts). • The relative density and distribution of the on-site occurrence versus typical occurrences of the species in question. *(continued on next page)*	*[see previous page]*	*[see previous page]*	

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems - *Biological Resources* *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-12 *(continued from previous two pages)* • The habitat quality of the on-site occurrence relative to historic, current or potential distribution of the population. (c) Prior to design approval, and in consultation with the CDFG and/or the USFWS, FMFCD shall prepare and implement a mitigation plan, in accordance with any applicable State and/or federal statutes or laws, that reduces impacts to a less than significant level. **Verification comments:**	*[see Page 44]*	*[see Page 44]*						
USS-13: When FMFCD proposes to provide drainage service outside in areas that support seasonal wetlands or vernal pools: (a) During facility design and prior to initiation of ground disturbing activities in areas that support seasonal wetlands or vernal pools, FMFCD shall conduct a preliminary survey to determine the presence of listed vernal pool crustaceans. *(continued on next page)*	During facility design and prior to initiation of ground disturbing activities in areas that support seasonal wetlands or vernal pools	CDFW and USFWS						X

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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems - *Biological Resources* *(continued)***:**

USS-13 *(continued from previous page)* (b) If potential habitat (vernal pools, seasonally inundated areas) or fairy shrimp exist within areas proposed to be disturbed, FMFCD shall complete the first and second phase of fairy shrimp presence or absence surveys. If an absence finding is determined and accepted by the USFWS, then no further mitigation shall be required for fairy shrimp. (c) If fairy shrimp are found to be present within vernal pools or other areas of inundation to be impacted by the implementation of storm drainage facilities, FMFCD shall mitigate impacts on fairy shrimp habitat in accordance with the USFWS requirements of the Programmatic Biological Opinion. This shall include on-site or off-site creation and/or preservation of fairy shrimp habitat at ratios ranging from 3:1 to 5:1 depending on the habitat impacted and the choice of on-site or off-site mitigation. Or mitigation shall be the purchase of mitigation credit through an accredited mitigation bank. **Verification comments:**	*[see previous page]*	*[see previous page]*	

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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems - *Biological Resources* *(continued)*:

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-14: When FMFCD proposes to construct drainage facilities in an area where elderberry bushes may occur: (a) During facility design and prior to initiation of construction activities, FMFCD shall conduct a project-specific survey for all potential Valley Elderberry Longhorn Beetle (VELB) habitats (elderberry shrubs), including a stem count and an assessment of historic or current VELB habitat. (b) FMFCD shall avoid and protect all potential identified VELB habitat where feasible. (c) Where avoidance is infeasible, develop and implement a VELB mitigation plan in accordance with the most current USFWS mitigation guidelines for unavoidable take of VELB habitat pursuant to either Section 7 or Section 10(a) of the Federal Endangered Species Act. The mitigation plan shall include, but might not be limited to, relocation of elderberry shrubs, planting of elderberry shrubs, and monitoring of relocated and planted elderberry shrubs. **Verification comments:**	During facility design and prior to initiation of construction activities	CDFW and USFWS						X

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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems - *Biological Resources* *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-15: Prior to ground disturbing activities during nesting season (March through July) for a project that supports bird nesting habitat, FMFCD shall conduct a survey of trees. If nests are found during the survey, a qualified biologist shall assess the nesting activity on the project site. If active nests are located, no construction activities shall be allowed within 250 feet of the nest until the young have fledged. If construction activities are planned during the no n-breeding period (August through February), a nest survey is not necessary. **Verification comments:**	Prior to ground disturbing activities during nesting season (March through July) for a project that supports bird nesting habitat	CDFW and USFWS						X
USS-16: When FMFCD proposes to construct drainage facilities in an area that supports bird nesting habitat: (a) FMFCD shall conduct a pre-construction breeding-season survey (approximately February 1 through August 31) of proposed project sites in suitable habitat (levee and canal berms, open grasslands with suitable burrows) during the same calendar year that construction is planned to begin. If phased construction procedures are planned for the proposed project, the results of the above survey shall be valid only for the season when it is conducted. *(continued on next page)*	Prior to ground disturbing activities during nesting season (March through July) for a project that supports bird nesting habitat	CDFW and USFWS				X		

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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems - *Biological Resources* *(continued)***:**

USS-16 *(continued from previous page)* (b) During the construction stage, FMFCD shall avoid all burrowing owl nest sites potentially disturbed by project construction during the breeding season while the nest is occupied with adults and/or young. The occupied nest site shall be monitored by a qualified biologist to determine when the nest is no longer used. Avoidance shall include the establishment of a 160-foot diameter non-disturbance buffer zone around the nest site. Disturbance of any nest sites shall only occur outside of the breeding season and when the nests are unoccupied based on monitoring by a qualified biologist. The buffer zone shall be delineated by highly visible temporary construction fencing. Based on approval by CDFG, pre-construction and pre-breeding season exclusion measures may be implemented to preclude burrowing owl occupation of the project site prior to project-related disturbance. Burrowing owls can be passively excluded from potential nest sites in the construction area, either by closing the burrows or placing one-way doors in the burrows according to current CDFG protocol. Burrows shall be examined not more than 30 days before construction to ensure that no owls have recolonized the area of construction. *(continued on next page)*	*[see previous page]*	*[see previous page]*	

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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems - *Biological Resources* *(continued)***:**

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-16 *(continued from previous two pages)* For each burrow destroyed, a new burrow shall be created (by installing artificial burrows at a ratio of 2:1 on protected lands nearby. **Verification comments:**	*[see Page 49]*	*[see Page 49]*						
USS-17: When FMFCD proposes to construct drainage facilities in the San Joaquin River corridor: (a) FMFCD shall not conduct instream activities in the San Joaquin River between October 15 and April 15. If this is not feasible, FMFCD shall consult with the National Marine Fisheries Service and CDFW on the appropriate measures to be implemented in order to protect listed salmonids in the San Joaquin River. (b) Riparian vegetation shading the main–channel that is removed or damaged shall be replaced at a ratio and quantity sufficient to maintain the existing shading of the channel. The location of replacement trees on or within *(continued on next page)*	During instream activities conducted between October 15 and April 15	National Marine Fisheries Service (NMFS), CDFW, and Central Valley Flood Protection Board (CVFPB)						X

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F - Not Applicable

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems / *Biological Resources* *(continued)***:**

USS-17 *(continued from previous page)* FMFCD berms, detention ponds or river channels shall be approved by FMFCD and the Central Valley Flood Protection Board. **Verification comments:**	*[see previous page]*	*[see previous page]*						

Utilities and Service Systems – *Recreation / Trails*:

USS-18: When FMFCD updates its District Service Plan: Prior to final design approval of all elements of the District Services Plan, FMFCD shall consult with Fresno County, City of Fresno, and City of Clovis to determine if any element would temporarily disrupt or permanently displace adopted existing or planned trails and associated recreational facilities as a result of the proposed District Services Plan. If the proposed project would not temporarily disrupt or permanently displace adopted existing or planned trails, no further mitigation is necessary. If the proposed project would have an effect on the trails and associated facilities, FMFCD shall implement the following: *(continued on next page)*	Prior to final design approval of all elements of the District Services Plan	P&D, PW, City of Clovis, and County of Fresno					X	

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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems – *Recreation / Trails* *(continued)*:

USS-18 *(continued from previous page)* (a) If short-term disruption of adopted existing or planned trails and associated recreational facilities occur, FMFCD shall consult and coordinate with Fresno County, City of Fresno, and City of Clovis to temporarily re-route the trails and associated facilities. (b) If permanent displacement of the adopted existing or planned trails and associated recreational facilities occur, the appropriate design modifications to prevent permanent displacement shall be implemented in the final project design or FMFCD shall replace these facilities. **Verification comments:**	*[see previous page]*	*[see previous page]*						

Utilities and Service Systems – *Air Quality*:

USS-19: When District drainage facilities are constructed, FMFCD shall: (a) Minimize idling time of construction equipment vehicles to no more than ten minutes, or require that engines be shut off when not in use. *(continued on next page)*	During storm water drainage facility construction activities	Fresno Metropolitan Flood Control District and SJVAPCD				X		

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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems – *Air Quality* *(continued)*:

USS-19 *(continued from previous page)* (b) Construction shall be curtailed as much as possible when the Air Quality Index (AQI) is above 150. AQI forecasts can be found on the SJVAPCD web site. (c) Off-road trucks should be equipped with on-road engines if possible. (d) Construction equipment should have engines that meet the current off-road engine emission standard (as certified by CARB), or be re-powered with an engine that meets this standard. **Verification comments:**	*[see previous page]*	*[see previous page]*						

Utilities and Service Systems – *Adequacy of Storm Water Drainage Facilities*:

USS-20: Prior to exceeding capacity within the existing storm water drainage facilities, the City shall coordinate with FMFCD to evaluate the storm water drainage system and shall not approve additional development that would convey additional storm water to a facility that would experience an exceedance of capacity until the necessary additional capacity is provided. **Verification comments:**	Prior to exceeding capacity within the existing storm water drainage facilities	FMFCD, PW, and P&D				X		

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MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F

Utilities and Service Systems – *Adequacy of Water Supply Capacity*:

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-21: Prior to exceeding existing water supply capacity, the City shall evaluate the water supply system and shall not approve additional development that demand additional water until additional capacity is provided. By approximately the year 2025, the City shall construct an approximately 25,000 AF/year tertiary recycled water expansion to the Fresno-Clovis Regional Wastewater Reclamation Facility in accordance with the 2013 Recycled Water Master Plan and the 2014 City of Fresno Metropolitan Water Resources Management Plan update. Implementation of Mitigation Measure USS-5 is also required prior to approximately the year 2025. **Verification comments:**	Prior to exceeding existing water supply capacity	DPU and P&D				X	X	

Utilities and Service Systems – *Adequacy of Landfill Capacity*:

MITIGATION MEASURE	WHEN IMPLEMENTED	COMPLIANCE VERIFIED BY	A	B	C	D	E	F
USS-22: Prior to exceeding landfill capacity, the City shall evaluate additional landfill locations and shall not approve additional development that could contribute solid waste to a landfill that is at capacity until additional capacity is provided. **Verification comments:**	Prior to exceeding landfill capacity	DPU and P&D				X	X	

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Chapter 4 Mitigation Monitoring and Reporting Program

This Mitigation Monitoring and Reporting Program (MMRP) has been formulated based upon the findings of the Initial Study/Mitigated Negative Declaration (IS/MND) for Plan Amendment Application No. P19-06286, Prezone Application No. P19-06286, Annexation Application No. P19-06018, Planned Development Permit Application No. P19-00369, and Vesting Tentative Tract Map No. 6241. The MMRP lists mitigation measures recommended in the IS/MND for the Project and identifies monitoring and reporting requirements.

Table 4-1 presents the mitigation measures identified for the proposed Project. Each mitigation measure is numbered with a symbol indicating the topical section to which it pertains, a hyphen, and the impact number. For example, **AIR-2** would be the second mitigation measure identified in the Air Quality analysis of the IS/MND.

The first column of **Table 4-1** identifies the mitigation measure. The second column, entitled "When Monitoring is to Occur," identifies the time the mitigation measure should be initiated. The third column, "Frequency of Monitoring," identifies the frequency of the monitoring of the mitigation measure. The fourth column, "Agency Responsible for Monitoring," names the party ultimately responsible for ensuring that the mitigation measure is implemented. The last columns will be used by the City to ensure that individual mitigation measures have been complied with and monitored.

Table 4-1 Mitigation Monitoring and Reporting Program

Mitigation Monitoring and Reporting Program					
Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
Agricultural Resources					
AG-1. Prior to recordation of final maps, the Project proponent shall mitigate for the loss of prime and locally important farmland by one of the following at the discretion of the Planning Department: A) recording a restrictive covenant or deed on portions of the property having said designations; B) paying In-Lieu Fees as determined by the Planning Department; C) contributing to an established Mitigation Bank; or D) other comparable mitigation as approved by the Planning Department.	Prior to recordation of Final map	One time prior to recordation	City of Fresno	Planning Approval	
Biological Resources					
BIO-1. Tree removal within the reorganization lands study area shall be performed outside the nesting period of raptors (trees should be removed from September 1 – January 31). If trees must be removed during the nesting period (February 1 – August 31) the project proponent shall submit a nesting raptor survey prepared by a qualified biologist to Fresno County Planning Department prior to issuance of a grading permit.	Prior to issuance of a grading permit	One time prior to issuance of grading permit	City of Fresno	Submittal of a report	
BIO-2. Prior to approval of entitlements or issuance of grading permits on the reorganization lands outside of Tract 6241, a qualified biologist shall evaluate each proposal on a project-level basis prior to issuance of a grading permit.	Prior to issuance of a grading permit	One time prior to issuance of grading permit	City of Fresno	Submittal of a report	
Cultural Resources					
CULT-1: Prior to issuance of demolition permits, development, or approval of entitlements for development	Prior to issuance of a demolition	One time prior to	City of Fresno	Submittal of a report	

Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
within the remainder of the Clinton-Armstrong No. 3 Reorganization (excepting VTM 6241), structures meeting the threshold for consideration of historic designation shall be evaluated by a qualified professional to make a determination of eligibility for inclusion in the Historical Register.	permit, development, or entitlements	issuance of grading permit			
CULT-2. Should archaeological remains or artifacts be unearthed during any stage of Project activities, work in the area of discovery shall cease until the area is evaluated by a qualified archaeologist. If mitigation is warranted, the Project proponent shall abide by recommendations of the archaeologist.	During construction	Upon occurrence	City of Fresno	Submittal of a report upon occurrence	
CULT-3. In the event that any human remains are discovered on the Project site, the Fresno County Coroner must be notified of the discovery (California Health and Safety Code, Section 7050.5) and all activities in the immediate area of the find or in any nearby area reasonably suspected to overlie adjacent human remains must cease until appropriate and lawful measures have been implemented. If the Coroner determines that the remains are not recent, but rather of Native American origin, the Coroner shall notify the Native American Heritage Commission (NAHC) in Sacramento within 24 hours to permit the NAHC to determine the Most Likely Descendent of the deceased Native American.	During construction	Upon occurrence	Fresno County Coroner	Submittal of a report upon occurrence	
Transportation					
TR-1. In accordance with timelines outlined in the Project Conditions of Approval, the Project shall implement and incorporate recommendations from the *Revised Traffic Impact Analysis for Tentative Tract 6241, Located at the Southwest Quadrant of Armstrong Avenue and Clinton Avenue* (December 12, 2019), by paying its fair share of traffic improvements and/or additional traffic mitigating conditions outlined in the traffic analysis and Public Works Department Conditions of Approval letters dated	Prior to recording a final map	One time only	City of Fresno	Proof of payment	

Mitigation Monitoring and Reporting Program					
Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
February 27, 2020.					
Tribal Cultural Resources					
Refer to **MM CULT-2**	During construction	Upon occurrence	Fresno County Coroner	Submittal of a report upon occurrence	