RECEIVED
By Kari Camino at 10:42 am, Aug 19, 2025

Planning Commission

August 19, 2025

Information Packet

ITEMS

File ID 25-1108

Consideration of an appeal regarding Development Permit Application No. P23-03993, Planned Development Permit Application No. P23-03990, and Conditional Use Permit Application No. P23-03982 for property bounded by West Herndon Avenue to the north, North Hayes Avenue to the west, and North Veterans Boulevard to the east (Council District 2) - Planning and Development Department.

Contents of Supplement:

REVISED Exhibit J – Environmental Assessment P23-03993/P23-03982/P23-03990 [4-4-2025]

Supplemental Information:

Any agenda related public documents received and distributed to a majority of the Commission after the Agenda Packet is printed are included in Supplemental Packets. Supplemental Packets are produced as needed. The Supplemental Packet is available for public inspection in the City Clerk's Office, 2600 Fresno Street, during normal business hours (main location pursuant to the Brown Act, G.C. 54957.5(2). In addition, Supplemental Packets are available for public review at the Planning Commission meeting in the City Council Chambers, 2600 Fresno Street. Supplemental Packets are also available online on the City Clerk's website.

Americans with Disabilities Act (ADA):

The meeting room is accessible to the physically disabled, and the services of a translator can be made available. Requests for additional accommodations for the disabled, sign language interpreters, assistive listening devices, or translators should be made one week prior to the meeting. Please call City Clerk's Office at 621-7650. Please keep the doorways, aisles and wheelchair seating areas open and accessible. If you need assistance with seating because of a disability, please see Security.

REVISED Exhibit J

E20251000086

CITY OF FRESNO

NOTICE OF INTENT TO ADOPT A

MITIGATED NEGATIVE DECLARATION

Filed with the
FRESNO COUNTY CLERK
2220 Tulare Street, Fresno, CA 93721

ENVIRONMENTAL ASSESSMENT FOR P23-03993/P23-03982/P23-03990

APPLICANT:

Armen Basmajian
Bella Vita, Inc.
6729 North Willow Avenue, Suite 105
Fresno, CA 93722

FILED
APR 04 2025 TIME 8:29am
FRESNO COUNTY CLERK
By Cyan Edmisten DEPUTY
Cyan Edmisten

PROJECT LOCATION:

Located on the southeast corner of West Herndon and North Hayes Avenues in the City and County of Fresno, California (See Exhibit A - Vicinity Map)

APN: 504-092-09, 504-092-10ST, 504-092-15, 504-092-16

Site Latitude: 36°50'06" N & Site Longitude: 119°53'56" W Mount Diablo Base & Meridian, Township 13S, Range 19E, Section 4

The full Initial Study is on file in the Planning and Development Department, Fresno City Hall, 3rd Floor, Room 3043, 2600 Fresno Street, Fresno, CA 93721.

E20251000086

PROJECT DESCRIPTION:

Development Permit Application No. P23-03993 requests authorization to construct the following:

1) (APNs: 504-092-15, 504-092-16; approximately 2.20 acres) A proposed commercial complex including new construction of one (1) approximately 12,750 square-foot retail shell building, one (1) approximately 5,000 square-foot commercial pad for a future commercial building (Pad 1), and one (1) approximately 4,916 square-foot commercial pad for a future commercial building (Pad 2). Additional new on-site and off-site improvements include, but are not limited to, a paved parking lot, landscaping, two (2) solid waste enclosures, two (2) outdoor patios, curb, gutter, and sidewalks. Direct access to the subject properties are proposed via two (2) driveway approaches on North Hayes Avenue. The proposed drive-thru for Pad 1 is considered separately under Conditional Use Permit Application No. P23-03982.

2) (APNs: 504-092-09, 504-092-10ST; approximately 16.53 acres) A proposed private multi-family residential apartment complex consisting of 33 three-story multi-family residential buildings encompassing a total of 396 multi-family residential dwelling units. The dwelling units would be comprised of 120 one-bedroom units, 192 two-bedroom units, and 84 three-bedroom units. These are categorized 10 *Type 1* Buildings (one-bedroom units), 16 *Type 2* Buildings (two-bedroom units), and 7 *Type 3* Buildings (three-bedroom units) for a total of 33 residential buildings. Additionally, on-site and off-site improvements include, but shall not be limited to, a parking lot including covered (garages and carports) and uncovered parking spaces, landscaping, open space areas including barbeque areas, a tot lot area, swimming pool, basketball half-court, gazebo areas, dog park, and curb, gutter and sidewalks. Direct access is proposed via two (2) private gated entrances on North Hayes Avenue.

Conditional Use Permit Application No. P23-03982 requests authorization to construct a drive-thru use for Commercial Pad 1 (as described above).

Planned Development Permit Application No. P23-03990 requests authorization to modify the development standards for a reduction in minimum drive-thru separation requirements from Residential districts, reduction in width of the separation requirement of the EA (Expressway Area Overlay) zone district from the center line of the nearest travel lane to the nearest proposed building, a reduction in the minimum front yard and interior side yard setback requirements of the RM-2 zone district, and a reduction in the minimum front yard and Type 2 landscape setback requirements for the O zone district.

The City of Fresno has prepared an Initial Study of the above-described project and proposes to adopt a Mitigated Negative Declaration.

Pursuant to the California Public Resources Code (PRC) §§ 21093 and 21094 and California Environmental Quality Act (CEQA) Guidelines §§ 15070 to 15075, 15150, and 15152, this project has been evaluated with respect to each item on the attached Appendix G/Initial Study Checklist to determine whether this project may cause any additional significant effect on the environment. After conducting a review of the adequacy of the Project Specific Mitigation Measure Checklist and CEQA Guidelines §§ 15151 and 15179(b), the Planning and Development Department, as lead agency, finds that no substantial changes have occurred and that no new information has become available.

E20251000086

The completed Appendix G/Initial Study Checklist, its associated narrative, technical studies and 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 and the CEQA.

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.

With mitigation imposed under the Project Specific Mitigation Measure Checklist, 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. The Planning and Development Department, as lead agency, finds that no substantial changes have occurred and that no new information has become available.

Based upon the evaluation guided by the Appendix G/Initial Study Checklist, it was determined that there are project specific foreseeable impacts which require project level mitigation measures.

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 § 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.

Public notice has been provided regarding staff's finding in the manner prescribed by § 15072 of the CEQA Guidelines and by § 21092 of the PRC Code (CEQA provisions).

Additional information on the proposed project, including the Project Specific Mitigation Measure Checklist, proposed environmental finding of a Mitigated Negative Declaration and the Initial Study may be obtained from the Planning and Development Department, Fresno City Hall, 2600 Fresno Street, 3rd Floor, Room 3043, Fresno, California 93721 3604. Please contact Rob Holt at (559) 621-8056 or via email at Robert.Holt@fresno.gov 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 April 25, 2025. Please direct comments to Rob Holt, Supervising Planner, City of Fresno Planning and Development Department, City Hall, 2600 Fresno Street, Room 3043, Fresno, California, 93721-3604; or by email to Robert.Holt@fresno.gov.

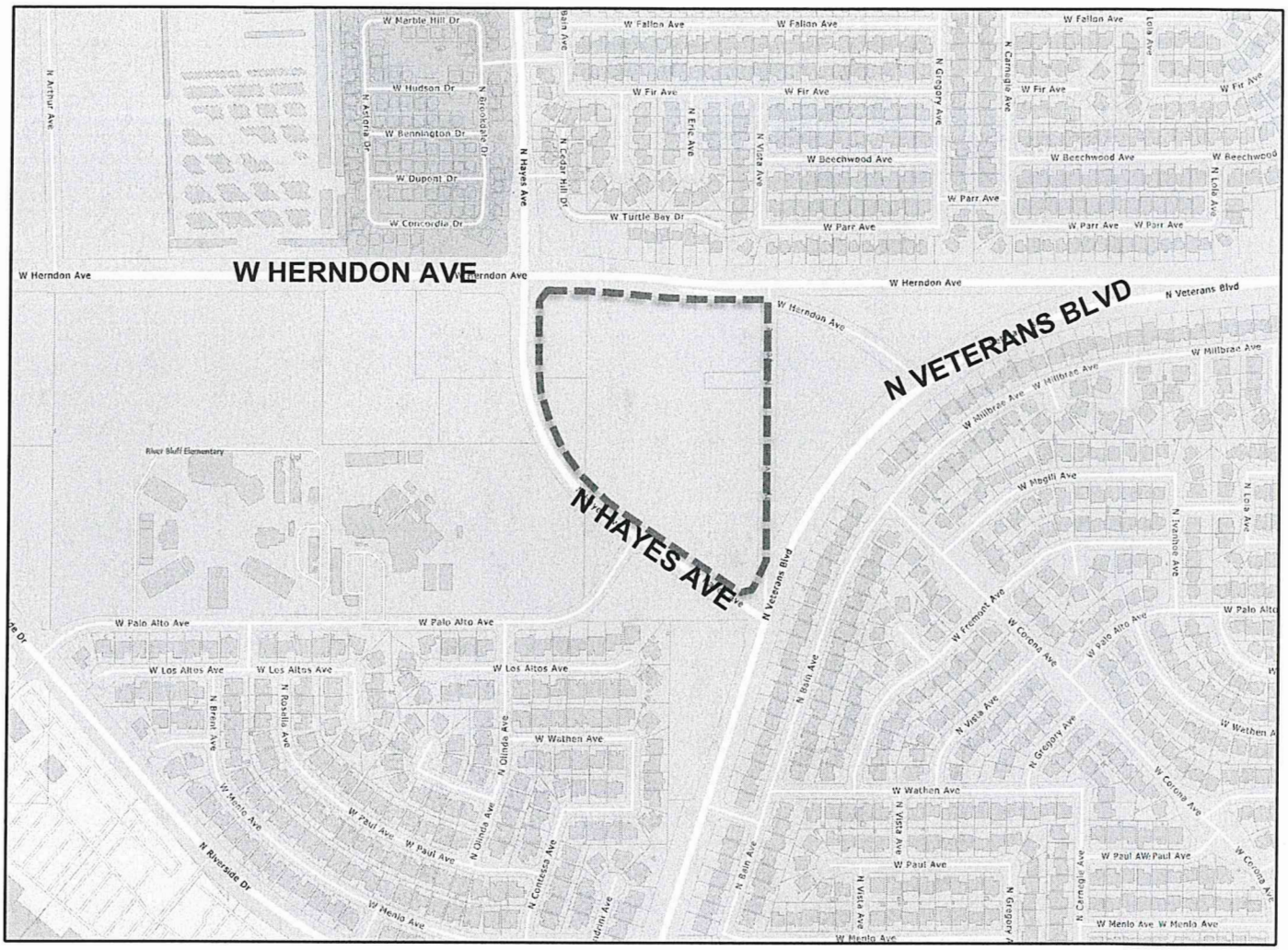
INITIAL STUDY PREPARED BY:	SUBMITTED BY:
Rob Holt, Supervising Planner	Robert Holt

E20251000086

DATE: 04/04/2025	Rob Holt, Supervising Planner CITY OF FRESNO PLANING AND DEVELOPMENT DEPARTMENT
Attachments: Exhibit A – Vicinity Map	

E202510000086

Exhibit A – Vicinity Map



Legend

Subject Property

APPENDIX G/INITIAL STUDY FOR A MITIGATED NEGATIVE DECLARATION

Environmental Checklist Form for:
Development Permit Application No. P23-03993 & Planned Development Permit Application No. P23-03982

1.	**Project title:** Development Permit Application No. P23-03993 & Planned Development Permit Application No. P23-03982 (Bella Vita Multifamily Development)
2.	**Lead agency name and address:** City of Fresno Planning and Development Department 2600 Fresno Street Fresno, CA 93721
3.	**Contact person and phone number:** Rob Holt, Supervising Planner City of Fresno Planning and Development Department (559) 621-8056
4.	**Project location:** SE Corner of N Hayes Ave/W Herndon Ave NW Corner of N Hayes Ave/N Veterans Blvd (APN: 504-092-09, 504-092-10ST, 504-092-15, 504-092-16)
5.	**Project sponsor's name and address:** Armen Basmajian Marc O' Polo Enterprises, Inc. 6729 N. Willow Ave., Ste. 105 Fresno, CA 93710
6.	**General & Community plan land use designation:** Urban Neighborhood Residential Employment – Office
7.	**Zoning:** RM-2/UGM (*Multi-Family Residential, Urban Neighborhood/Urban Growth Management*) O/EA/UGM/cz (*Office/Expressway Area Overlay/Urban Growth Management/conditions of zoning*)

8.	**Description of project:** Development Permit Application No. P23-03993 was filed with the City of Fresno ("City") by Armen Basmajian on behalf of Marc O' Polo Enterprises, Inc. This application is to approve a site plan for the construction and operation of multifamily residential and commercial uses on vacant land in the northwestern portion of the City generally bounded by West Herndon Avenue to the north, North Hayes Avenue to the west and south, and the North Hayes Avenue alignment to the east ("project site"). The project site consists of four parcels which encompass approximately 18.56 acres of land. These parcels are associated with Assessor's Parcel Numbers (APNs): 504-092-09, 504-092-10ST (Flood Control Parcel), 504-092-15, and 504-092-16. The project's multifamily residential component would construct 396 units across two parcels totaling approximately 16.36 net acres for a density of 24.21 units per acre (du/ac) where the density requirement of the property's zone district (RM-2) requires a minimum of 16 and maximum of 30 du/ac. The multifamily residential component of the project would include a diverse unit mix of 120 one-bedroom units, 192 two-bedroom units, and 84 three-bedroom units all of which are three-story buildings. These are categorized 10 *Type 1* Buildings (one-bedroom units), 16 *Type 2* Buildings (two-bedroom units), and 7 *Type 3* Buildings (three-bedroom units) for a total of 33 residential buildings onsite, comprising approximately 187,116 square feet of residential building area. Residential amenities include a recreation building, swimming pool, basketball half-court, two pickle ball courts, tot lot, two barbeque areas, a dog park, and expansive landscaped open spaces. The residential parking plan includes approximately 70 enclosed garages, 326 covered carports, and 240 open parking spaces, totaling 636 spaces. Moreover, approximately 322,023 square feet, or approximately 45.5 percent of the multifamily residential component's lot area would be landscaped, and the balance of the lot would be hardscaped with pavement and structures. The project's commercial component would construct approximately 22,600 square feet of commercial space on approximately 2.2 net acres. The project does not propose to change these existing land use and zoning designations. For the commercial component, the development would feature two commercial pads (one with a drive-thru use) and a retail shell building generally concentrated in the northwestern portion of the project site fronting North Hayes Avenue near the intersection of West Herndon Avenue. The retail shell building would be approximately 12,750 square feet of building area and the commercial pads would be approximately 5,000 square feet (with drive-thru use) and 4,916 square feet, respectively, for a total of 22,666 square feet of commercial building area. This section of the project site would include 84 parking stalls, including 6 ADA accessible parking spaces. The commercial pads would be located in the northern and southern portions of the commercial component area of the project site, and the retail shell building would be located near the center of the commercial component area. The commercial pads are anticipated to provide

restaurant uses, and the commercial pad in the northern area would include a drive-through. While tenants for the commercial uses are not known at this time, the anticipated operating hours would be from 8:00 am to 10:00 pm, seven days per week. Moreover, approximately 27,494 square feet, or approximately 25.3 percent, of the commercial component's lot area would be landscaped, and the balance of the lot would be hardscaped with pavement and structures.

Vehicular access to the multifamily residential component would be provided via new driveways and security gates along North Hayes Avenue with emergency vehicle access also provided from West Herndon Avenue. Vehicular access to the commercial component would be provided from new driveways along North Hayes Avenue separate from the residential access points. Additionally, the project incorporates an existing overhead electric transmission line easement that generally bisects the northeastern portion of the site to avoid a conflict between the project's proposed development and the existing transmission lines.

For the purposes of this environmental analysis, the project's construction is estimated to commence in May 2026 and consist of one phase with project completion estimated by May 2028 and project site occupancy by June 2028.

9. **Surrounding land uses and setting:**

	Planned Land Use	Existing Zoning	Existing Land Use
North	Low Density Residential /Medium-Low Density Residential	RS-4/RS-5	Neighborhood Park/Medium-Low Density Residential
East	Low Density Residential	RM-2/RS-4	Vacant/Medium Density Residential
South	Low Density Residential/ Open Space	RS-5/RS-4/PI	Vacant/Ponding Basin/Medium Density Residential
West	Office/Elementary School	O/PI	Vacant/Elementary School

10. **Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):**

- San Joaquin Valley Air Pollution Control District (SJVAPCD)
- Central Valley Regional Water Quality Control Board

11.	**Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code (PRC) Section 21080.3.1? If so, has consultation begun?** The State requires lead agencies to consider the potential effects of proposed projects and consult with California Native American tribes during the local planning process for the purpose of protecting Traditional Tribal Cultural Resources through the California Environmental Quality Act (CEQA) Guidelines. Pursuant to PRC Section 21080.3.1, before public distribution of the document, the lead agency shall begin consultation with the California Native American tribe that is traditionally and culturally affiliated with the geographical area of the proposed project. Such significant cultural resources are either sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a tribe which is either on or eligible for inclusion in the California Historic Register or local historic register, or, the lead agency, at its discretion, and support by substantial evidence, choose to treat the resources as a Tribal Cultural Resources (PRC Section 21074(a)(1-2)). According to the most recent census data, California is home to 109 currently recognized Indian tribes. Tribes in California currently have nearly 100 separate reservations or Rancherias. Fresno County has a number of Rancherias such as Table Mountain Rancheria, Millerton Rancheria, Big Sandy Rancheria, Cold Springs Rancheria, and Squaw Valley Rancheria. These Rancherias are not located within the city limits. Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See PRC Section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that PRC Section 21082.3(c) contains provisions specific to confidentiality. Currently, the Table Mountain Rancheria Tribe and the Dumna Wo Wah Tribe have requested to be notified pursuant to Assembly Bill 52 (AB 52). A certified letter was mailed to the above-mentioned tribes on July 31, 2024. The 30-day comment period ended on August 30, 2024. The Table Mountain Rancheria provided a comment letter on August 16, 2024, requesting consultation. City staff contacted Table Mountain Rancheria and provided them with a Cultural Study for review on August 26, 2024, with a follow-up email requesting a status on the consultation request on September 11, 2024. On January 21, 2025, City staff sent another follow-up request expressing the City's good faith efforts in requesting to meet for consultation, as requested by Table Mountain Rancheria, with a due date for the consultation meeting request by January 31, 2025, stating that a "No Response" would be considered as fulfilling the request for consultation and it is no longer needed. Table Mountain Rancheria did not respond.

Herndon Ave
Hayes Ave
Polk Ave
Riverside Dr
Palo Alto Ave
Veterans Blvd
Maxar, Microsoft
N
4CREEKS
Bella Vita Development
Vicinity Map
City of Fresno
Legend
Project Site
Miles
0
0.25
0.5

449241v1

PROJECT DIRECTORY:

OWNER
MARC D' POLO ENTERPRISES, INC.
7480 N. PALM AVE., STE. 109
FRESNO, CALIFORNIA 93711
CONTACT: ARMEN BASMAJIAN
PH.: (559) 905-5600
EMAIL: armen@marcdpoloent.com

ARCHITECT
KENT P. RODRIGUES, ARCHITECT
3080 W. MAGILL AVE.
FRESNO, CA 93711
CONTACT: KENT RODRIGUES
PH.: (559) 439-1790
EMAIL: kentparch@comcast.net

CIVIL ENGINEER
ALAN MOK ENGINEERING
3422 W. SHAW AVE., STE. 106
FRESNO, CA 93711
CONTACT: ALAN MOK
PH.: (559) 492-6811
EMAIL: alanw@alanmokengineering.com

MULTIFAMILY SITE PLAN KEY NOTES:

1. EXISTING CONCRETE CURB, GUTTER AS REQUIRED TO CITY OF FRESNO PW STDS. P-5
2. NEW CONC. APPROACH (WIDTH AS DIMENSIONED) CONSTRUCTED TO CITY OF FRESNO PW STDS. P-2, P-4, AND P-40
3. PROVIDE 6'-8" HIGH CONC. BLOCK WALL WITH 4" CAP AT PROJECT PERIMETER
4. CONSTRUCT CONC. BLOCK TRASH ENCLOSURE PER CITY OF FRESNO STDS. (TYP. OF 6)
5. PROVIDE ASPHALT PAVING AT PARKING LOT / TRAFFIC CIRCULATION AREAS PER PW STD. P-21 AT MIN.
6. PROVIDE ACCESSIBLE PARKING STALL AND RAMP WITH ALL REQUIRED SIGNAGE
7. MIN. 4'-0" HIDE CONC. WALKS WITH MAX 2% CROSS SLOPE
8. ENCLOSED GARAGES, MIN. 9' x 21' WITH 10' x 8' OVERHEAD GARAGE DOORS
9. 5'-0" HIGH PATIO FENCES AT UNITS
10. FIRE DEPARTMENT ACCESS: CONTACT FRESNO FIRE DEPARTMENT FOR REQUIREMENTS. CONSTRUCT TO PW STD. P-67
11. DECORATIVE WROUGHT IRON FENCING AT PROJECT ENTRY
12. WROUGHT IRON SECURITY GATES AT ENTRY / ELECTRONICALLY OPERATED
13. PROPOSED CONTROLLED PEDESTRIAN ACCESS GATE
14. PROPOSED PEDESTRIAN ACCESS TO FUTURE DEVELOPMENT TO THE WEST
15. LINE OF OPEN CARPORTS SHOWN DASHED
16. PROPOSED BAR-B-QUE AREA
17. PROPOSED TOT LOT AREA / OWNER TO SELECT EQUIPMENT
18. PROPOSED SWIMMING POOL
19. PROPOSED MAIL DROP LOCATION
20. LANDSCAPED MEDIAN AT PROJECT ENTRY
21. PROPOSED MONUMENT SIGN AT PROJECT ENTRY
22. ENTRY KEYPAD MOUNTED IN COLUMN
23. PROPOSED GAZEBO
24. PROPOSED BAR-B-QUE / PATIO AREA
25. PICKLE BALL COURT
26. PLANTER ISLAND AT PARKING AREA
27. 5'-0" HIGH WROUGHT IRON FENCE AT POOL
28. DOG PARK WITH 48" HIGH CHAIN LINK FENCE
29. FENCED SERVICE AREA
30. ROLLING AUTOMATIC SECURITY GATE AT SECOND EXIT
31. ACCESS, PATH OF TRAVEL FROM PUBLIC RIGHT OF WAY TO SITE ARRIVAL POINT
32. 8'-0" HIGH CONC. BLOCK WALL AT EAST PROPERTY LINE
33. LINE OF OVERHEAD POWER LINE EASEMENT
34. ACCESSIBLE PATH OF TRAVEL THROUGH SITE
35. PROPOSED 4'-8" HIGH CMU WALL WITH 4" CAP AT SERVICE YARD
36. PROVIDE A MIN. 8'-0" HIGH CONC. BLOCK WALL AT HERNDON EXPRESSWAY STREET FRONTAGE
37. 12'-0" HIDE x 6'-0" HIGH METAL GATES AT SERVICE YARD
38. INSTALL 30" STATE STANDARD STOP "STOP" SIGN(S) AT LOCATION(S) SHOWN SIGN SHALL BE MOUNTED ON A 2" DIA. GALVANIZED POST WITH THE BOTTOM ABOVE GROUND LOCATED BEHIND CURB AND IN-BETWEEN BEHIND SIDEWALK WHERE "RIGHT TURN ONLY" SIGN IS REQUIRED AT THE SAME LOCATION. INSTALL 30"x30" STATE STANDARD SIGN IMMEDIATELY BELOW THE STOP SIGN ON THE SAME POST.
39. PROVIDE "RIGHT TURN ONLY" SIGN AT PROJECT EXIT. SEE KEYNOTE NO. 38 FOR MOUNTING REQUIREMENTS
40. CONSTRUCT A 12'-0" WIDE BIKE AND PEDESTRIAN TRAIL PER THE CITY OF FRESNO STANDARDS, PLAN AND FRESNO PUBLIC WORKS STDS. P-28, P-60 AND P-61 AND CALTRANS HIGHWAY DESIGN MANUAL CHAPTER 1000 FOR CLASS I BIKEWAYS (BIKE PATHS)
41. OMITTED
42. PROVIDE 12'x12' VISIBILITY TRIANGLE AT ALL DRIVE APPROACHES (TYP.)
43. DEDICATE A 28' PUBLIC EASEMENT FOR LANDSCAPE, BIKE AND PEDESTRIAN PURPOSES ONLY. ABOVE GROUND UTILITIES ARE NOT ALLOWED WITHIN THIS EASEMENT
44. CONSTRUCT NEW CONC. GURB AND GUTTER PER PW STP. P-5
45. CONSTRUCT NEW 6'-0" HIDE CONC. WALK PER PW STP. P-5
46. CONSTRUCT 4'-0" HIGH WROUGHT IRON FENCE
47. PRE-MANUF. METAL STORAGE BLDG AT SERVICE YARD (2,280 SQ. FT.)
48. 40' WIDE SLIDING GATE AT STORAGE YARD
49. FIRE APPARATUS TURNING RADIUS / 44 FT. TO CENTERLINE
50. FIRE HYDRANT LOCATION, SEE FIRE DEPT. NOTE NO. 14 FOR REQUIREMENTS
51. FIRE DEPARTMENT CONNECTION LOCATION. TYPICAL AT ALL BUILDINGS

SITE STATISTICS:

EXISTING ZONE DISTRICTS:
COMMERCIAL - CEA/SSP/U
RESIDENTIAL - RM-2/SSP

EXISTING GP LAND USES:
COMMERCIAL - EMPLOYMENT-OFFICE
RESIDENTIAL - URBAN NEIGHBORHOOD

MULTIFAMILY RESIDENTIAL:
LAND / FLOOR AREA RATIO:
LAND AREA EQUALS 712,642 SQUARE FEET OF LAND OR 16.36 ACRES (NET)
WITH 396 UNITS - FAR = 396 UNITS / 16.36 ACRES = 24.21 UNITS PER ACRE)

BUILDINGS:
PARCEL 1:
BUILDING TYPE 1: 3 STORY BUILDING WITH 12 ONE BEDROOM / ONE BATH UNITS (1 BUILDING)
BUILDING TYPE 2: 3 STORY BUILDING WITH 12 TWO BEDROOM / TWO BATH UNITS (10 BUILDINGS)
BUILDING TYPE 3: 3 STORY BUILDING WITH 12 THREE BEDROOM / TWO BATH UNITS (7 BUILDINGS)
RECREATION BUILDING - SINGLE STORY
PARCEL 2:
BUILDING TYPE 1: 3 STORY BUILDING WITH 12 ONE BEDROOM / ONE BATH UNITS (3 BUILDINGS)
BUILDING TYPE 2: 3 STORY BUILDING WITH 12 TWO BEDROOM / TWO BATH UNITS (6 BUILDINGS)
BUILDING TYPE 3: 3 STORY BUILDING WITH 12 THREE BEDROOM / TWO BATH UNITS (4 BUILDINGS)
TOTAL:
BUILDING TYPE 1: 3 STORY BUILDING WITH 12 ONE BEDROOM / ONE BATH UNITS (10 BUILDINGS)
BUILDING TYPE 2: 3 STORY BUILDING WITH 12 TWO BEDROOM / TWO BATH UNITS (16 BUILDINGS)
BUILDING TYPE 3: 3 STORY BUILDING WITH 12 THREE BEDROOM / TWO BATH UNITS (11 BUILDINGS)

UNITS:
PARCEL 1:
UNIT "A" - ONE BEDROOM / ONE BATH = 84 UNITS
UNIT "B" - TWO BEDROOM / TWO BATH = 120 UNITS
UNIT "C" - THREE BEDROOM / TWO BATH = 36 UNIT
TOTAL 240 UNITS
PARCEL 2:
UNIT "A" - ONE BEDROOM / ONE BATH = 36 UNITS
UNIT "B" - TWO BEDROOM / TWO BATH = 72 UNITS
UNIT "C" - THREE BEDROOM / TWO BATH = 48 UNITS
TOTAL 156 UNITS
TOTAL:
UNIT "A" - ONE BEDROOM / ONE BATH = 120 UNITS (30.3%)
UNIT "B" - TWO BEDROOM / TWO BATH = 192 UNITS (48.5%)
UNIT "C" - THREE BEDROOM / TWO BATH = 84 UNITS (21.2%)
TOTAL 396 UNITS

LOT COVERAGE:
BUILDING:
87,136 SQ. FT. / 712,642 SQ. FT. (BUILDING AREA / LOT AREA) = 28.3%
PAVED AREA:
209,503 SQ. FT. / 712,642 SQ. FT. (PAVED AREA / LOT AREA) = 29.2%
LANDSCAPED AREA:
322,023 SQ. FT. / 712,642 SQ. FT. (LANDSCAPED AREA / LOT AREA) = 45.5%

PARKING:
PARKING REQUIRED:
1 STALL PER ONE AND TWO BEDROOM UNITS x 252 UNITS = 252 STALLS
1.5 STALLS PER THREE BEDROOM UNITS x 84 UNITS = 126 STALLS
1 STALL FOR EVERY 2 UNITS (GUEST PARKING = 118 STALLS
TOTAL PARKING STALLS REQUIRED 636 STALLS
PARKING PROVIDED:
ENCLOSED GARAGES = 312 STALLS
COVERED CARPORTS = 324 STALLS
TOTAL COVERED PARKING STALLS = 798 STALLS (ONE PER UNIT)
OPEN PARKING STALLS = 240 STALLS
TOTAL PARKING STALLS PROVIDED 636 STALLS

COMMERCIAL:
LAND AREA:
LAND AREA EQUALS 108,900 SQ. FT. OF LAND OR 2.2 ACRES (NET)

BUILDING AREA:
RETAIL SHELL BUILDING = 12,750 SQ. FT.
RETAIL PAD 3 = 5,000 SQ. FT.
RETAIL PAD 4 = 4,850 SQ. FT.
TOTAL SQUARE FOOTAGE = 22,600 SQ. FT.

LOT COVERAGE:
BUILDING:
22,600 SQ. FT. / 108,900 SQ. FT. (BUILDING AREA / LOT AREA) = 20.7%
PAVED AREA:
58,806 SQ. FT. / 108,900 SQ. FT. (PAVED AREA / LOT AREA) = 54%
LANDSCAPED AREA:
27,494 SQ. FT. / 108,900 SQ. FT. (LANDSCAPED AREA / LOT AREA) = 25.3%

LOT COVERAGE:
BUILDING AREA / LOT AREA = 22,600 / 108,900 = .207

PARKING:
PARKING REQUIRED:
RETAIL BUILDING - ONE STALL PER 450 SQ. FT. = 40 STALLS
COMMERCIAL PAD - ONE STALL PER 150 SQ. FT. = 99 STALLS
TOTAL PARKING REQUIRED 74 STALLS
PARKING PROVIDED:
STANDARD PARKING STALLS 78
ACCESSIBLE PARKING STALLS 6
TOTAL SPACES PROVIDED 84

COMMERCIAL SITE PLAN KEY NOTES:

1. NEW CONCRETE APPROACH (WIDTH AS DIMENSIONED) CONSTRUCTED TO CITY OF FRESNO STANDARDS STDS. P-2, P-4, AND P-40
2. EXIST. CONCRETE CURB,GUTTER TO CITY OF FRESNO STANDARDS PER PW STD. P-5
3. NEW ASPHALT PAVING AT CIRCULATION AREAS PER CITY OF FRESNO STANDARDS P-21/P-22 AND P-23
4. LANDSCAPED AREAS AT PARKING AREA
5. LANDSCAPED STREET SETBACK
6. EXIST. SIDEWALK RAMP FOR ACCESSIBILITY
7. NEW 8'-0" HIDE VAN ACCESSIBLE LOADING AREA
8. NEW ACCESSIBLE PARKIG STALL AS SHOWN WITH ALL REQUIRED SIGNAGE AND PAINTED AS A.D.A. REQUIRED STALL AND SITE SIGNAGE
9. PROPOSED 6'-8" HIGH CMU WALL WITH 4" CAP AT PROPERTY LINE
10. PROPOSED CONC. PATIOS
11. PROPOSED 4" CONC. GURB AT PARKING AREAS
12. NEW TRASH ENCLOSURE TO CITY STDS. P-33 & P-34
13. NEW CONCRETE WALKWAY
14. NEW ACCESSIBLE PATH OF TRAVEL TO PUBLIC R.O.W.
15. PROPOSED STANDARD 8'-0" WIDE PARKING STALLS, STRIPING TO CITY OF FRESNO PARKING MANUAL STANDARDS
16. EXISTING STREET MEDIAN AT NORTH HAYES STREET
17. RED CURBS DENOTING FIRE LANES SHOWN HATCHED. PAINT CURBS RED WITH WHITE LETTERING STATING "FIRE LANE - NO PARKING"
18. PROPOSED TRAFFIC DIRECTION ARROWS (TYP. AS SHOWN)
19. INSTALL 30" STATE STANDARD STOP "STOP" SIGN(S) AT LOCATION(S) SHOWN SIGN SHALL BE MOUNTED ON A 2" DIA. GALVANIZED POST WITH THE BOTTOM ABOVE GROUND LOCATED BEHIND CURB AND IN-BETWEEN BEHIND SIDEWALK WHERE "RIGHT TURN ONLY" SIGN IS REQUIRED AT THE SAME LOCATION. INSTALL 30"x30" STATE STANDARD SIGN IMMEDIATELY BELOW THE STOP SIGN ON THE SAME POST.
20. PROVIDE 12'x12' VISABILITY TRIANGLE AT DRIVE APPROACH
21. LANDSCAPED PLAZA WITH STAMPED CONC. PAVING
22. ACCESSIBLE PATH OF TRAVLE THROUGH PROJECT SITE
23. "EV" DENOTES ELECTRICAL VEHICLE CHARGING PARKING STALLS
24. DRIVE THRU LANE, 330 LINEAL FEET LONG ALLOWS FOR 15 CAR STACKING BASED ON 20 LF. PER CAR
25. PROVIDE "RIGHT TURN ONLY" SIGN AT PROJECT EXIT. SEE KEYNOTE 19 FOR MOUNTING REQUIREMENTS
26. PROVIDE 12' WIDE TRAIL PER PW STDS. P-58, P-60
27. PROVIDE 4'-0" HIGH WROUGHT IRON FENCE
28. FIRE HYDRANT LOCATION, SEE FIRE DEPT. NOTE NO. 14 FOR REQUIREMENTS

KENT P. RODRIGUES Architect
3080 W. MAGILL, FRESNO, CA 93711 (559) 439-1790
PLANNING * DESIGN * ARCHITECTURE

LICENSED ARCHITECT KENT P. RODRIGUES C-15955 STATE OF CALIFORNIA

PROJECT TITLE:
BELLA VITA MULTIFAMILY DEVELOPEMNT
COMMERCIAL DEVELOPMENT
SE CORNER / HERNDON AND HAYES
FRESNO, CALIFORNIA

SHEET TITLE:
SITE PLAN

REVISED 10/12/23
REVISED 12/29/23
REVISED 7/31/24
REVISED 9/30/24
REVISED 12/18/24
REVISED 12/19/24

JOB NO.: ARMENIAYATES
DRAWN BY: RODRIGUES
SHEET NO.:
A-1
OF 1 SHEETS
DATE: 4/21/21

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry Resources
☐	Air Quality	☐	Biological Resources
☐	Cultural Resources	☐	Energy
☐	Geology/Soils	☐	Greenhouse Gas Emissions
☐	Hazards and 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		

DETERMINATION: (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.
X	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 (EIR) 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 EIR 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.

Robert Holt

04/04/2025

Rob Holt, Supervising Planner Date

1. For purposes of this Initial Study, the following answers have the corresponding meanings:

   a. “No Impact” means the specific impact category does not apply to the project, or that the record sufficiently demonstrates that project specific factors or general standards applicable to the project will result in no impact for the threshold under consideration.

   b. “Less Than Significant Impact” means there is an impact related to the threshold under consideration, but that impact is less than significant.

   c. “Less Than Significant with Mitigation Incorporation” means there is a potentially significant impact related to the threshold under consideration, however, with the mitigation incorporated into the project, the impact is less than significant.

   d. “Potentially Significant Impact” means there is substantial evidence that an effect may be significant related to the threshold under consideration.

2. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (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. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

4. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant

Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

5. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from, "Earlier Analyses," as described in (6) below, may be cross-referenced).

6. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a. Earlier Analysis Used. Identify and state where they are available for review.

   b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

7. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

8. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

9. The explanation of each issue should identify:

   a. The significance criteria or threshold, if any, used to evaluate each question; and

   b. The mitigation measure identified, if any, to reduce the impact to less than significance.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS – Except as provided in PRC Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?			X	
b) Substantially damage scenic resources, including, but not limited to, trees, rock out-croppings, and historic buildings within a state scenic highway?				X
c) In non-urbanized areas, substantially degrade the existing visual character or quality 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?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?		X		

DISCUSSION

a) Have a substantial adverse effect on a scenic vista?

A scenic vista is a viewpoint that provides expansive views of a highly valued landscape for the public's benefit. The City's General Plan identifies six locations along the San Joaquin River bluffs as designated vista points from which views should be maintained. Scenic vistas within the Planning Area could provide distant views of features such as the San Joaquin River to the north and the foothills of the Sierra Nevada Mountains to the east.

The project site is located in an urbanized area and is currently disturbed grassland dominated by ruderal, nonnative grasses and forbs. The southeastern two-thirds of the project site is covered with vegetated spoil piles. Trash, debris, and homeless encampments are present throughout the project site. The project would include the development of three-story multifamily residential structures and one-story commercial uses. The project site is not located within any of the scenic vista points identified in the General Plan. Furthermore, the construction of the proposed project would not significantly affect or block a potentially scenic vista in the City. Therefore, the proposed project would have a less than significant impact 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?

According to the Caltrans State Scenic Highway Mapping System, there are no eligible or officially-designated State Scenic Highways within the City.[1] However, Fresno County has three eligible State Scenic Highways; the nearest eligible highways include a portion of State Route 180, located approximately 7 miles east of the City, and a portion of State Route 168, located approximately 5 miles east of City. The nearest officially-designated State Scenic Highway is located more than 30 miles northeast of the City within Madera County. Since there are no eligible or officially-designated State Scenic Highways within or in close proximity to the project site, implementation of the proposed project would not damage scenic resources within a designated state scenic highway. Therefore, there would be no impact.

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?

The project site is currently disturbed grassland dominated by ruderal, nonnative grasses and forbs. The proposed project would include the development of three-story multifamily residential structures and one-story commercial uses. Although the proposed project would change the visual characteristics of the project site by redeveloping vacant land into a built environment, the design of the additions would be consistent and compatible with the visual character of the project vicinity. Although the characteristics of the project site would change, the project would not substantially degrade the visual character or quality of the site and its surroundings. Therefore, the proposed project would have a less than significant impact.

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

1 *California Department of Transportation. Scenic Highways. Available online at: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways (accessed 4-24-24)*

The project site is located in an urbanized area subject to preexisting exterior lighting from surrounding developments and existing street lighting. The proposed project would introduce new sources of light and glare to the area in the form of exterior building lighting, parking lot lighting, street lighting, and interior lighting. However, new sources of light and glare associated with the project would not be substantial in the context of existing lighting sources in the project vicinity. In addition, daytime glare would not be substantial because no highly reflective glass elements or building materials are proposed as part of the project. Compliance with California Building Code (Title 24, California Code of Regulations) standards, and implementation of Mitigation Measures AES-1, AES-2, AES-3, AES-4 and AES-5 would address light and glare impacts to day- and night-time views resulting from construction of the proposed project. Therefore, potential light and glare from the proposed project would result in a less than significant impact.

Mitigation Measure AES-1

Lighting for Street and Parking Areas. Prior to the issuance of the certificate of occupancy, the project applicant shall demonstrate to the satisfaction of the City Inspector that the project's lighting systems for the project's street and parking areas 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.

Mitigation Measure AES-2

Lighting for Public Facilities. Prior to the issuance of the certificate of occupancy, the project applicant shall demonstrate to the satisfaction of the City Inspector that the project's lighting systems for public facilities such as active play areas provide adequate illumination for the activity while also utilizing low intensity light fixtures and shields to minimize spillover light onto adjacent properties.

Mitigation Measure AES-3

Lighting for Non-Residential Uses. Prior to the issuance of the certificate of occupancy, the project applicant shall demonstrate to the satisfaction of the City Inspector that the lighting systems for non-residential uses, not including public facilities, provides shields on the light fixtures and are oriented away from adjacent properties. Low intensity light fixtures may also be used if excessive spillover light onto adjacent properties would otherwise occur.

Mitigation Measure AES-4

Signage Lighting. Prior to the issuance of the certificate of occupancy, the project applicant shall demonstrate to the satisfaction of the City Inspector that the lighting systems for freestanding signs do 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

do not exceed 500 FT-L when adjacent to streets which have an average light intensity of 2.0 horizontal footcandles or greater.

Mitigation Measure AES-5

Use of Non-Reflective Materials. Prior to the issuance of the building permits, the project applicant shall demonstrate to the satisfaction of the City Plan Inspector that the materials used on building facades shall be non-reflective.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY RESOURCES – In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
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?			X	
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
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?				X

DISCUSSION

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?

The project site is located within an urbanized area of the City of Fresno. There are no agricultural uses located within or adjacent to the project site. Additionally, the site is classified as Farmland of Local Importance by the State Department of Conservation. However, the site is vacant and not currently used for agricultural uses. Therefore, development of the proposed project would not convert agricultural land to a non-agricultural use. The proposed project would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use and the impact would be less than significant.

b) Conflict with existing zoning for agricultural use or a Williamson Act contract?

The project site is designated Urban Neighborhood (UN) and Office (O) in the General Plan. The project site is located in Residential Multi-Family (RM-2) and Office (O) zoning districts. The Residential Multi-Family designation allows for various residential uses. The Office designation allows for administrative, financial, business, professional, medical, and public offices, as identified by the General Plan. Retail uses would be limited to business services and food service and convenience goods for those who work in the area. The project site is also not subject to a Williamson Act contract. Therefore, development of the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract, and the proposed project would have a no impact.

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))?

The project site is located within an existing urban area and is located within a Residential Multi-Family and Office zoning designations, and as such, would not conflict with the existing zoning for, or cause rezoning of, forest land or conversion of forest land to non-forest uses. Therefore, the proposed project would have no impact.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

Please refer to the discussion for c) above. The proposed project would not result in the loss of forest land or conversion of forest land to non-forest uses. Therefore, the proposed project would have no impact.

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?

Please refer to the discussion for a) and c) above. The project site is located within an existing urban environment and would not result in the conversion of farmland to non-agricultural uses or forest land to non-forest uses either on- or off-site. Therefore, the proposed project would have no impact.

Mitigation Measures

No mitigation measures are required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan (*e.g.*, by having potential emissions of regulated criterion pollutants which exceed the San Joaquin Valley Air Pollution Control Districts (SJVAPCD) adopted thresholds for these pollutants)?			X	
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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X	
c) Expose sensitive receptors to substantial pollutant concentrations?			X	
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

DISCUSSION

a) Conflict with or obstruct implementation of the applicable air quality plan?

CEQA requires that certain proposed projects be analyzed for consistency with the applicable air quality plan. An air quality plan describes air pollution control strategies to be implemented by a city, county, or region classified as a non-attainment area. The main purpose of the air quality plan is to bring the area into compliance with the

requirements of the federal and State air quality standards. To bring the San Joaquin Valley Air Basin (SJVAB) into attainment, the SJVAPCD adopted the 2016 Plan for the 2008 8-Hour Ozone Standard in June 2016 to satisfy Clean Air Act requirements and ensure attainment of the 75 parts per billion (ppb) 8-hour ozone standard.

To assure the SJVAB's continued attainment of the U.S. Environmental Protection Agency (USEPA) respirable particulate matter (PM_{10}) standard, the SJVAPCD adopted the 2007 PM_{10} Maintenance Plan in September 2007. SJVAPCD Regulation VIII (Fugitive PM_{10} Prohibitions) is designed to reduce PM_{10} emissions generated by human activity. The SJVAPCD adopted the 2018 plan for the 1997, 2006, and 2012 fine particulate matter ($PM_{2.5}$) standard to address the USEPA federal annual $PM_{2.5}$ standard of 12 µg/m3, established in 2012.

The SJVAPCD has established project construction and operational emissions thresholds for criteria pollutants, as shown in Table 1 below[2]. For a project to be consistent with SJVAPCD attainment plans, the pollutants emitted from project operation should not exceed the SJVAPCD daily thresholds, cause a significant impact on air quality, or the project must already have been included in the attainment plans projection. As discussed below, emissions associated with the construction or operation of the proposed project result in the generation of criteria air pollutants that would exceed SJVAPCD thresholds of significance.

Table 1: SJVAPCD Project Construction and Operational Emission Thresholds

	CO	NO_x	ROG	SO_x	PM_{10}	$PM_{2.5}$
Annual Construction Emissions*	100.0	10.0	10.0	27.0	15.0	15.0
Annual Operational Emissions*	100.0	10.0	10.0	27.0	15.0	15.0

Source: SJVAPCD, 2015.
*Emission units = Tons per Year (tpy)
CO = carbon monoxide
NOX = nitrogen oxides
PM2.5 = particulate matter less than 2.5 microns in size
PM10 = particulate matter less than 10 microns in size
ROG = reactive organic gas
SJVAPCD = San Joaquin Valley Air Pollution Control District
SOX = sulfur oxides

Construction and operational emissions for the proposed project were analyzed using the California Emissions Estimator Model version 2022.1.1.22 (CalEEMod). Model results for construction and operational emissions are shown in Table 2 and Table 3 respectively. Model output results are available in Appendix A to this document.

2 *San Joaquin Valley Air Pollution Control District. 2015. Air Quality Thresholds of Significance – Criteria Pollutants. Available online at: http://www.valleyair.org/transportation/0714-GAMAQI-Criteria-Pollutant-Thresholds-of-Significance.pdf (accessed 4/24/24)*

Table 2: Project Construction Emissions (Tons Per Year)

Project Construction	CO	NO_x	ROG	SO_x	PM_{10}	$PM_{2.5}$
Annual Construction Emissions*	3.18	1.60	0.75	0.005	0.59	0.27
SJVAPCD Thresholds	100.0	10.0	10.0	27.0	15.0	15.0
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod Version 2022.1.1.22.
*Emission units = Tons per Year (tpy)
CO = carbon monoxide
NOX = nitrogen oxides
PM2.5 = particulate matter less than 2.5 microns in size
PM10 = particulate matter less than 10 microns in size
ROG = reactive organic gas
SJVAPCD = San Joaquin Valley Air Pollution Control District
SOX = sulfur oxides

Table 3: Project Operational Emissions (Tons per Year)

	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions	1.42	0.21	5.83	0.01	0.54	0.52
Energy Source Emissions	0.03	0.50	0.23	0.004	0.04	0.04
Mobile Source Emissions	2.63	2.32	16.0	0.04	3.43	0.89
Total Project Operational Emissions*	4.08	3.03	22.0	0.06	4.01	1.45
SJVAPCD Significance Threshold	10.0	10.0	100.0	27.0	15.0	15.0
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod Version 2022.1.1.22.
*Emission units = Tons per Year (tpy)
CO = carbon monoxide
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic gas
SJVAPCD = San Joaquin Valley Air Pollution Control District
SO_X = sulfur oxides

The results shown in Tables 2 and 3 indicate that the proposed project's construction and operational emissions would not exceed SJVAPCD criteria pollutant thresholds. Therefore, the proposed project would not conflict with or obstruct implementation of SJVAPCD air quality plans and the impact would be less than significant.

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?

CEQA defines a cumulative impact as two or more individual effects, which when considered together, are considerable or which compound or increase other environmental impacts. Therefore, if annual emissions of construction- or operational-related criteria air pollutants exceed any applicable threshold established by the SJVAPCD, the proposed project would result in a cumulatively significant impact. As discussed above, the proposed project's construction and operational emissions of criteria pollutants would not exceed SJVAPCD established significance thresholds for CO, NOx, ROG, SOx, PM_{10}, or $PM_{2.5}$ emissions during project construction or operation. Therefore, the proposed project would not result in a cumulatively

considerable contribution to a net increase of any criteria pollutant for which the project region is in non-attainment, and impacts would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

Construction of the proposed project may expose surrounding sensitive receptors to airborne particulates, as well as a small quantity of construction equipment pollutants (i.e., usually diesel-fueled vehicles and equipment). However, project construction emissions would be below the SJVAPCD significance thresholds. Once constructed, the project's operational emissions would fall below the SJVAPCD significance thresholds and would not be a significant source of long-term operational emissions. Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations as a result of the proposed project, and the impact would be less than significant.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

During construction, the various diesel-powered vehicles and equipment in use on-site would create localized odors. These odors would be temporary and are not likely to be noticeable for extended periods of time beyond the project site. The potential for diesel odor impacts is therefore considered less than significant. In addition, the proposed uses that would be developed within the project site are not expected to produce any offensive odors that would result in frequent odor complaints because substantial odor-generating sources are not proposed, such as land uses including agricultural activities, feedlots, wastewater treatment facilities, landfills, or heavy manufacturing uses. The proposed project would not create objectionable odors affecting a substantial number of people during project construction or operation, and this impact would be less than significant.

Mitigation Measures

No mitigation measures are required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES – Would the project:				
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 Game or U.S. Fish and Wildlife Service?		x		
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 Game or US Fish and Wildlife Service?				x
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				x
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?		x		

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				x
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?				x

A Biological Resource Evaluation was prepared for this project by Colibri Ecological Consulting. This report is available in Appendix B to this document. The Biological Resource Evaluation initially assessed a disturbance area of approximately 23.42 acres based on an earlier version of the proposed project. However, the project has since been reduced to approximately 18.56 acres. Despite this reduction, the impact analysis remains adequate for the project's environmental assessment.

DISCUSSION

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 the U.S. Fish and Wildlife Service?

The project site is located in an urbanized area and is currently disturbed grassland dominated by ruderal, nonnative grasses and forbs. The project could adversely affect, either directly or through habitat modifications, one special-status animal species (Swainson's hawks) that occurs or may occur on or near the project site. Common wildlife species that are adapted to urban environments are expected to continue to use the site and vicinity after redevelopment. Construction activities such as excavating, trenching, or using other heavy equipment that disturbs or harms a special-status species or substantially modifies its habitat could constitute a significant impact. Implementing of Mitigation Measure BIO-1 would reduce the potential impacts to the special-status Swainson's hawk to a less-than-significant level by avoiding commencement of construction activities during the hawk's nesting season or by pre-construction surveys and adherence to appropriate protocols in the event a Swainson's hawk is present on site. Therefore, impacts would be less than significant impact with mitigation incorporated.

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

Future development that occurs in the vicinity of the San Joaquin River, its tributaries, any lakes or streams, and/or open grasslands with seasonal wetlands, may result in a significant impact to riparian habitat or a special-status natural community. No riparian habitat or other sensitive natural communities occur within the project site, or within the vicinity of the project site. The project site consists entirely of developed areas. As a result, the impact would no impact.

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?

Future development that occurs in the vicinity of the San Joaquin River corridor may result in significant impacts to protected wetlands. No aquatic resources occur within the project site, or within the vicinity of the project site. The project site consists entirely of developed areas. As a result, the impact would be no impact.

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?

The project has the potential to impede the use of nursery sites for native birds protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC). Migratory birds are expected to nest on and near the project site. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Disturbance that causes nest abandonment or loss of reproductive effort can be considered take under the MBTA and CFGC. Loss of fertile eggs or nesting birds, or any activities resulting in nest abandonment, could constitute a significant effect if the species is particularly rare in the region. Construction activities such as excavating, trenching, and grading that disturb a nesting bird on the project site or immediately adjacent to the construction zone could constitute a significant effect. Implementing Mitigation Measure BIO-2 would reduce the potential effect to a less-than-significant level by avoiding the commencement of construction activities during the neating season of migratory nesting birds, or by pre-construction surveys for protected bird species and appropriate protocol if such species are found on site. Therefore, impacts would be less than significant impact with mitigation incorporated.

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

The project would not conflict with any local policies or ordinances protecting biological resources. Though the proposed project is subject to provisions of the City's Municipal Code regarding trees on public property (Article 3 of Section 13 of the City of Fresno Municipal Code), the proposed project would not conflict with any of the existing ordinances. As a result, the impact would be no impact.

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?

The PG&E San Joaquin Valley Operation and Maintenance (O&M) Habitat Conservation Plan (HCP)[3] was approved in 2007 and covers portions of nine counties, including Fresno County. This HCP covers PG&E activities which occur as a result of ongoing O&M that would have an adverse impact on any of the 65 covered species and provides incidental take coverage from the USFWS and CDFW. The project site is not located within the covered area of any HCP, Natural Community Conservation Plan (NCCP), or other adopted local, regional or state HCP. Mitigation Measures BIO-1 and BIO-2 are consistent with avoidance and minimization measures included in the PG&E HCP. Therefore, the project would not conflict with the provisions of the PG&E HCP and the proposed project and would have no impact.

Mitigation Measures

The proposed project shall implement and incorporate the following biological resource related mitigation measures.

Mitigation Measure BIO-1: Protect nesting Swainson's hawks.

1. To the extent practicable, construction shall be scheduled to avoid the Swainson's hawk nesting season, which extends from March through August.
2. If it is not possible to schedule construction between September and February, a qualified biologist shall conduct surveys for *Swainson's hawk in accordance with the Swainson's Hawk Technical Advisory Committee's Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley.* These methods require six surveys, three in each of the two survey periods, prior to initiation of the project. Surveys shall be conducted within a minimum 0.5-mile radius around the project site.
3. If an active Swainson's hawk nest is found within 0.5 miles of the project site, and the qualified biologist determines that the project would disrupt the nesting birds, a construction-free buffer or limited operating period shall be implemented in consultation with the CDFW.

3 Pacific Gas and Electric (PG&E). 2007. PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan. Available online at: https://ecos.fws.gov/docs/plan_documents/thcp/thcp_838.pdf (accessed 4-24-24)

Mitigation Measure BIO-2. Protect nesting birds.

1. To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from February through August.
2. If it is not possible to schedule construction between September and January, pre-construction surveys for nesting birds shall be conducted by a qualified biologist to ensure that no active nests would be disturbed during the implementation of the project. A pre-construction survey shall be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the qualified biologist shall inspect all potential nest substrates in and immediately adjacent to the impact areas. If an active nest is found close enough to the construction area to be disturbed by these activities, the qualified biologist shall determine the extent of a construction-free buffer to be established around the nest. If work cannot proceed without disturbing the nesting birds, work may need to be halted or redirected to other areas until nesting and fledging are completed or the nest has otherwise failed for non-construction related reasons.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?			X	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?			X	
c) Disturb any human remains, including those interred outside of formal cemeteries?			X	

A Phase I Cultural Resources Assessment was prepared for this project by Taylored Archaeology. The report is available in Appendix C to this document. The Phase I Cultural Resources Assessment initially assessed a disturbance area of approximately 23.42 acres based on an earlier version of the proposed project. However, the project has since been reduced to approximately 18.56 acres. Despite this reduction, the impact analysis remains adequate for the project's environmental assessment.

DISCUSSION

a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

A historical resource defined by CEQA includes one or more of the following criteria: 1) the resource is listed, or found eligible for listing in, the California Register of Historical Resources (CRHR); 2) listed in a local register of historical resources as defined by Public Resources Code (PRC) Section 5020.1(k); 3) identified as significant in a historical resources survey meeting the requirements of PRC Section 5024.1(g); or 4) determined to be a historical resource by the project's lead agency (PRC Section 21084.1; CEQA Guidelines Section 15064.(a)). Under CEQA, historical resources include built-environment resources and archaeological sites.

As discussed in the Cultural Resources Report/Historic Resource Assessment, attached in Appendix C, no historical resources were identified within or adjacent to the project site. However, project development could result in potential impacts to

unknown resources that are located below the ground surface. Adherence to Mitigation Measure CULTURAL-1 would reduce potential impacts to unknown historical resources to less than significant.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

According to the CEQA Guidelines, "When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource" (CEQA Guidelines Section 15064.5(c)(1)). Those archaeological sites that do not qualify as historical resources shall be assessed to determine if these qualify as "unique archaeological resources" (California PRC Section 21083.2). No archaeological resources were identified in the project site. However, due to the nominal amount of prehistoric archaeological information within the majority of the City, including the project site, there is potential to impact prehistoric archaeological resources during grading and construction activities within previously undisturbed soils. Adherence to Mitigation Measure CULTURAL-2 would reduce potential impacts to unknown archeological resources to less than significant.

c) Disturb any human remains, including those interred outside of formal cemeteries?

Disturbance of human remains interred outside of formal cemeteries would result in a significant impact. If human remains are identified during project construction, Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the Public Resources Code shall apply, as appropriate. Although there is no record of isolated human remains or unknown cemeteries on the project site, there is always a possibility that ground-disturbing activities associated with future development may uncover previously unknown buried human remains. Adherence to Mitigation Measure CULTURAL-3 would reduce potential impacts to unknown human remains to less than significant.

Mitigation Measures

The proposed project shall implement and incorporate the cultural resource related mitigation measures as identified in the attached Mitigation Measure Monitoring Program.

Mitigation Measure CULTURAL-1

If previously unknown resources are encountered before or during grading activities for the project, 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 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 historical artifacts 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.

Mitigation Measure CULTURAL-2

In the event that buried prehistoric archaeological resources are discovered during excavation and/or construction activities for the project, 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 Section 15064.5 of the CEQA Guidelines. 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 City. 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 City approves the measures to protect these resources. Any prehistoric archaeological artifacts 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.

Mitigation Measure CULTURAL-3

In the event that human remains are unearthed during excavation and grading activities for the 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 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.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. ENERGY – Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			X	

DISCUSSION

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

The proposed project would be constructed using energy efficient modern building materials and construction practices, and the proposed project would also use new modern appliances and equipment, in accordance with the Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608). The expected energy consumption during construction and operation of the proposed project would be consistent with typical usage rates for multi-family residential and commercial uses; however, energy consumption is largely a function of personal choice and the physical structure and layout of buildings. It can be assumed that implementation of the proposed project would result in additional energy demand in the City; however, since the proposed project would be located in a developed urban area and would be required to comply with the City's energy efficiency policies, including General Plan Policies RC-8-a through RC-8-k, the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. Therefore, the project would have a less than significant impact.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The proposed project would be required to comply with the CALGreen Code (CCR Title 24, Part 11) and the California Energy Code (CCR Title 24, Part 6), which

includes provisions related to insulation and design aimed at minimizing energy consumption.

The proposed project would be compliant with relevant energy-efficient policies and recommendations outlined in the General Plan. The recommendations and policies that would be implemented by the project are outlined below.

- **Policy UF-12-d Appropriate Mixed-Use.** Facilitate the development of vertical and horizontal mixed-uses to blend residential, commercial, and public land uses on one or adjacent sites. Ensure land use compatibility between mixed-use districts in Activity Centers and the surrounding residential neighborhoods.
- **Policy 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.
- **Policy 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.
- **Policy LU-2-a Infill Development and Redevelopment.** Promote development of vacant, underdeveloped, and re-developable land within the City Limits where urban services are available by considering the establishment and implementation of supportive regulations and programs.
- **Policy LU-5-f High Density Residential Uses.** Promote high-density residential uses to support Activity Centers and BRT corridors, and walkable access to transit stops.
- **Policy MT-5-a Sidewalk Development.** Pursue funding and implement standards for development of sidewalks on public streets, with priority given to meeting the needs of persons with physical and vision limitations; providing safe routes to school; completing pedestrian improvements in established neighborhoods with lower vehicle ownership rates; or providing pedestrian access to public transportation routes.
- **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.
- **Policy RC-8-c Energy Conservation in New Development.** Consider providing an incentive program for new buildings that exceed California Energy Code requirements by fifteen percent.
- **Policy RC-11-a Waste Reduction Strategies.** Maintain current targets for recycling and re- use of all types of waste material in the city and enhance waste and wastewater management practices to reduce natural resource

consumption.

Therefore, the proposed project would not conflict or obstruct state and local plans for energy efficiency and renewable energy, and the impact would be less than significant.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GEOLOGY AND SOILS – Would the project:				
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.			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?			X	
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?			X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			X	

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	

DISCUSSION

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.

Fault ruptures are generally expected to occur along active fault traces that have exhibited signs of recent geological movement (i.e., in the last 11,000 years). Alquist-Priolo Earthquake Fault Zones delineate areas around active faults with potential surface fault rupture hazards that would require specific geological investigations prior to approval of certain kinds of development within the delineated area. The project site is not located within an Alquist-Priolo Earthquake Fault Zone. In addition, no known active or potentially active faults or fault traces are located in the project vicinity. The nearest active faults are the Nunez Fault, located approximately 52 miles from the project site, and the San Andreas Fault, located approximately 65 miles from the project site. As a result, potential impacts related to fault ruptures would be less than significant.

ii. Strong seismic ground shaking?

The City of Fresno is located in an area with historically low to moderate level of seismicity. However, strong ground shaking could occur within the project site during seismic events and occurrences have the possibility to result in significant impacts. Major seismic activity along the nearby Great Valley Fault Zone or the Nunez Fault, or other associated faults, could affect the project site through strong

seismic ground shaking. Strong seismic ground shaking could potentially cause structural damage to the proposed project. However, due to the distance to the known faults, hazards due to ground shaking would be minimal. In addition, compliance with the California Building Code (Title 24, California Code of Regulations) would ensure that the geotechnical design of the proposed project would reduce potential impacts related to seismic ground shaking to less than significant.

iii. Seismic-related ground failure, including liquefaction?

The predominant soils within the City of Fresno consist of varying combinations of loose/very soft to very dense/hard silts, clays, sands, and gravels. Groundwater has been encountered near the ground surface in close proximity to water-filled features such as canals, ditches, ponds, and lakes. Based on these characteristics, the potential for soil liquefaction within the City ranges from very low to moderate due to the variable density of the subsurface soils and the presence of shallow groundwater. In addition to liquefaction, the City could be susceptible to induced settlement of loose unconsolidated soils or lateral spread during seismic shaking events. Based on the nature of the subsurface materials and the relatively low to moderate seismicity of the region, seismic settlement and/or lateral spread are not anticipated to represent a substantial hazard within the City during seismic events.

Based on the nature of the subsurface materials and the relatively low to moderate seismicity of the region, potential for seismic related ground failure is low in Fresno.[4] Additionally, compliance with the Fresno Municipal Code and the California Building Code, as well as General Plan Policies NS-2-a through NS-2-d would ensure that potential impacts associated with seismic-related ground failure would be less than significant.

iv. Landslides?

A landslide generally occurs on relatively steep slopes and/or on slopes underlain by weak materials. The City of Fresno is located within an area that consists of mostly flat topography within the Central Valley. Accordingly, there is no risk of large landslides in the majority of the City. However, there is the potential for landslides and slumping along the steep banks of rivers, creeks, or drainage basins such as the San Joaquin River bluff and the many unlined basins and canals that trend throughout the City. The project site is located in a relatively flat area, and it is not in the vicinity of the San Joaquin River bluff or any unlined basins or canals. Therefore, the potential for the proposed project to expose people or

[4] *Tulare County Association of Governments. 1974. Five County Seismic Safety Element. Available online at: https://tularecounty.ca.gov/rma/planning-building/environmental-planning/environmental-planning-resources/five-county-seismic-safety-element-1974/five-county-seismic-safety-element-volume-i/ (accessed 8-28-24)*

structures to risk as a result of landslides would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil?

Grading and earthmoving during project construction has the potential to result in erosion and loss of topsoil. Exposed soils could be entrained in stormwater runoff and transported off the project site. However, this impact would be reduced to a less than significant level through compliance with water quality control measures, which include preparation of a Stormwater Pollution Prevention Plan (SWPPP) (refer to Section X, Hydrology and Water Quality). Although designed primarily to protect stormwater quality, the SWPPP would incorporate Best Management Practices (BMPs) to minimize erosion. Additional details regarding the SWPPP are provided in Section X, Hydrology and Water Quality of this Initial Study. This impact would be less than significant.

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?

As described in discussion a) in this section, soils on the project site would not be subject to liquefaction, lateral spreading, or landslides. Additionally, the proposed project would be required to conform with the California Building Code, which would reduce risks related to unstable soils. Therefore, the proposed project would have a less-than-significant impact related to unstable soils.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial direct or indirect risks to life or property?

The surface and near-surface soils observed throughout the City consist of varying combinations of clays, silts, sands, gravels, and cobbles. Expansive soils are characterized by the potential for shrinking and swelling as the moisture content of the soil decreases and increases, respectively. The clayey soils, which consist of very fine particles, are considered to be slightly to moderately expansive. The project site contains San Joaquin loam, shallow, 0 to 3 percent slopes, and Exeter Loam, all soils with relatively low clay content and low expansion potential. Furthermore, compliance with recommendations from the City of Fresno Municipal Code would reduce potential impacts related to expansive soils to less than significant.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

The project site would be served by a wastewater conveyance system maintained by the Wastewater Management Division (WMD) of the City of Fresno. Wastewater from

the City's collection system is treated at the Fresno/Clovis Regional Wastewater Reclamation Facility. Development of the proposed project would not involve the use of septic tanks or alternative wastewater disposal systems. Therefore, the proposed project would have no impact related to the use of septic tanks or alternative wastewater disposal systems.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Development in the City of Fresno could potentially impact unknown paleontological resources or unique geological features. Implementation of Mitigation Measure GEO-1 would ensure that a field survey and record search are conducted prior to construction on a previously undisturbed site, and that paleontological/geological resources found during the field survey or during project construction would be handled and preserved by a qualified paleontologist. Adherence to Mitigation Measure GEO-1 would reduce potential impacts to paleontological and geological resources to less than significant.

Mitigation Measures:

Mitigation Measure GEO-1

During the project's excavation or construction activities within previously undisturbed soils, the following procedures shall be followed to address the inadvertent discovery of unique paleontological or geological resources:

- If unique paleontological/geological resources are discovered during excavation or construction, all work shall cease in the immediate vicinity of the find. A qualified paleontologist shall be consulted to evaluate the significance of the resource and recommend appropriate measures to protect it. Recommendations may include, but are not limited to, excavation, documentation, and preservation of the resource.
- The qualified paleontologist shall provide recommendations to the City on measures to protect the discovered resources, including potential excavation and evaluation of the find. If the resources are deemed significant, appropriate mitigation measures shall be developed and implemented, which may include avoidance, capping, incorporation of the site into green space, parks, or open space, or data recovery excavations.
- No further grading shall occur in the area of the discovery until the City has approved the measures to protect these resources. Any paleontological or geological resources recovered as a result of mitigation shall be curated at a City-approved institution or by a person capable of providing long-term preservation for future scientific study.
- If additional paleontological or geological resources are encountered during subsequent excavation or construction activities, the same protocol for inadvertent discoveries shall be followed, ensuring that any significant finds are appropriately managed and preserved.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS – Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

DISCUSSION

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

The project's greenhouse gas (GHG) emissions were evaluated in accordance with the State CEQA Guidelines. State CEQA Guidelines Section 15064.4 states that, when making a determination with respect to the significance of a project's GHG emissions, a lead agency shall have discretion to determine whether to: (1) Use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use; and/or (2) Rely on a qualitative analysis or performance-based standards. Section 15064.4 also states that a lead agency should consider the following factors when assessing the significance of the impact of GHG emissions on the environment: (1) The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (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 GHG emissions.

GHG emissions were calculated using CalEEMod, which is the same model used to determine the proposed project's criteria air pollutant emissions. Consistent with SJVAPCD recommendations, construction emissions were amortized over a 30-year period and added to the annual operational emissions to determine the proposed project's annual GHG emissions. Moreover, consistent with State CEQA Guidelines Section 15064(h)(3), project significance was determined based on the proposed project's consistency with an approved plan or mitigation program that provides

specific requirements that would avoid or substantially lessen the cumulative problem within the geographic area of the proposed project.

The California Air Resources Board's (CARB) 2022 Scoping Plan is applicable to the proposed project as neither the SJVAPCD nor the City of Fresno have established GHG emissions thresholds of significance. The 2022 Scoping Plan was adopted to reduce GHG statewide in conformance with Assembly Bill 1279, which sets a goal to reduce emissions 85 percent below 1990 levels by 2045. The Scoping Plan includes numerous strategies and measures to GHG reduction, including recommendations for local governments, such as transportation electrification, reduction in vehicle miles traveled, and building code revisions toward electrification over natural gas and other decarbonization building strategies. The project is assessed for its consistency with the Scoping Plan, which would achieve the legislative mandate for statewide GHG reduction.

Construction Emissions

GHGs would be generated during construction activities for the project, including site preparation, grading, building construction, application of architectural coatings, and paving. Based on the CalEEMod outputs, construction activities for the project are predicted to generate a maximum of approximately 716 metric tons (MT) of CO2e emissions per year.

SJVAPCD does not recommend assessing emissions associated with construction because of its temporary nature, and as such, does not provide specific numeric thresholds for assessing construction-related GHG emissions. Therefore, emissions from the project were compared to thresholds established by the Sacramento Metropolitan Air Quality Management District (SMAQMD) as a point of reference with another air district in the region. SMAQMD uses a threshold of 1,100 MTCO2e per year for construction emissions amortized over a 30-year project life. Since the project's construction emissions of 716 MTCO2e would be below this threshold, the impacts related to GHG emissions during construction would be considered less than significant.

Operational Emissions

Operational GHG emissions for the project are derived from building energy use, water consumption, waste management, and vehicle trips. These emissions are estimated as follows

- CO2: 4,694 metric tons per year
- CH4: 4.34 metric tons per year
- N2O: 0.22 metric tons per year
- Total CO2e: 4,874 metric tons per year (inclusive of Global Warming Potential adjustments)

The calculated GHG emissions in CalEEMod incorporate GHG reducing measures

that are required by the building code, such as bicycle parking, EV charging infrastructure, water-efficient fixtures, energy efficient appliances, etc. and considered the project site's urban location.

SJVAPCD does not currently have formal guidance for assessing operational GHG impacts. Therefore, alternative significance thresholds were utilized, including the bright-line numeric threshold and the efficiency-based threshold:

Bright-Line Numeric Threshold
The California Air Pollution Control Officers Association (CAPCOA) suggests a highly conservative 900 MT CO2e per year threshold as a screening tool. Projects below this threshold are considered to have a *de minimis* impact on GHG emissions. With operational emissions of 4,847 MT CO2e per year, the project would exceed the bright-line numeric threshold. However, exceeding the bright-line numeric threshold does not automatically indicate significant impacts, but instead triggers further evaluation using the efficiency-based threshold metric.

Efficiency-Based Threshold
The following efficiency-based threshold is derived from CARB's Scoping Plan for residential projects implemented after 2020 as a threshold for the project's operational impacts.

Using the City of Fresno's Housing Element for average household size of 3.07 persons, the Project's residential component would support an estimated population of:

396 units × 3.07 persons/unit = 1,216 people

The efficiency-based threshold was calculated to be 4.02 MTCO2e per year per capita based on 2030 GHG reduction goals, and as such:

1,216 people × 4.02 MT CO2e/yr/capita = 4,888 MT CO2

The Project's total operational GHG emissions are estimated at **4,874 MT CO2e per year,** which does not exceed the allowable emissions of **4,888 MT CO2e** per year under the efficiency metric.

The Bella Vita Mixed-Use Development's GHG emissions during operation do not exceed the efficiency-based threshold when applied to residential projects. There is a less than significant impact.

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

Table 4 below evaluates the proposed project's consistency with the applicable

objectives and policies included in the General Plan that are related to the reduction of greenhouse gases.

Table 4: Consistency with the General Plan's Greenhouse Gas Reduction-Related Policies

General Plan Policy	Project Consistency
Policy UF-12-d Appropriate Mixed-Use. Facilitate the development of vertical and horizontal mixed-uses to blend residential, commercial, and public land uses on one or adjacent sites. Ensure land use compatibility between mixed-use districts in Activity Centers and the surrounding residential neighborhoods.	**Consistent.** This project would be consistent with the policy as it integrates horizontal mixed-use of residential and commercial land uses, ensuring compatibility with surrounding residential neighborhoods through thoughtful design and strategic community engagement.
Policy 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.	**Consistent.** The project would create a walkable community, connecting the interior of the project and with the surrounding uses.
Policy 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.	**Consistent.** The surrounding streets would not have dead ends and would connect with the surrounding uses.
Policy UF-14-c Block Length. Create development standards that provide desired and maximum block lengths in residential, retail, and mixed-use districts order to enhanced walkability.	**Consistent.** The project would fill one block with mixed uses, allowing for connectivity with the surrounding uses.
Policy LU-2-a Infill Development and Redevelopment. Promote development of vacant, underdeveloped, and redevelopable land within the City Limits where urban services are available by considering the establishment and implementation of supportive regulations and programs.	**Consistent.** The project would be an infill development of vacant, undeveloped land.
Policy LU-5-f High Density Residential Uses. Promote high-density residential uses to support Activity Centers and BRT corridors, and walkable access to transit stops.	**Consistent.** The project would be high density residential uses.
Policy MT-5-a Sidewalk Development. Pursue funding and implement standards for development of sidewalks on public streets, with priority given to meeting the needs of persons with physical and vision limitations; providing safe routes to school; completing pedestrian improvements in established neighborhoods with lower vehicle ownership rates; or providing pedestrian access to public transportation routes.	**Consistent.** The project would have sidewalks/pathways throughout and surrounding the development.

Source: City of Fresno General Plan.

As shown in Table 4 above, the proposed project would be consistent with the applicable GHG-reducing policies from the General Plan. Additionally, the Project will align with the following AB 32 Policies:

1. **Greenhouse Gas Emissions Reduction**
   Policy: AB 32 mandates the reduction of GHG emissions to 1990 levels by implementing sustainable development and reducing energy consumption.

   Project Alignment
   - The project will incorporate energy-efficient residential and commercial buildings designed to comply with Title 24 (California Building Energy Efficiency Standards) and CALGreen Code.
   - Implementation of LED lighting, Energy Star appliances, and high-efficiency HVAC systems.
   - Landscaping will include native, drought-tolerant plants to reduce water and energy consumption.

2. **Compliance with California Air Resources Board (CARB) Scoping Plan**
   Policy: The CARB Scoping Plan outlines strategies for reducing emissions across sectors, including land use and transportation.

   Project Alignment
   - The residential buildings will include EV charging stations and bicycle storage to promote sustainable transportation.
   - The project will participate in waste diversion programs, ensuring at least 65% of construction waste is recycled, per CALGreen guidelines.

3. **Sustainable Land Use and Transportation (SB 375 - Sustainable Communities Act)**
   Policy: SB 375 works alongside AB 32 to reduce vehicle miles traveled (VMT) by encouraging transit-oriented and walkable communities.

   Project Alignment
   - The project is located in an urbanized area with existing road infrastructure, reducing the need for sprawl.
   - The site design includes pedestrian-friendly pathways, bicycle lanes, and proximity to transit stops.
   - Mixed-use development (residential + commercial) allows residents to access retail and services without needing to drive, reducing overall emissions.

4. **Low Carbon Fuel Standard (LCFS) & Electric Vehicle (EV) Infrastructure**
   Policy: AB 32 promotes the adoption of zero-emission vehicles (ZEVs) and low-carbon fuels to reduce transportation-related emissions.

   Project Alignment
   - The project will install EV charging stations in both the residential and commercial parking areas.
   - Preferential parking will be provided for low-emission and carpool

vehicles.

5. **Energy Efficiency and Renewable Energy (Title 24 & CALGreen)**
   Policy: Title 24 and the California Green Building Standards Code (CALGreen) require new buildings to be energy- and water-efficient.

   Project Alignment
   - The residential buildings will be constructed with high-performance insulation, dual-pane windows, and cool roofing materials to minimize energy use.
   - Water conservation measures include low-flow fixtures, high-efficiency irrigation systems, and permeable paving.

6. **Stormwater Management and Water Conservation**
   Policy: AB 32 encourages sustainable water management to reduce emissions from water conveyance and treatment.

   Project Alignment
   - The project will integrate a stormwater management system with bioswales and retention basins to capture and treat runoff.
   - Landscaping will be designed in compliance with California's Model Water Efficient Landscape Ordinance (MWELO).
   - Water-efficient fixtures and graywater reuse opportunities will be explored.

7. **Waste Management & Recycling**
   Policy: To reduce landfill-related emissions, AB 32 promotes waste reduction, recycling, and composting.

   Project Alignment
   - A construction waste management plan will be implemented, ensuring at least 65% of waste is diverted from landfills.
   - Residential and commercial tenants will have access to separate waste, recycling, and organic waste bins to support the state's organic waste diversion goals (SB 1383).
   - Retail tenants will be encouraged to adopt green packaging and composting programs.

Therefore, the proposed project would not generate substantial greenhouse gas emissions, or conflict with plans, policies, or regulations adopted for the purpose of reducing greenhouse gas emissions. The impact would be less than significant.

Mitigation Measures:

No mitigation measures are required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. HAZARDS AND HAZARDOUS MATERIAL – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
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?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
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?				X
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 for people residing or working in the project area?			X	

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			X	

DISCUSSION

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

Construction activities associated with the proposed project would involve the use of limited amounts of potentially hazardous materials, including but not limited to, solvents, paints, fuels, oils, and transmission fluids. However, all materials used during construction would be contained, stored, and handled in compliance with applicable standards and regulations established by the Department of Toxic Substances Control (DTSC), the United States Environmental Protection Agency (USEPA), and the Occupational Safety and Health Administration (OSHA). All storage, handling, and disposal of hazardous materials during project construction and operation would comply with applicable safety standards and regulations, including General Plan Policies NS-4-a, NS-4-e, and NS-4-f.[5] No manufacturing, industrial, or other uses utilizing large amounts of hazardous materials would occur within the project site. Therefore, the proposed project would have a less-than-significant impact associated with the routine transport, use, or disposal of hazardous materials, and no mitigation is required.

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?

See discussion a) above. The proposed project would not result in a significant hazard

5 *City of Fresno. 2014. Fresno General Plan-Noise and Safety Element, pgs. 9-33, 9-34. Available online at: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2016/11/GP9NoiseandSafety.pdf (accessed 4-24-24).*

to the public or the environment through the transport of hazardous materials. Additionally, the General Plan includes Objective NS-4 and Policies NS-4-a, NS-4-c, NS-4-e, NS-4-f and NS-4-g, which require site and project-specific compliance with local, State and federal standards and procedures to avoid the release or upset of hazardous materials. Therefore, compliance with federal and state regulations and applicable General Plan policies would ensure that the project would not result in significant hazards to the public or environment through the release of hazardous materials. The impact would be less than significant.

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

The closest existing school is River Bluff Elementary School, located approximately 0.1 miles southwest from the project site. As previously stated, the proposed project would not result in the use or emission of substantial quantities of hazardous materials that would pose a human or environmental health risk. In addition, all materials would be handled, stored, and disposed of in accordance with applicable standards and regulations. Therefore, because the proposed project does not involve activities that would result in the emission of hazardous materials or acutely hazardous substances to an existing or proposed school. Therefore, implementation of the proposed project would result in a less-than-significant impact in the use or emission of hazardous materials that would adversely affect a 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?

According to the DTSC EnviroStor database,[6] the project site is not located on a federal superfund site, State response site, voluntary cleanup site, school cleanup site, evaluation site, school investigation site, military evaluation site, tiered permit site, or corrective action site. Additionally, the project site is not included on the list of hazardous waste sites compiled pursuant to Government Code Section 65962.5.[7] As a result, no hazards to the public or environment are anticipated, and there would be no impact.

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 for people residing or working in the project area?

---

6 California Department of Toxic Substances Control. 2007. EnviroStor. Available online at: https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=fresno (accessed 4-24-24)

7 California Environmental Protection Agency. 2018. Government Code Section 65962.5(a) Hazardous Waste and Substances Site List. Available online at: https://calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/ (accessed 4-24-24)

The nearest airports include the Fresno Yosemite International Airport, located approximately 9.6 miles southeast of the project site, Fresno Chandler Executive Airport, located approximately 8 miles southeast of the project site, and the Sierra Sky Airport, located approximately 1.5 miles east of the project site. The nearest medical center helipads (HP) include Saint Agnes Medical Center HeliPlate[8], located approximately 7.4 miles east of the project site. Due to the distance between the project site and local airports and helipads, operations at these locations are not expected to pose a safety hazard for people in the project site. Therefore, the proposed project would not expose persons to airport-related hazards, and the potential impact would be less than significant.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The California Emergency Services Act requires cities to prepare and maintain an Emergency Plan for natural, manmade, or war-caused emergencies that result in conditions of disaster or in extreme peril to life. The City's full-time Emergency Preparedness Officer (EPO) is responsible for ensuring that Fresno's emergency response plans are up-to-date and implemented properly. The EPO also facilitates cooperation between City departments and other local, State and federal agencies that would be involved in emergency response operations. The City of Fresno Emergency Operations Center (EOC) serves as the coordination and communication between the City of Fresno and Fresno County Operational Area EOC. The proposed project would not result in any alterations of existing roadways that would block the circulation of emergency response services or introduce elements that would conflict with the operations of the EOC. Therefore, the proposed project would not interfere with emergency evacuation plans in the City, and this impact would be less than significant.

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

The project site is located in an area mapped as Local Responsibility Area (LRA) Unzoned, indicating that the area is urbanized and not susceptible to wildland conflagrations, and is not located within a very high fire hazard severity zone (VHFHSZ).[9] Therefore, the proposed project would not expose people or structures to a significant loss, injury or death involving wildland fires and the impact would be less than significant.

---

8 California Department of Transportation (Caltrans). 2019. Caltrans HeliPlates. Available online at: https://heliplates.dot.ca.gov/# (accessed 4-24-24)

9 California Department of Forestry and Fire Protection (CAL FIRE). 2007. Fresno County Fire Hazard Severity Zones in LRA. Kune . Available online at: https://osfm.fire.ca.gov/media/6673/fhszl06_1_map10.pdf (accessed 4-24-24)

Mitigation Measures:

No mitigation measures are required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. HYDROLOGY AND WATER QUALITY – Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			X	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
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 a substantial erosion or siltation on- or off-site;			x	
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site:			x	
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			x	
iv) impede or redirect flood flows?			x	

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			x	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			x	

DISCUSSION

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

The State Water Resources Control Board and nine Regional Water Quality Control Boards regulate the water quality of surface water and groundwater bodies throughout California. The proposed project is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB).

Pollutants of concern during construction include sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. During project construction, there would be an increased potential to expose soils to wind and water erosion, which could result in temporary minimal increases in sediment load in nearby water bodies, including the San Joaquin River located approximately 1-miles to the north of the project site.

In compliance with the General Plan, any development project disturbing one or more acres of soil must obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ). Construction activities subject to the Construction General Permit includes clearing, grading, and other ground-disturbing activities such as stockpiling or excavation. The Construction General Permit requires development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The project would disturb approximately 18.56 acres of soil.

A SWPPP includes features designed to eliminate contact of rainfall and stormwater runoff with sources of pollution that occur on construction sites, the main source being soil erosion resulting from unstabilized soils coming in contact with water and wind. These features are known as Best Management Practices (BMPs). Common BMPs

to limit pollution in stormwater runoff from construction sites include maintaining or creating drainages to convey and direct surface runoff away from bare areas and installing physical barriers such as berms, silt fencing, waddles, straw bales, and gabions. Regulatory compliance with the National Pollutant Discharge Elimination System (NPDES) Construction General Permit will ensure the project's construction activities will not significantly impact water quality. This permit requires the project to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) and BMPs to effectively minimize potential water quality impacts.

Long-term operation impacts associated with the proposed project would be reduced to less than significant levels with the implementation of the City's Storm Drainage and Flood Control Master Plan (SDFCMP), which manages the City's stormwater drainage systems, and the City's participation in the Phase 1 NPDES Permit for Stormwater Discharges From Municipal Separate Storm Sewer Systems (Phase 1 MS4), which requires the City to implement water quality and watershed protection measures for all development projects.

Therefore, impacts associated with the proposed project would be less than significant.

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

The proposed project will receive water supply and wastewater services from the City of Fresno, managed through the Department of Public Utilities (DPU) Water and Wastewater Management Divisions. The project is located within the City's service area, ensuring water supply reliability through existing infrastructure and water management practices.

As discussed below in Section XIX, Utilities and Service Systems, the City receives all of its water supply from groundwater. To mitigate increased water demands, the City plans to incrementally expand groundwater wells, pump stations, recharge facilities, water treatment and distribution systems. A primary objective of Fresno's future water supply plan, as detailed in Fresno's current Urban Water Management Plan (UWMP)[10] is to balance groundwater operations through a host of strategies. These include increasing surface water supplies and surface water treatment facilities, intentional recharge, and conservation measures to reduce groundwater pumping. The City continually monitors impacts of land use changes and development project proposals on water supply facilities by assigning fixed demand allocations to each parcel by land use, whether currently zoned or proposed for rezoning.

10 *City of Fresno. 2021. 2020 Urban Water Management Plan - Final. Available online at: https://www.fresno.gov/publicutilities/wp-content/uploads/sites/16/2021/07/Fresno-2020-UWMP_Final_2021-07-21.pdf (accessed 4-24-24)*

Project Specific Water Use

The project involves the construction of 396 multi-family residential units and 22,666 square feet of commercial space across approximately 18.56 net acres. The development is divided into two main components: commercial parcels totaling 2.2 net acres and a residential parcel comprising 16.36 net acres.

Commercial Water Demand

According to the UWMP, in 2020 the commercial sector covered 4,563 acres with a water demand of 16,971 acre-feet (AF), averaging 3.719 AF per acre. This water demand includes indoor and outdoor water uses, including landscaping. By 2030, commercial acreage is expected to increase to 6,018 acres. Without conservation measures, water demand would proportionally rise to 22,383 AF, maintaining the same per-acre usage.

However, the UWMP anticipates a gradual reduction in water demand due to passive conservation efforts, such as upgrading to more efficient fixtures and appliances. Existing commercial development is projected to reduce demand by 0.05% annually, while future commercial buildings are expected to start at 5% more water-efficient than existing developments and further reduce demand by an additional 0.01% annually.

Incorporating this 5% reduction in demand into the project, the adjusted water demand for commercial portion in 2030 is 3.533 AF per acre. This demand decreases slightly to 3.530 AF per acre in 2040 and to 3.526 AF per acre in 2050. For the 2.2 net acres of commercial space in the project, the total water demand is expected to be:

- 2030: 2.2 acres × 3.533 AF/acre = 7.773 AFY
- 2040: 2.2 acres × 3.530 AF/acre = 7.766 AFY
- 2050: 2.2 acres × 3.526 AF/acre = 7.757 AFY

Residential Water Demand

Per the UWMP, in 2020 multi-family residential areas covered 3,666 acres with a water demand of 18,842 AF, averaging 5.140 AF per acre. This includes indoor and outdoor water uses, including landscaping. Demand factors are expected to decrease over time due to passive conservation. Existing residential development is projected to reduce demand by 0.2% annually, while future residential buildings are expected to begin at 10% more water-efficient than existing developments and further reduce demand by 0.04% annually.

Incorporating this 10% reduction, the adjusted demand for residential spaces in 2030 is 4.626 AF per acre. This demand decreases to 4.621 AF per acre in 2040 and to 4.616 AF per acre in 2050. For the 16.36 net acres of multi-family residential space in the project, the total water demand is expected to be:

- 2030: 16.36 acres × 4.626 AF/acre = 75.681 AFY
- 2040: 16.36 acres × 4.621 AF/acre = 75.600 AFY
- 2050: 16.36 acres × 4.616 AF/acre = 75.518 AFY

Total Water Demand

Based on water demand factors and projected conservation measures, the project is expected to have an annual water demand of approximately 83.454 AFY in 2030. This demand is anticipated to decrease slightly over time to 83.366 AFY in 2040 and to 83.275 AFY in 2050. This reflects a slight decrease over time due to gradual reductions in water use from increased efficiency in both the multi-family residential units and commercial spaces.

Impact on Fresno's Water Supply

Fresno's available water supply is projected to be:

- 2030: 341,140 AF
- 2040: 352,000 AF
- 2045: 357,330 AF

The total city-wide demand for potable and non-potable water is estimated at:

- 2030: 212,756 AF
- 2040: 231,876 AF
- 2045: 241,447 AF

Given these figures, Fresno will maintain a substantial surplus of water supply over demand in each year. The project's annual water demand represents a negligible portion of the City's total water resources. Therefore, due to the ample water supply available, the project will not significantly impact Fresno's water supply.

Groundwater Supply and Recharge Impact

Fresno's Groundwater Management

The proposed project will connect to the City of Fresno's water supply system, which includes extensive infrastructure such as over 202 active municipal groundwater wells and three surface water treatment facilities. This system ensures a reliable and well-regulated water supply, reducing dependency on groundwater and promoting sustainability through strategic planning and efficient management.

The City of Fresno operates under the Sustainable Groundwater Management Act (SGMA) framework, actively participating in the North Kings Groundwater Sustainability Agency. Groundwater use is carefully monitored, and strategies are in place to prevent overdraft and ensure long-term resource stability. Compliance with

SGMA regulations provides an additional layer of assurance that the City's groundwater use will remain sustainable.

The City's ongoing groundwater recharge efforts further support sustainability. Through intentional recharge, the City diverts surface water from the Kings River and the Central Valley Project to recharge basins, contributing an average of 60,000 AFY. This volume is set to increase over time, helping to sustain groundwater levels and counterbalance any extractions.

In 2014, Fresno updated its Metropolitan Water Resources Management Plan (MWRMP) designed to ensure the Fresno metro area has a reliable water supply through 2025. The plan implements a conjunctive use program, combining groundwater, treated surface water, artificial recharge and an enhanced water conservation program. While groundwater will continue to be an important part of the City's supply, it will not be relied upon as heavily as historically, with the City planning to expand delivery and treatment of surface water supplies and groundwater recharge activities.

Project Compliance with Water Management Plans

The proposed project would be consistent with water management strategies from both the UWMP and the MWRMP. Furthermore, the project applicant would be required to comply with water management requirements and recommendations of the City of Fresno Department of Public Utilities, which would reduce the project impacts to groundwater recharge to less than significant. These requirements can be found in the UWMP and MWRMP. Compliance with these plans ensures efficient water use, promotes water conservation, and prevents over-extraction from the groundwater supply. Additionally, these plans include strategies for groundwater recharge, such as capturing runoff and using recharge basins to ensure water infiltrates into the groundwater basin. By implementing these strategies, the project helps maintain a balance between water extraction and recharge, reducing pressure on groundwater resources and supporting a sustainable water supply.

The UWMP includes the following requirements the project will follow:

- Water Waste Prevention Ordinances: Compliance with ordinances prohibiting water waste, such as runoff from overwatering landscapes or using water to clean driveways and sidewalks.
- Metering Requirements: Each unit must be individually metered, or if not possible, the complex must have a master meter with sub-metering systems to ensure residents are billed based on actual water use, promoting conservation.
- Conservation Pricing: Implementation of tiered or conservation-based pricing structures for water use, with higher rates for higher usage levels to incentivize efficient water use.

- High-Efficiency Fixtures: Installation of high-efficiency plumbing fixtures, such as low-flow toilets, showerheads, and faucets, as required under the California Plumbing Code.
- Landscape Irrigation Restrictions: Adherence to water-efficient irrigation practices, like watering during early morning or late evening hours, using drought-tolerant plants, and avoiding excess irrigation.
- Leak Detection and Repairs: Establishment of routine checks for leaks in plumbing and irrigation systems and ensuring timely repairs to minimize water loss.

The MWRMP includes the following requirements the project would have to follow:

- Plumbing Fixtures: Installation of plumbing fixtures with water-saving devices, such as low-flow toilets, showerheads, and faucets, to meet updated efficiency standards.
- Metering and Billing: Implementation of metering systems to monitor water use.
- Water Audits and Leak Detection: Conducting regular water system audits to identify and fix leaks within the complex; implementing measures to ensure efficient water use and minimize water loss.
- Landscape Irrigation Conservation: Use of efficient irrigation practices, such as drip irrigation or smart irrigation systems that adjust water use based on weather conditions; prioritizing drought-tolerant plants in landscaping.
- Compliance with Water Waste Prohibitions: Enforcement of rules against water waste, such as preventing excessive runoff from irrigation, fixing broken sprinklers, and avoiding watering during peak heat times when water loss is higher due to evaporation.
- High-Efficiency Appliances: Installation of high-efficiency washing machines in laundry facilities, if applicable.

The project will also incorporate design features like permeable surfaces and efficient stormwater management systems to enhance local groundwater recharge, aligning with City requirements. Additionally, when development permits are issued, the project site will be required to pay drainage fees pursuant to the Drainage Fee Ordinance, contributing financially to regional water management and supporting the infrastructure necessary for ongoing groundwater recharge and conservation efforts.

With the implementation of the outlined measures and adherence to regional water management strategies, the proposed project's impact on groundwater supplies and recharge will be less than significant. The project's design, relatively minimal water demand, and compliance with conservation requirements ensure that its impact on groundwater resources will be negligible. Combined with the City of Fresno's proactive groundwater management and recharge strategies, the project will not impede sustainable groundwater management or substantially affect groundwater supplies.

Therefore, impacts associated with the proposed project would be less than significant.

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?

Construction of the proposed project would result in grading on the site that would expose native soils that could be subject to the effects associated with wind and water erosion unless adequate measures are taken to limit the transport of soils in surface water from the site to downstream locations.

Stormwater collection and disposal, and flood control for the City of Fresno, City of Clovis, and the unincorporated areas within the City of Fresno's sphere of influence are provided by the Fresno Metropolitan Flood Control District (FMFCD). The project would include curb and gutter requirements as required by Fresno.

As required by the General Plan, a SWPPP would be developed prior to any ground disturbance at the project site and would include BMPs to reduce erosion and surface water contamination during construction of the proposed project. Additionally, compliance with the City's grading plan check process, the Fresno Metropolitan Flood Control District (FMFCD) Storm Drainage and Flood Control Master Plan (SDFCMP), and stipulations of the NPDES Construction General Permit would ensure that potential impacts related to erosion and saltation on- and off-site would be less than significant.

ii. Substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?

The proposed project would result in the addition of impervious surfaces and alter existing drainage patterns on approximately 18.56 acres within the project site which would have the potential to result in erosion or siltation on- or off-site. Ground-disturbing activities related to project construction, such as grading, excavation, placing fill, and trenching, could change existing surface drainage patterns and increase the potential for flooding, particularly during storm events. Regulatory mechanisms in place that would reduce the effects of construction activities on drainage patterns that would result in flooding on or off the construction site include compliance with the City of Fresno grading plan check process, the SDFCMP, and the NPDES Construction General Permit. Compliance with these required regulations would reduce project construction impacts on grading patterns and flooding on and off of the construction site to less-than-significant levels.

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?

Please refer to discussions a) and c) i and ii in this section. The proposed project would increase impervious surfaces at the project site. However, with implementation of a SWPPP, which would require execution of BMPs for controlling pollution sources during project construction, compliance with the City's Storm Drainage and Flood Control Master Plan (SDFCMP), and implementation of the NPDES Permit, the proposed project would not exceed capacity of stormwater drainage systems or generate additional sources of polluted runoff. Additionally, the project applicant would pay the City a Drainage Fee to address impacts related to increased amount of surface runoff resulting from the proposed project. The impact would be less than significant.

iv. Impede or redirect flood flows?

Title 40 of the Code of Federal Regulations, Part 60 regulations (40CFR60), and the floodplain ordinance of the City of Fresno require that placement and flood provision structures within a floodplain not result in a cumulative change in the floodplain water surface that exceeds one foot. In addition, the regulations under 40CFR60 do not allow placement of structures within a regulatory floodway unless that placement would not result in any increase in the floodplain water surface elevation, meaning that there is no displacement or redirection of the floodway. The City's floodplain ordinance requires that a registered Civil Engineer in the State of California certify that no displacement of floodwater would result from the flood proofing of a structure within a floodplain or a regulatory floodway. The proposed project is not located within the 100-year flood hazard area as mapped by the Federal Emergency Management Agency (FEMA).[11] As a result, the impact would be less than significant.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

The project site is not located in flood hazard, tsunami, or seiche zones. Refer to discussion a) in Section IX, Hazards and Hazardous Materials regarding the use of hazardous materials within the project site. As a result, a less-than-significant impact would occur.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

---

11 Federal Emergency Management Agency. 2020. FEMA Flood Map Service Center: Search By Address. Available online at: https://msc.fema.gov/portal/search?AddressQuery#searchresultsanchor (accessed 4/30/2024)

The City is located within the Kings Sub-basin, which is part of the larger San Joaquin Valley Groundwater Basin. The planning documents regarding water resources for the City include the North Kings Groundwater Sustainability Act (GSA) Groundwater Management Plan, the City of Fresno Urban Water Management Plan, and City of Fresno Metropolitan Water Resources Management Plan. The project would be required to adhere to NPDES drainage control requirements during construction and operation as well as to FMFCD drainage control requirements. As a result, the project would not conflict with any applicable water quality control plan or groundwater management plan, and the impact would be less than significant.

Mitigation Measures:

No mitigation measures are required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. LAND USE AND PLANNING – Would the project:				
a) Physically divide an established community?				X
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?				X

DISCUSSION

a) Physically divide an established community?

The physical division of an established community typically refers to the construction of a physical feature (such as an interstate highway or railroad tracks) or removal of a means of access (such as a local road or bridge) that would impair mobility within an existing community, or between a community and outlying areas. For instance, the construction of an interstate highway through an existing community may constrain travel from one side of the community to another; similarly, such construction may also impair travel to areas outside of the community.

The proposed project site is vacant, consisting of disturbed grassland dominated by ruderal, nonnative grasses and forbs. Single family residential homes exist to the north, south, and east. River Bluff Elementary school exists to the west. The proposed project would include 396 residential units and 22,666 square feet of commercial space. These improvements would not affect connectivity and would not divide an established community. Therefore, the proposed project would have no impact.

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?

The project site is designated Urban Neighborhood (UN) and Office (O) in the General Plan. The UN land use designation is intended to provide for a compact community that includes community facilities and walkable access to parkland and commercial services; it also supports efficient, frequent transit service. The O land use is intended

for administrative, financial, business, professional, medical, and public offices. This designation is mainly intended to apply to existing office uses on smaller lots, generally located on arterial roadways. This designation is also considered compatible with existing residential neighborhoods given the smaller level of noise and traffic generated compared to commercial uses. Retail uses would be limited to business services, food services, and convenience goods for those who work in the area. The project site is located in Residential Multi-Family (RM) and Employment (E) zoning districts. The RM district allows for various residential uses, including Multi-Unit Residential. The E District allows for administrative, financial, business, professional, medical, and public offices, as identified by the General Plan. Retail uses would be limited to business services and food service and convenience goods for those who work in the area.[12]

The project would not require a change the General Plan land use designation or the current zoning and would be consistent with the City's General Plan and Zoning Ordinance. Additionally, the project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, the impact would be no impact.

12 *City of Fresno. 2016. Fresno Municipal Code Chapter 15: Citywide Development Code. Available online at: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2016/11/Complete_Code_March_2017.pdf (accessed 4-24-24)*

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. MINERAL RESOURCES – Would the project:				
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?			X	
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?			X	

DISCUSSION

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?

The principal area for mineral resources in the City of Fresno is located along the San Joaquin River Corridor. The California Department of Mines and Geology classifies lands along the San Joaquin River Corridor as Mineral Resource Zone (MRZ) 1, MRZ-2, and MRZ-3. The project site is not located in the vicinity of the San Joaquin River, is not a MRZ, and it doesn't contain a MRZ. The City's General Plan includes Objective RC-10 and Policies RC-10-a through RC-10-f to conserve aggregate mineral resources, which would be applied by the proposed project, as applicable.[13] As a result, the proposed project would not result in the loss of availability of a known mineral resource of value to the region or residents of the State. Therefore, the impact would be less than significant.

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?

Please refer to the discussion for a). The proposed project would not result in the loss of availability of any known locally important mineral resource recovery sites. Therefore, the proposed project would have a less than significant impact.

13 *City of Fresno. 2016. General Plan. Resource Conservation and Resilience. Available online at: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2016/11/GP7ResourceConservation.pdf (accessed 4-24-24)*

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. NOISE – Would the project result in:				
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?		x		
b) Generation of excessive groundborne vibration or groundborne noise levels?			x	
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?			x	

An acoustical analysis was prepared by WJV Acoustics in October 2020 (Appendix D).

DISCUSSION

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 in other applicable local, state, or federal standards?

Short-Term (Construction) Noise Impacts. Project construction would result in short-term noise impacts on nearby sensitive receptors. Maximum construction noise would be short-term, generally intermittent depending on the construction phase, and variable depending on receiver distance from the active construction zone. The duration of noise impacts generally would be from one day to several days depending

on the phase (e.g., demolition, land clearing, grading, excavation, erection) of construction. Noise produced by construction equipment such as earthmovers, material handlers, and portable generators can reach high levels. Generally, the grading phase of construction involves the most equipment and generates the highest noise levels, although noise ranges are usually similar across all construction phases. Typical noise levels generated by individual pieces of construction equipment generally range from approximately 77 dBA to 90 dBA Lmax at 50 feet. Depending on the equipment required and duration of use, average-hourly noise levels associated with construction activity typically ranges from roughly 65 to 90 dBA Leq at 50 feet.

Certain land uses are considered more sensitive to noise than others. Examples of these include residential areas, educational facilities, hospitals, childcare facilities, and senior housing. The closest sensitive receptors to the proposed project include existing residences located directly adjacent to the project site across Veterans Blvd., as well as an elementary school, located approximately 500 feet to the west of the project site.

Chapter 10, Article 1 (Noise Regulations), of the Fresno Municipal Code establishes excessive noise guidelines and exemptions. Section 10-109 states that construction noise is exempted from City noise regulations provided such work takes place between the hours of 7:00 a.m. and 10:00 p.m. on any day except Sunday.

Thus, although development activities associated with the proposed project could potentially result in a temporary or periodic increase in ambient noise levels in the project vicinity, construction activity would be exempt from City of Fresno noise regulations, as long as such activity is conducted pursuant to an applicable construction permit and occurs between 7:00 a.m. and 10:00 p.m., excluding Sunday. Therefore, short-term construction impacts associated with the exposure of persons to or the generation of noise levels in excess of standards established in the General Plan or noise ordinance or applicable standards of other agencies would be less than significant.

Operational Noise Impacts. Motor vehicles with their distinctive noise characteristics are the dominant noise source in the project vicinity. The amount of noise varies according to many factors, such as volume of traffic, vehicle mix (percentage of cars and trucks), average traffic speed, and distance from the observer. Implementation of the proposed project would result in new daily trips on local roadways in the project site vicinity. A characteristic of sound is that a doubling of a noise source is required in order to result in a perceptible (3 dBA or greater) increase in the resulting noise level. As discussed below in Section XVII, Transportation, the proposed project would generate approximately 5,968 daily trips. The project daily trips would not result in a doubling of traffic volumes along any roadway segment in the project vicinity and, therefore, would not result in a perceptible increase in traffic noise levels at receptors in the project vicinity.

Additionally, development of the project site would increase activity at the site. The noise-generating activities and the resulting noise levels from operations at the Bella Vita Mixed-Use Development in Fresno include the following:

Commercial/Retail Noise Sources: The project would feature commercial spaces including a drive-through restaurant, a small restaurant, and a retail store. These facilities are expected to generate noise from:

- HVAC/Mechanical Equipment: Noise from roof-mounted HVAC units on commercial buildings is expected to range between approximately 39-44 dB at a distance of 100 feet.
- Truck Deliveries: Noise levels produced by slowly moving trucks are measured to be in the range of 65 to 71 dBA at a distance of 100 feet.
- Parking Lot Activities: Noise due to traffic in parking lots typically involves the sounds of car doors and trunks being closed, vehicle alarms, and car stereos. These activities are not usually considered significant noise sources due to their transient nature and the low speeds at which cars move in parking areas.
- Drive-Through Operations: The drive-through component, likely to include amplified speech for ordering, is anticipated to generate noise levels. However, the exact levels depend on the specific operations and layout but were modeled based on measurements from similar establishments.

Residential Noise Sources: The residential component is primarily expected to contribute to the noise environment through general living activities, but these are typically not significant compared to commercial noise sources.

Exposure to Sensitive Receptors: The City of Fresno establishes interior noise standards to ensure a comfortable and healthy living environment for its residents. According to these standards, interior noise levels in residential units should not exceed 45 dB Ldn to prevent disruptive noise from affecting the well-being of inhabitants. For the Bella Vita Mixed-Use Development, traffic noise from nearby major roads, particularly W. Herndon Avenue, is predicted to exceed this threshold due to the high volume of vehicle movements and the proximity of the residential units to these traffic corridors. Implementation of Mitigation Measure NOI-1 would ensure compliance with these noise standards for the proposed residences.

With implementation of General Plan policies, operation of the proposed project would not substantially increase noise levels over existing conditions, and the impact would be less than significant.

b) Generation of excessive groundborne vibration or groundborne noise levels?

No permanent noise sources would be located within the project site that would expose persons to excessive groundborne vibration or noise levels. Construction activities associated with the proposed project are not expected to result in excessive

groundborne vibration or groundborne noise levels. Therefore, the proposed project would not permanently expose persons within or around the project site to excessive groundborne vibration or noise and the impact would be less than significant.

c) 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 expose people residing or working in the project area to excessive noise levels?

The nearest medical center helipad (HP) to the project site is Saint Agnes Medical Center Helipad, located approximately 6.3 miles east of the project site. The nearest airports include the Fresno Yosemite International Airport, located approximately 9.6 miles southeast of the project site, Fresno Chandler Executive Airport, located approximately 8.2 miles southeast of the project site, and the Sierra Sky Airport, located approximately 1.3 miles east of the project site.

Each of these airports is considered under the Fresno County Airport Land Use Compatibility Plan (ALUCP)[14], which guides local jurisdictions in determining appropriate compatible land uses with detailed findings and policies. The City of Fresno General Plan, other City land use plans, and all City land use decisions must be compatible with the adopted ALUCP for Fresno County. The ALUCP includes CNEL noise contours based on projected airport and aircraft operations.

The project site is within 2 miles of the Sierra Sky Park Airport. However, the project is not located within a future noise contour as identified by the Sierra Sky Park Airport Land Use Compatibility Plan. As such, the proposed project would not result in the exposure of sensitive receptors to the excessive noise levels from aircraft noise sources. The impact would be less than significant.

Mitigation Measures

The proposed project shall implement and incorporate the noise related mitigation measures as identified in the attached Mitigation Measure Monitoring Program.

Mitigation Measures NOI-1: The project developer shall install mechanical ventilation and air conditioning systems in all apartment units within the project. These systems must be capable of maintaining comfortable indoor temperatures with all windows and doors closed.

14 Fresno Council of Governments. 2018. Fresno County Airport Land Use Compatibility Plan. Amended December 2021. Available online at: https://www.fresnocog.org/project/airport-land-use-commission-fresno-county/ (accessed 4/10/24)

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. POPULATION AND HOUSING – Would the project:				
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)?			x	
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				x

DISCUSSION

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)?

The proposed project would include the development of 396-unit multi-family development and 22,666 square feet of commercial space. The commercial portion of the proposed project is designated as Office by the City of Fresno General Plan and belongs to the Office zoning district. The residential portion of the proposed development is designated as Urban Neighborhood by the General Plan and is zoned RM-2 – Residential Multi-Family, Urban Neighborhood.

The proposed project would result in direct population growth as the use proposed is not residential and would contribute to permanent residency on site. However, the proposed residential uses are consistent with the current land use land zoning designations. Therefore, the proposed project would not directly or indirectly induce unplanned population growth and this impact would be less than significant.

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

The project site is currently vacant and there are no residences located within the project area. The proposed project would not necessitate the displacement or removal of existing housing. Therefore, no impacts would occur.

Mitigation Measures

No mitigation measures are required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. PUBLIC SERVICES – Would the project:				
a) 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?			x	
Police protection?			x	
Schools?			x	
Parks?			x	
Other public facilities?			x	

DISCUSSION

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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:

i. Fire protection?

The City of Fresno Fire Department (FFD) would provide fire protection services to the proposed project. There are 20 FFD fire stations in Fresno, with the closest fire station, Fire Station 14, located approximately 0.66 miles from the project site. Planned growth under the General Plan would increase calls for fire protection service in the City. The proposed use of the project site is consistent with the site's General Plan designation and does not represent unplanned growth given that the

project site would be developed consistent with its land use and zoning designations. The project could result in an incremental increase in the demand for fire protection services because of additional to the project site. However, the proposed project would be required to pay a Fire Facilities Fee and a Development Impact Fee pursuant to Chapter 12, Article 4.9 of the City's Code of Ordinances to account for the potential impacts to fire services.

The FFD would continue providing services to the project site and would not require additional firefighters to serve the proposed project. The construction of a new or expanded fire station would not be required. The proposed project would not result in a significant impact on the physical environment due to the incremental increase in demand for fire protection and life safety services. The incremental increase in demand for services would not adversely affect existing responses times to the site or within the City. Therefore, construction and operation of the proposed project would have a less than significant impact.

ii. Police protection?

The City of Fresno Police Department (FPD) provides police protection to the project site. The Police Department Patrol Division is divided into five policing districts with the nearest being Fresno Police Department Northwest District, located approximately 3.2 miles from the project site. Planned growth under the General Plan would increase calls for police protection service in the City. The proposed use of the project site is consistent with the site's General Plan designation and does not represent unplanned growth given that the project site would be developed consistent with its land use and zoning designation.

The project could result in an incremental increase in the demand for police protection services. However, the proposed project would be required to pay a Police Impact Fee and a Development Impact Fee pursuant to Chapter 12. Article 4.8 of the City's Code of Ordinances to account for the potential impacts to police protection services.

The FPD would continue providing services to the project site and would not require additional personnel to serve the proposed project. The construction of new or expanded police facilities would not be required. Therefore, the proposed project would not result in a substantial adverse impact associated with the provision of additional police facilities or services and impacts to police protection would represent a less than significant impact.

iii. Schools?

The proposed project is within the Central Unified School District. Since the proposed project includes the addition of 396 multi-family residential units, the number of students in the school district would increase. The proposed project site

is located within the City limits and therefore, growth associated with the project has been planned and expected. According to the CUSD Facilities Master Plan (2016), 0.351 students are generated from each residential unit. The 396-unit project would add an estimated 139 students to the district. Based on student enrollment data, the CUSD is projecting a total enrollment of 16,239 students in the 2027/28 school year, with a capacity for 22,182 students.

The project would not necessitate a new school. However, the developer would be required to pay appropriate school fees pursuant to Chapter 12, Article 8 of the City's Code of Ordinances at time of building permits to address potential impacts. The impact is less than significant.

iv. Parks?

The addition of 396 new residential units would result in increased use of existing parks. Parks within the vicinity of the site that could potentially service the proposed development include a small neighborhood park located on the NE corner of Hayes Avenue and Herndon Avenue, Koligian Park (located approximately 0.7 miles from the project site, Stallion Park, located approximately 0.7 miles from the project site, and Riverside Golf course, located approximately 0.4 miles from the project site. The proposed multi-family development includes outdoor recreation facilities for residents, including recreational building, two barbeque areas, tot lot, swimming pool, basketball half-court, dog park, and other landscaped areas.

The developer would be required to pay applicable park facilities fees, pursuant to Chapter 12, Article 4.7 of the City's Code of Ordinances, to mitigate potential impacts of the proposed project on park facilities. Therefore, impacts to parks would be less than significant.

v. Other public facilities?

Development of the proposed project could also increase demand for other public services, including libraries, community centers, and public health care facilities. However, the proposed project would not result in significant population growth that would increase the demand for these facilities, such that new facilities would be needed to maintain service standards, as these facilities are not currently overused and have capacity to serve new demand. Therefore, impacts to other public facilities would be less than significant.

Mitigation Measures

No mitigation measures are required.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. RECREATION - Would the project:				
a) 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?			X	
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?				X

DISCUSSION

a) 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?

The proposed project would include 349,517 square feet of landscaped open space, including a recreational building, a tot lot, two barbeque areas, a dog park, a basketball half-court, and a community pool. Nearby parks include a neighborhood park and Koligian Park to the north, and stallion park to the south. The proposed project may increase the demand of recreational facilities in the vicinity of the project site. However, the proposed project would include the construction of several recreation features. The developer would be required to pay park impact fees pursuant to Chapter 12, Article 4.7 of the City's Code of Ordinances at the time building permits are obtained to account for potential impacts to recreational facilities. The impact fees would serve to offset project impact on existing recreational facilities. Therefore, the impact would be less than significant.

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

The proposed project would consist of a multi-family apartment complex and a small amount of commercial uses. The development would include 349,517 square feet of

landscaped open space, including a recreational building, a tot lot, two barbeque areas, a dog park, a basketball half-court, and a community pool. The proposed project would not include or require the construction or expansion of existing public recreational facilities. Therefore, the impact would be no impact.

Mitigation Measures

No mitigation measures are required.

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

DISCUSSION

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

The Traffic Impact Analysis (TIA) for the Bella Vista project, located at the southeast corner of Herndon Avenue and Hayes Avenue in Fresno, CA, was conducted by JLB Traffic Engineering, Inc. (available in Appendix I).[15] The proposed development includes 17,666 square feet of general retail, a 5,000-square-foot fast-food restaurant with a drive-through, and 396 multifamily residential units. The primary objective of the TIA was to evaluate potential on-site and off-site traffic impacts, identify short-term and long-term roadway needs, recommend potential roadway improvement measures, and pinpoint any critical traffic issues that should be addressed in the planning process. This comprehensive analysis considered various traffic scenarios,

[15] *The TIA analyzed an earlier and larger version of the proposed project. The proposed project site and dwelling units have since been decreased from approximately 23.42 acres to 18.56 acres and from 516 dwelling units to 396 dwelling units. Despite this reduction, the TIA analysis remains adequate for the project's environmental assessment as the findings provide for a more conservative impact analysis. However, trip generation calculations in this IS/MND have been adjusted based on the current project programming.*

including existing conditions, existing plus project, near-term plus project, and cumulative year 2046 plus project conditions.

The findings of the TIA reveal that all study intersections currently operate at an acceptable Level of Service (LOS) and will continue to do so with the addition of the Bella Vista project and other near-term developments. The project is expected to generate approximately 5,968 daily trips, with 423 AM peak hour trips and 483 PM peak hour trips. The analysis included a detailed review of existing traffic conditions, and minor recommendations were made for two of the project driveways along Hayes Avenue. Notably, all study intersections are projected to maintain acceptable LOS during both peak periods under existing plus project conditions, and traffic signalization is not recommended for any unsignalized intersections based on the warrant analysis.

To support active transportation and enhance safety, the TIA recommends constructing Class I bikeways along Hayes Avenue and Veterans Boulevard and adding a high-visibility crosswalk across the north leg of the intersection at Hayes Avenue and Palo Alto Avenue. Additionally, a queuing analysis suggests the City consider appropriate left-turn and right-turn lane storage lengths. The analysis also factored in the cumulative impacts of other near-term projects, estimating an additional 100,395 daily trips, with 5,259 AM peak hour trips and 8,970 PM peak hour trips. Despite these increases, all study intersections are expected to maintain acceptable LOS through 2046, demonstrating that the project would not conflict with the Mobility and Transportation Element of the Fresno General Plan. The project's integration of recommended roadway improvements ensures continued efficient traffic flow and supports the city's long-term transportation planning goals.

The area is currently served by two Fresno Area Express (FAX) routes, Route 3 and Route 20, which provide connections to various commercial centers and institutions. Route 3 operates along Herndon Avenue with a nearby stop on Riverside Drive, and Route 20 operates along Riverside Drive, both offering 45-minute intervals on weekdays and weekends.

The Fresno Active Transportation Plan (ATP), adopted in December 2016, outlines a comprehensive network of bikeways to improve safety and accessibility for non-motorized transportation. In the vicinity of the project site, existing Class I (Bike Path) and Class II (Bike Lane) bikeways are present along portions of Veterans Boulevard, Riverside Drive, Spruce Avenue, Hayes Avenue, and Bullard Avenue. The ATP recommends the construction of additional Class I and Class II bikeways along Hayes Avenue and Veterans Boulevard adjacent to the project site. Additionally, the project proposes to construct Class I bikeways along these frontages, aligning with the ATP's recommendations and supporting the city's goals for an integrated active transportation network.

Pedestrian facilities near the project include existing sidewalks and crosswalks, with

specific focus on safe routes to nearby schools such as River Bluff Elementary School and Rio Vista Middle School. To enhance pedestrian safety, the project proposes adding a high-visibility crosswalk across the north leg of the intersection at Hayes Avenue and Palo Alto Avenue, facilitating safer access for students walking or biking to school.

The proposed Bella Vista project is consistent with the implementation of applicable transit, bicycle, and pedestrian programs and plans. It does not conflict with the operation of existing facilities; instead, it supports and enhances the existing infrastructure by integrating recommended improvements from the Fresno ATP. The project's contributions to active transportation and transit accessibility ensure alignment with the city's long-term mobility and transportation goals, promoting a more connected and efficient network for all users.

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

Senate Bill (SB) 743 requires that relevant CEQA analysis of transportation impacts be conducted using a metric known as vehicle miles traveled (VMT) instead of Level of Service (LOS). VMT measures how much actual auto travel (additional miles driven) a proposed project would create on California roads. If the project adds excessive car travel onto our roads, the project may cause a significant transportation impact.

The State CEQA Guidelines were amended to implement SB 743, by adding Section 15064.3. Among its provisions, Section 15064.3 confirms that, except with respect to transportation projects, a project's effect on automobile delay shall not constitute a significant environmental impact. Therefore, LOS measures of impacts on traffic facilities is no longer a relevant CEQA threshold for transportation impacts.

CEQA Guidelines Section 15064.3(b)(4) states that "[a] lead agency has discretion to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate used to estimate vehicle miles traveled and any revision to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section."

A VMT analysis for the project was prepared by JLB Traffic Engineering, Inc. (available in Appendix H).[16] The following analysis is based on the VMT analysis

[16] *The VMT analyzed an earlier and larger version of the proposed project. The proposed project site and dwelling units have since been decreased from approximately 23.42 acres to 18.56 acres and from 516 dwelling units to 396 dwelling units. Despite this reduction, the VMT analysis remains adequate for the project's environmental assessment as the findings provide for a more conservative impact analysis.*

report.

On June 25, 2020, the City of Fresno adopted CEQA Guidelines for Vehicle Miles Traveled Thresholds, pursuant to Senate Bill 743 to be effective of July 1, 2020. The thresholds described therein are referred to herein as the City of Fresno VMT Thresholds. The City of Fresno VMT Thresholds document was prepared and adopted consistent with the requirements of CEQA Guidelines Sections 15064.3 and 15064.7. The December 2018 Technical Advisory on Evaluating Transportation Impacts in CEQA (Technical Advisory) published by the Governor's Office of Planning and Research (OPR), was utilized as a reference and guidance document in the preparation of the Fresno VMT Thresholds.

The proposed development includes 17,666 square feet of general retail, a 5,000-square-foot fast-food restaurant with a drive-through, and 396 multifamily residential units. The City of Fresno VMT Thresholds Section 3.0 regarding Project Screening discusses a variety of projects that may be screened out of a VMT analysis including specific development and transportation projects. For development projects, conditions may exist that would presume that a development project has a less than significant impact. These may be size, location, proximity to transit, or trip-making potential. For transportation projects, the primary attribute to consider with transportation projects is the potential to increase vehicle travel, sometimes referred to as "induced travel."

The proposed retail portion of the project is eligible to screen out because it is a local serving retail project less than 50,000 square feet.

The residential portion of the project does not screen out from the need for a quantitative VMT analysis because it does not meet any of the established screening criteria specified in the City of Fresno's CEQA Guidelines for VMT thresholds. These criteria include being located in a Transit Priority Area or High-Quality Transit Corridor, being a local-serving retail project of less than 50,000 square feet, generating fewer than 500 average daily trips, containing a high level of affordable housing units, being an institutional/government or public service use, or being located in a low VMT zone. Since the residential component of the project does not satisfy any of these criteria, it cannot be screened out. For projects that are not screened out, a quantitative analysis of VMT impacts must be prepared and compared against the adopted VMT thresholds of significance. The Fresno VMT Thresholds document includes thresholds of significance for development projects, transportation projects, and land use plans. These thresholds of significance were developed using the County of Fresno as the applicable region, and the required reduction of VMT (as adopted in the Fresno VMT Thresholds) corresponds to Fresno County's contribution to the statewide GHG emission reduction target. In order to reach the statewide GHG reduction target of 15%, Fresno County must reduce its GHG emissions by 13%. The method of reducing GHG by 13% is to reduce VMT by 13% as well.

The City's adopted thresholds for development projects correspond to the regional thresholds set by the Fresno Council of Governments (COG). For residential and non-residential (except retail) development projects, the adopted threshold of significance is a 13% reduction, which means that projects that generate VMT in excess of a 13% reduction from the existing regional VMT per capita or per employee would have a significant environmental impact. Projects that reduce VMT by more than 13% are less than significant. For retail projects, the adopted threshold is any net increase in VMT per employee compared to existing VMT per employee.

Quantitative assessments of the VMT generated by a development project are determined using the COG Activity Based Model (ABM), which is a tour-based model.

For mixed use projects, the City of Fresno VMT Thresholds state that the VMT can be estimated based on each component of the project, independently, after taking credit for internal trip capture. It also confirms that mixed use projects must use the Fresno COG's Activity Based Model. The VMT per capita (for the residential component) and the total VMT (for the retail component) is then compared against the relevant threshold.

The Traffic Consultant requested Fresno COG to run its Activity-Based Model (ABM) to determine the project's VMT for the proposed land uses. Based on the Fresno COG VMT output, the residential component was calculated to yield 19.36 VMT per capita, which exceeds the City of Fresno's threshold of 14.01 VMT per capita, indicating a potentially significant impact without mitigation. However, after applying feasible mitigation measures, the residential VMT was reduced to 11.94 VMT per capita, making the impact less than significant. The retail component of the project, considered local-serving retail less than 50,000 square feet, screened out from a quantitative VMT analysis due to its expected draw from the surrounding area and existing traffic, resulting in no net increase in regional VMT. Consequently, the residential component, after mitigation, and the retail component, based on its screening status, would not have a significant impact on VMT.

In conclusion, the proposed project would result in a less than significant impact concerning consistency with CEQA Guidelines Section 15064.3(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)?

The proposed project would include 17,666 square feet of general retail, a 5,000-square-foot fast-food restaurant with a drive-through, and 396 multifamily residential units. The project would not alter pedestrian or vehicle access to the project site, or introduce incompatible design features or equipment that would substantially increase the risk of hazards. Therefore, the project would not substantially increase hazards due to a design feature, and the impact would be less than significant.

d) Result in inadequate emergency access?

The proposed project would include 17,666 square feet of general retail, a 5,000-square-foot fast-food restaurant with a drive-through, and 396 multifamily residential units. Emergency vehicles would have access to the project site via an emergency vehicle access onto Herndon Avenue, and emergency access would be modified as a result of the proposed project. Furthermore, roads adjacent to the project site would not require closure during project construction. Therefore, the impact would be less than significant.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. TRIBAL CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC 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 PRC section 5020.1(k), or,			X	
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 PRC section 5024.1. In applying the criteria set forth in subdivision (c) of PRC section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		

DISCUSSION

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:

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

As previously discussed in Section V, Cultural Resources, the project site does not contain historical resources listed or eligible for listing in the California Register of Historical Resources, or in any local listing for Fresno County or the City of Fresno. Furthermore, the area surrounding the project site does not contain any listed historical resources. As a result, a less-than-significant impact would occur.

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. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

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

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

Assembly Bill (AB) 52, which became law January 1, 2015, requires that, as part of the CEQA review process, public agencies provide early notice of a project to California Native American Tribes to allow for consultation between the tribe and the public agency. The purpose of AB 52 is to provide the opportunity for public agencies and tribes to consult and consider potential impacts to Tribal Cultural Resources (TCR's), as defined by the Public Resources Code (PRC) Section 2107(a). Under AB 52, public agencies shall reach out to California Native American Tribes who have requested to be notified of projects in areas within or which may have been affiliated with their tribal geographic range. Pursuant to

Assembly Bill 52 (AB 52), the Table Mountain Rancheria Tribe and the Dumna Wo Wah Tribe were invited to consult. A certified letter was mailed to the mentioned tribes on July 31, 2024. The 30-day comment period ended on August 30, 2024. The Table Mountain Rancheria provided a comment letter on August 16, 2024, requesting consultation. City staff contacted Table Mountain Rancheria and provided them with a Cultural Study for review on August 26, 2024, with a follow-up email requesting a status on the consultation request on September 11, 2024. On January 21, 2025, City staff sent another follow-up request expressing the City's good faith efforts in requesting to meet for consultation, as requested by Table Mountain Rancheria, with a due date for the consultation meeting request by January 31, 2025, stating that a "No Response" would be considered as fulfilling the request for consultation and it is no longer needed. Table Mountain Rancheria did not respond.

If any artifacts are inadvertently discovered during ground-disturbing activities, existing federal, State, and local laws and regulations would require construction activities to cease until such artifacts are properly examined and determined not to be of significance by a qualified cultural resource professional. In addition, Mitigation Measures CULTURAL-1, CULTURAL-2 and CULTURAL-3 included above in Section V, Cultural Resources, would apply to the project and would reduce potential impacts to unknown archaeological historical resources to less than significant.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIX. UTILITIES AND SERVICE SYSTEMS – Would the project:				
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 effect?			X	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			X	
c) Result in a determination by the waste water 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?			X	
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 reduction goals?			X	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			X	

DISCUSSION

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?

The Department of Public Utilities has determined that adequate sanitary sewer and water services would be available to serve the proposed project subject to the payment of any applicable connection charges and/or fees and extension of services in a manner which is compliant with the Department of Public Utilities standards, specifications, and policies.

Impacts to storm drainage facilities have been previously discussed in Section X, Hydrology and Water Quality. While the proposed project would result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of such facilities would be required to comply with the City's grading plan check process, the Fresno Metropolitan Flood Control District (FMFCD) Storm Drainage and Flood Control Master Plan (SDFCMP), and requirements of the NPDES General Construction Permit. As such, construction of storm drainage facilities for the proposed project would be consistent with construction and design standards for the City, and the impact would be less than significant.

Electric power, natural gas, and telecommunication facilities would require connections to the project site. However, because the project site is located within an urbanized area with existing facilities in close proximity, connection to these facilities would not cause significant environmental effects. As a result, the project would not result the relocation or construction or new or expanded utilities, which could cause significant environmental effects, and the impact would be less than significant.

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

As discussed above, the Department of Public Utilities would supply water to the project site. Based on the 2015 Urban Water Management Plan, the water supplies for the City (363,540 Acre Feet (AF)/year) are adequate to accommodate the demand in the City by 2040 (i.e., 228,091 AF/year), and at buildout of the approved General Plan in 2056 (i.e., 254,834 AF/year). The proposed project would be consistent with the General and would therefore be covered by the City's water supply projections. Plan. As a result, there would be sufficient water supply for the project, and the impact would be less than significant.

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?

The proposed project is not expected to exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board. The City of Fresno owns and operates two wastewater treatment facilities. They are the Fresno/Clovis Regional Wastewater Reclamation Facility and the North Fresno Wastewater Reclamation Facility. The RWRF currently has a capacity of 91.5 million gallons per day (mgd). The North Facility has a capacity of 0.71 mgd. The proposed project is not expected to exceed the capacity of existing wastewater-related services and facilities. Therefore, the impact would be less than significant.

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 reduction goals?

Garbage disposed in the City of Fresno is taken to the Cedar Avenue Recycling and Transfer Station. Once trash has been off-loaded at the transfer station, it is sorted, and non-recyclable solid waste is loaded onto large trucks and taken to the American Avenue Landfill located approximately 6 miles southwest of Kerman.

The American Avenue Landfill (i.e., American Avenue Disposal Site 10-AA-0009) has a maximum permitted capacity of 32,700,000 cubic yards and a remaining capacity of 29,358,535 cubic yards, with an estimated closure date of August 31, 2031. The maximum permitted throughput is 2,200 tons per day.[17]

Other landfills within the County of Fresno include the Clovis Landfill (City of Clovis Landfill 10-AA-0004) with a maximum remaining permitted capacity of 7,740,000 cubic yards, a maximum permitted throughput of 2,000 tons per day, and an estimated closure date of 2047.[18]

Operation of the proposed project would generate approximately 2,022 pounds of solid waste per day or about 369.1 tons of solid waste per year. Given the available capacity at the landfills, the additional solid waste generated by the proposed project is not anticipated to cause the facility to exceed its daily permitted capacity. As such, the project would be served by a landfill with sufficient capacity to accommodate the project's waste disposal needs, and impacts associated with the disposition of solid waste would be less than significant.

---

[17] *CalRecycle. Available online at: https://www2.calrecycle.ca.gov/SolidWaste/Site/Summary/352 (accessed 4-24-24)*

[18] *CalRecycle. Available online at: https://www2.calrecycle.ca.gov/SolidWaste/Site/Summary/347 (accessed 4-24-24)*

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

The proposed project would comply with Cal Green, the City's Construction and Demolition (C&D) Waste Management Guide, and with waste management policies and recommendations from the General Plan. The proposed project would dispose of waste in accordance with applicable federal, state, and local recycling, reduction, and waste requirements and policies. Therefore, the proposed project would not conflict with federal, state, and local management and reduction statutes and regulations related to solid waste, and the impact would be less than significant.

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. WILDFIRE – If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?			X	
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 uncontrolled spread of a wildfire?			X	
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?			X	
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?			X	

DISCUSSION

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

The proposed project would not interfere with any emergency evacuation routes within the City of Fresno or an adopted emergency response plan. The project site would not require the alteration of any existing roadways. Therefore, the impact would be less than significant.

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 uncontrolled spread of a wildfire?

The project site is in an urban area and is not located within a Very High Fire Hazard Severity Zone (VHFHSZ).[19] The project site does not possess physical characteristics that would exacerbate wildfire risks. Therefore, the proposed project would not exacerbate wildfire risks and potentially expose project occupants to pollutants from a wildfire. The impact would be less than significant.

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?

The project site is located in a developed area of the City of Fresno, and it would not require the installation or maintenance of infrastructure that would increase the risk of fire or result in temporary or ongoing environmental impacts, outside of what is already implemented according to City plans. As a result, a less-than-significant impact would occur.

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?

The project site is located on a relatively flat area and is not located adjacent to any hills. In general, the potential for land sliding or slope failure in Fresno is very low and the project site would not be susceptible to landslides. The project site is also not located on a flood hazard zone and would not be susceptible to flooding because of post-fire drainage changes. As discussed above, the project is not located within a VHFHSZ. Therefore, the proposed project would not expose people or structures to significant risks, and a less-than-significant impact would occur.

19 *California Department of Forestry and Fire Protection (CAL FIRE). 2008. Fresno County Very High Fire Hazard Severity Zones in LRA. Available online at: https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/ (accessed 4-24-24)*

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIX. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to 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, 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?			X	
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)?			X	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

DISCUSSION

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 an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?

As discussed in Section 4, Biological Resources, the project could potentially impact sensitive and special-status species within the project area. However, mitigation measures BIO-1 and BIO-2 reduce the potential to substantially reduce habitats, special species populations, and the range of rare or endangered plant species. With these mitigation measures in place, the project would not substantially degrade the environment or wildlife within the project area.

Based on the findings discussed in Section 5, Cultural Resources, the project site is not known to be archaeologically sensitive. However, this may change due to the possibility of the unanticipated discovery of archaeological resources during ground disturbing activities. Therefore, project construction activities could potentially impact major periods of California history or prehistory. However, implementation of Mitigation Measures CULTURAL-1 through CULTURAL-3 would reduce these potential impacts to a less than significant level.

Therefore, with the incorporation of mitigation measures, development of the proposed project would not: 1) degrade the quality of the environment; 2) substantially reduce the habitat of a fish or wildlife species; 3) cause a fish or wildlife species population to drop below self-sustaining levels; 4) threaten to eliminate a plant or animal community; 5) reduce the number or restrict the range of a rare or endangered plant or animal; or 6) eliminate important examples of the major periods of California history. Therefore, this impact would be less than significant.

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.)

The proposed project's impacts would be individually limited and not cumulatively considerable due to the site-specific nature of the potential impacts. The potentially significant impacts that can be reduced to less-than-significant levels with implementation of recommended mitigation measures include the topics of aesthetic resources, biological resources, cultural resources, geology and soils, and noise. These impacts would primarily be related to construction-period activities, would be temporary in nature, and would not substantially contribute to any potential cumulative impacts associated with these topics.

Cumulative Aesthetic Impacts

The Bella Vita project would contribute to regional aesthetic changes, which are inherently subjective and localized. Although cumulative visual impacts from other developments may alter the environment, these changes are not considered significant, and the Bella Vita project's contribution remains less than significant. The project adheres to regulations for scenic quality, incorporating measures such as shielded lighting and non-reflective materials to minimize light and glare, ensuring nighttime views are not adversely affected.

The project's viewshed includes West Herndon Avenue, North Hayes Avenue, nearby vacant/open spaces, and single-family homes. Northwestern Fresno's landscape features a mix of urban developments and undeveloped parcels, with anticipated shifts as development continues in accordance with the City's General Plan and zoning ordinances. While the area's visual character is evolving, the project's incremental effect aligns with planned land use changes and does not create significant cumulative aesthetic impacts, as it complies with measures designed to maintain visual harmony and minimize light pollution.

Cumulative Agriculture and Forestry Resources Impacts

The Bella Vita project contributes to Fresno's ongoing urbanization, a process that has historically converted agricultural land to urban uses. However, the City's General Plan has already anticipated and incorporated this agricultural loss, so while the project adds to the cumulative condition, it does not constitute a significant contribution.

The cumulative impact analysis covers Fresno and surrounding areas, where the General Plan MEIR acknowledges the significant impact of converting up to 15,903 acres of Important Farmland. The Bella Vita project site is not zoned for agriculture, does not have a Williamson Act contract, and is classified as Farmland of Local Importance; therefore, not meeting CEQA's Important Farmland criteria. Surrounded by urban development, its use for urban purposes aligns with the City's established land use plans. Therefore, cumulative impacts on agriculture and forestry resources are less than significant.

Cumulative Air Quality Impacts

There is an existing cumulative impact related to air quality in the SJVAB, which is currently designated as a nonattainment area for pollutants such as ozone precursors (reactive organic gases [ROG] and oxides of nitrogen [NOX]), respirable particulate matter (PM10), and fine particulate matter (PM2.5). While the project would contribute to regional air pollutant emissions from construction and operational activities, these emissions would not be cumulatively considerable.

Air quality impacts are evaluated at the air basin level. As discussed in the Air Quality Section of this Initial Study, emissions from the project have been assessed using established thresholds developed by the SJVAPCD, which are designed to take into account cumulative conditions across the region. The project's construction and operational emissions of criteria pollutants, including ROG, NOX, PM10, and PM2.5, would remain below these significance thresholds, indicating that the project would

not have a substantial impact on air quality when considered in conjunction with other regional developments.

Furthermore, the Bella Vita project complies with SJVAPCD regulations and control measures, which are part of the broader strategy to achieve air quality improvements and meet state and federal standards. These regulations include requirements for dust control, the use of cleaner construction equipment, and adherence to air quality plans.

Although the San Joaquin Valley continues to face air quality challenges, and the cumulative condition remains significant, the project's contribution would not worsen these conditions in a meaningful way. Additionally, the project would not interfere with the implementation of air quality management plans or conflict with the attainment goals established for the region. As a result, cumulative air quality impacts would be less than significant.

Cumulative Biological Resources Impacts

The Bella Vita project, in combination with other existing and planned developments in the area, could contribute to cumulative impacts on biological resources, including habitat loss and effects on special-status species. However, these impacts are anticipated to be less than significant with the implementation of mitigation measures. The analysis for biological impacts encompasses the project site and surrounding areas where similar habitats and special-status species may occur. As discussed in Section IV, "Biological Resources," the project site is currently characterized as disturbed habitat with limited ecological value. Nevertheless, the project could impact special-status species, such as Swainson's hawk or other nesting birds if these species are present during construction. Additionally, vegetation removal could result in habitat loss.

Future development in the region will continue to reduce available habitat for these species, contributing to a significant cumulative impact on biological resources. However, the Bella Vita project incorporates specific mitigation measures to minimize its impact. These measures include pre-construction surveys for special-status species, avoiding active nesting sites, and habitat compensation where necessary. By implementing these measures, the project would minimize its effects and ensure that its incremental impact on biological resources is not cumulatively considerable.

The project would not impact sensitive habitats, such as wetlands or wildlife corridors, and development would comply with local, state, and federal regulations protecting biological resources. Thus, while the regional loss of habitat remains a significant concern, the project's contribution is adequately mitigated and does not worsen the existing cumulative condition. Therefore, the project's contribution to cumulative biological resources impacts would not be cumulatively considerable.

Cumulative Archaeological, Historical, and Tribal Cultural Resources Impacts

The Bella Vita project, in combination with other planned and ongoing developments in the region, could contribute to cumulative impacts on archaeological, historical, and tribal cultural resources. However, these impacts are generally localized and site-specific. As a result, the project's contribution to any cumulative impact would not be cumulatively considerable.

The geographic scope for this cumulative impact analysis includes the broader region, where cultural and tribal resources may have historical significance. Development in Fresno and surrounding areas has the potential to disturb or damage undiscovered cultural resources. However, as described in Section V, "Cultural Resources," of this Initial Study, there are no known significant archaeological, historical, or tribal cultural resources within the project site.

Potential impacts to unknown resources during construction, such as buried archaeological artifacts or human remains, would be mitigated through the implementation of mitigation measures. These measures include halting construction if resources are discovered, consulting with qualified cultural resource specialists, and, if applicable, coordinating with local Native American tribes. These protocols ensure that any potential impacts to cultural resources are addressed and minimized.

Because impacts to cultural resources at individual sites are typically independent and do not combine to create a greater regional effect, the project would not contribute to a significant cumulative impact. Moreover, regulatory requirements and mitigation measures ensure that any impacts are reduced to a less than significant level. Therefore, cumulative impacts would be less than significant.

Cumulative Energy Impacts

Cumulative development in the region would result in increased energy demand from construction activities, vehicle trips, and the use of electricity and natural gas. However, the project's contribution to this cumulative energy demand would not be cumulatively considerable. Cumulative impacts would be less than significant.

The geographic scope for analyzing cumulative energy impacts is regional, encompassing the broader management and supply of energy resources. Construction of the project would temporarily increase energy use, primarily through fuel consumption. However, construction practices are designed to optimize efficiency and minimize costs, preventing wasteful energy use. During operation, the project's energy consumption would comply with the California Energy Code, which enhances energy efficiency and supports California's transition toward zero-net energy development.

The project incorporates energy-efficient measures, including advanced insulation, high-efficiency appliances, and smart building designs. Over time, as energy providers increase the share of renewable sources in their supply, the project's impact will decrease further. Additionally, state initiatives, such as the Advanced Clean Cars and Clean Trucks programs, will progressively reduce vehicle emissions and fuel use. As a result, the project would not lead to inefficient or wasteful energy consumption and

would remain consistent with regional energy plans and policies. Cumulative energy impacts would be less than significant.

Cumulative Geology and Soils Impacts

Due to their site-specific nature, impacts related to geology and soils are typically assessed on a project-by-project basis for a particular localized area. Similar to the Bella Vita project, related projects in the region would address site-specific geologic hazards through implementation of project-specific geotechnical recommendations and compliance with local, state, and federal regulations and standards for seismic safety, including the California Building Code. These measures ensure that potential risks from seismic activity, liquefaction, expansive soils, or erosion are mitigated to less than significant levels.

The Bella Vita project would implement site-specific geotechnical recommendations and adhere to applicable regulations, ensuring impacts to geology and soils would be less than significant. Therefore, the project would not make a cumulatively considerable contribution to any potential cumulative impacts. Cumulative impacts to geology and soils would be less than significant.

With regard to paleontological resources, the project would comply with existing regulatory requirements, including mitigation measures requiring work to stop if resources are discovered and evaluation by a qualified paleontologist. Related projects would similarly be required to adhere to existing regulations. Consequently, the Bella Vita Project would not make a cumulatively considerable contribution to potential cumulative impacts on paleontological resources, and cumulative impacts would be less than significant.

Cumulative Greenhouse Gas Emissions and Climate Change Impacts

There is a potentially significant cumulative impact related to GHG emissions and global climate change. However, the project's contribution to this cumulative impact would not be cumulatively considerable.

The geographic scope for cumulative GHG emissions and climate change impacts is global, as climate change is a widespread issue influenced by the accumulation of GHGs from past, present, and future projects worldwide. GHGs such as carbon dioxide and methane have long atmospheric lifetimes, contributing to global warming and climate disruptions. The cumulative effect of climate change arises from the aggregate of emissions across sectors and regions.

The project would generate GHG emissions from construction, energy use, and vehicular traffic. However, the project incorporates numerous reduction measures, such as energy-efficient building materials, compliance with California's stringent building energy efficiency standards (CALGreen), and design features that promote non-vehicular transportation. Additionally, the project will remain under the SMAQMD and Efficiency-Based thresholds. The project's incremental contribution to climate

change would not be cumulatively significant. Therefore, cumulative GHG impacts would be less than significant.

Cumulative Hazards and Hazardous Materials Impacts

Cumulative development within the City of Fresno would involve the use, storage, and transport of hazardous materials. However, the project's contribution to these hazards would not be cumulatively considerable. Cumulative impacts would be less than significant.

The geographic scope of the cumulative impact analysis for hazards and hazardous materials includes the City of Fresno and surrounding areas, as the potential for hazardous material incidents is generally site-specific. Construction and operational activities would involve the routine use of small quantities of hazardous materials, such as fuels, lubricants, and cleaning agents. These materials would be managed and disposed of following all local, state, and federal regulations, including those enforced by agencies like the DTSC, the EPA, and the OSHA. Compliance with these standards, along with City of Fresno General Plan Policies NS-4-a, NS-4-e, and NS-4-f, would ensure the proper handling of hazardous materials.

The project site is not listed on hazardous materials databases compiled under Government Code Section 65962.5, and there are no significant contamination issues identified. Additionally, the project is not within a very high fire hazard severity zone and would not interfere with emergency response plans. Although River Bluff Elementary School is located within 0.1 miles of the project site, the use of hazardous materials would be limited and managed to prevent any risk to the school or surrounding area. As such, the project would not result in a considerable contribution to cumulative hazards or hazardous material impacts. Cumulative impacts would be less than significant.

Cumulative Hydrology and Water Quality Impacts

There is a significant cumulative impact related to hydrology and water quality within the City of Fresno and the surrounding areas. However, the project's contribution to this impact would not be cumulatively considerable.
The geographic scope of the cumulative impact analysis for hydrology and water quality encompasses the watershed areas affected by urban development, including impacts on surface and groundwater quality, groundwater recharge, and flood management. Construction activities associated with the project would involve soil disturbance, potentially leading to sediment runoff and water quality impacts. However, the project would implement a SWPPP with BMPs, as required by the NPDES permit. These measures would effectively control erosion, manage sediment transport, and prevent pollutants from entering waterways.

During operation, the project would add impervious surfaces, potentially altering local drainage patterns and increasing surface runoff. However, the project design incorporates features to manage stormwater in accordance with the FMFCD Storm

Drainage and Flood Control Master Plan. Additionally, the project would comply with local and regional water quality control measures and sustainable groundwater management plans, including the North Kings Groundwater Sustainability Plan. These measures ensure that stormwater is properly treated and that the project does not substantially impact groundwater recharge or violate water quality standards. As a result, the project's impact on cumulative hydrology and water quality would be less than significant.

Cumulative Land Use and Planning Impacts

The project would not result in a considerable contribution to significant cumulative land use and planning impacts.

The geographic scope of the cumulative impact analysis for land use and planning includes the City of Fresno and adjacent areas affected by similar growth and development trends. The project is consistent with the City's General Plan, which anticipates urban development in the area. The General Plan designates the site for Urban Neighborhood and Office uses, and the project's residential and commercial components align with these designations without necessitating changes in land use or zoning.

The project does not physically divide an established community. The development of multifamily residential and commercial uses on currently vacant land complements the surrounding urban fabric, which includes residential neighborhoods and community facilities. By incorporating access and connectivity measures, the project enhances the local circulation network and promotes integration with the existing urban environment. Furthermore, the project adheres to relevant policies and regulations intended to avoid or mitigate environmental effects, ensuring compatibility with regional land use plans. Therefore, cumulative impacts related to land use and planning are considered less than significant.

Cumulative Mineral Resources Impacts

Development of the project in combination with related projects would not result in the loss of availability of mineral resources. The project and the surrounding area are highly urbanized area. The project would not involve mineral extraction activities, nor are any such activities presently occurring on the project site. As such, project impacts would not occur to mineral resources. Therefore, the Project would not make a cumulatively considerable contribution to any potential cumulative impacts, and no cumulative impacts to mineral resources would occur.

Cumulative Noise and Vibration Impacts

The project would contribute to cumulative noise and vibration impacts through construction activities and increased traffic from operational uses. However, these contributions would not be cumulatively considerable.

The geographic scope for analyzing cumulative noise impacts is the surrounding area where the project and other developments could influence ambient noise levels. Construction activities would produce temporary noise from equipment like excavators and trucks, with noise levels reaching up to 90 dBA at 50 feet. This could temporarily affect nearby sensitive receptors, such as residences and River Bluff Elementary School. However, construction noise would occur during permissible hours as outlined in the Fresno Municipal Code (7:00 a.m. to 10:00 p.m. on all days except Sundays), and the project would implement measures like sound barriers to minimize impacts. Therefore, cumulative construction noise would not be considerable.

Operationally, the project's main noise sources would include increased traffic, HVAC units, and commercial activities. Traffic noise from new vehicle trips would not cause a doubling of existing traffic volumes and thus would not result in a perceptible increase in ambient noise levels. Commercial noise, including from drive-through facilities and parking lot activities, would be managed through compliance with City noise standards and design features. Vibration from construction activities would be limited and would not exceed thresholds known to cause structural damage. Therefore, with adherence to regulations and mitigation measures, the project would not have a significant cumulative impact on noise or vibration. Cumulative impacts would be less than significant.

Cumulative Population and Housing Impacts

The Bella Vita project proposes the development of a mixed-use community consisting of 396 multi-family residential units and 22,666 square feet of commercial space. This development aligns with the City of Fresno’s General Plan designations for Urban Neighborhood and Office zoning districts. The project would result in direct population growth as new residential units are introduced, but this growth has been planned for under the City’s General Plan and is consistent with existing zoning. Therefore, the project would not induce unplanned population growth and would not generate impacts beyond what has been anticipated in regional and local planning efforts. As a result, cumulative impacts on population growth are considered less than significant.

The site is currently vacant and does not contain any existing residences. The project would not result in the displacement of existing housing or residents, nor would it necessitate the construction of replacement housing elsewhere. Furthermore, as the project does not contribute to unplanned population increases or housing displacement, its cumulative impact on population and housing is considered less than significant.

Cumulative Public Services and Recreation Impacts

The project would increase demand for public services, including fire protection, police services, schools, parks, and other public facilities. However, the project’s contribution to cumulative demand would not be cumulatively considerable. Cumulative impacts would be less than significant.

The project site is within the service areas of the FFD and FPD. The closest fire station, Fire Station 14, is approximately 0.66 miles away, ensuring adequate emergency response. The project would be required to pay Fire Facilities Fees and Development Impact Fees to support fire service infrastructure, preventing the need for new or expanded fire facilities. The FPD would also provide adequate coverage without needing additional facilities, and the project would contribute Police Impact Fees to mitigate any incremental impact.

The project is within the Central Unified School District, and based on student generation rates, it is expected to add around 139 students. The district has adequate capacity to accommodate this increase, and school fees paid by the developer will mitigate any impact. Additionally, nearby parks, such as Collegian Park and Riverside Golf Course, will support recreational needs. The project includes on-site recreational amenities like a pool, playground, and sports courts, and park facilities fees will further address off-site recreational demands. Therefore, the project's incremental effect on public services and recreational facilities would be less than significant.

Cumulative Transportation and Circulation Impacts

The Bella Vita project, consisting of 396 residential units and 22,666 square feet of commercial space, would contribute to cumulative transportation impacts. The TIA for this project evaluated potential effects on local roadways and intersections under multiple scenarios, including existing, near-term, and long-term cumulative conditions through 2046. The project is expected to generate 6,777 daily trips, with 423 trips during the AM peak hour and 483 during the PM peak hour. All studied intersections would continue to operate at an acceptable LOS, even under cumulative conditions, and no intersections require traffic signalization based on the warrant analysis.

The project incorporates several design measures to support active transportation and improve safety, such as constructing Class I bikeways along Hayes Avenue and Veterans Boulevard and adding a high-visibility crosswalk at Hayes Avenue and Palo Alto Avenue. The Fresno Area Express (FAX) transit routes 3 and 20, operating near the project site, provide connections to commercial and institutional centers, supporting the project's integration with public transit. Additionally, the project aligns with the Fresno Active Transportation Plan by enhancing pedestrian and bicycle infrastructure, thereby promoting a more connected and efficient transportation network. Overall, the project's contributions, combined with recommended improvements, ensure no significant cumulative impact on transportation and circulation.

Cumulative Utilities Impacts

The project, along with other development in the City of Fresno, would increase demand for utilities, including water, wastewater, electricity, natural gas, and solid waste services. However, the project's contribution to this cumulative demand would not be cumulatively considerable.

The geographic scope for cumulative utilities impacts covers the service areas of the utilities serving the project site. The City of Fresno Department of Public Utilities would provide water and wastewater services, while PG&E would supply electricity and natural gas. Solid waste collection and disposal would be managed by the City's Solid Waste Division. The project site is located within a developed urban area with established infrastructure, and utility providers have indicated adequate capacity to accommodate the project.

The project would incorporate water conservation measures consistent with the City's Urban Water Management Plan, ensuring efficient water use. Wastewater generated would be treated at the Fresno/Clovis Regional Wastewater Reclamation Facility, which has capacity for the additional flows. Additionally, the project would comply with California Title 24 energy efficiency standards and implement solid waste reduction and recycling measures. As a result, the project's incremental increase in utility demand would not necessitate the construction of new or expanded facilities that could result in significant environmental effects. Therefore, cumulative utilities impacts would be less than significant.

Cumulative Wildfire Impacts

The Bella Vita project site and related projects are located in urbanized areas within the City of Fresno, away from designated Very High Fire Hazard Severity Zones or wildlands. As such, the project site does not include fire-prone terrain, vegetation, or other conditions that would exacerbate wildfire risks. Consequently, there is no potential for the project or related projects to expose occupants to pollutant concentrations from a wildfire or substantially increase wildfire hazards.

During construction, standard construction management practices, including maintaining access routes for emergency vehicles, would ensure adequate emergency access and circulation in the vicinity of the project site. Operations of the project would comply with local emergency access requirements, including adherence to the Fresno Fire Department's guidelines, ensuring the project would not impede emergency response plans in the event of a wildfire.

Given these factors, the project would not make a cumulatively considerable contribution to any potential wildfire impacts. Therefore, cumulative wildfire impacts associated with the project would be less than significant.

Therefore, the Project would not make a cumulatively considerable contribution to any potential cumulative impacts, and impacts would be less than significant.

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

The proposed project's potential to result in environmental effects that could directly or indirectly impacts human beings have been evaluated in this Initial Study. With implementation of the recommended mitigation measures, all environmental effects that could adversely affect human beings would be less than significant.

Development Permit Application No. P23-03993 & Planned Development Permit Application No. P23-03982 (Bella Vita Multifamily Development)
MITIGATION MONITORING AND REPORTING PROGRAM

As required by Public Resources Code Section 21081.6, subd. (a)(1), a Mitigation Monitoring and Reporting Program (MMRP) has been prepared for the Bella Vita Multifamily Development Project to monitor the implementation of the mitigation measures that have been adopted for the Project. This MMRP has been created based upon the findings of the Initial Study/Mitigated Negative Declaration.

The first column of the table identifies the mitigation measure. The second column names the party responsible for carrying out the required action. The third column identifies the timing of initiating the mitigation measure. The fourth column names the party ensuring that the mitigation measure is implemented. The last column will be used by the City of Fresno to ensure that the individual mitigation measures have been monitored.

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
Mitigation Measure AES-1: Lighting for Street and Parking Areas. Prior to the issuance of the certificate of occupancy, the project applicant shall demonstrate to the satisfaction of the City Inspector that the project's lighting systems for the project's street and parking areas 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.	Project Applicant	Pre-Construction	City of Fresno	
Mitigation Measure AES-2: Lighting for Public Facilities. Prior to the issuance of the certificate of occupancy, the project applicant shall demonstrate to the satisfaction of the City Inspector that the project's lighting systems for public facilities such as active play areas provide adequate illumination for the activity while also utilizing low intensity light fixtures and shields to minimize spillover light onto adjacent properties.	Project Applicant	Pre-Construction	City of Fresno	
Mitigation Measure AES-3: Lighting for Non-Residential Uses. Prior to the issuance of the certificate of occupancy, the project applicant shall demonstrate to the satisfaction of the City Inspector that the lighting systems for non-residential uses, not including public facilities, provides shields on the light fixtures and are oriented away from adjacent properties. Low intensity light fixtures may also be used if excessive spillover light onto adjacent properties would otherwise occur.	Project Applicant	Pre-Construction	City of Fresno	
Mitigation Measure AES-4: Signage Lighting. Prior to the issuance of the certificate of occupancy, the project applicant shall demonstrate to the satisfaction of the City Inspector that the lighting systems for freestanding signs do 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 do not exceed 500 FT-L when adjacent to streets which have an average light intensity of 2.0 horizontal footcandles or greater.	Project Applicant	Pre-Construction	City of Fresno	
Mitigation Measure AES-5: Use of Non-Reflective Materials. Prior to the issuance of the building permits, the project applicant shall demonstrate to the satisfaction of the City Plan Inspector that the materials used on building facades shall be non-reflective.	Project Applicant	Pre-Construction	City of Fresno	
Mitigation Measure BIO-1: Protect nesting Swainson's hawks. 1. To the extent practicable, construction shall be scheduled to avoid the Swainson's hawk nesting season, which extends from March through August. 2. If it is not possible to schedule construction between September and February, a qualified biologist shall conduct surveys for *Swainson's hawk in accordance with the Swainson's Hawk Technical Advisory Committee's Recommended Timing and Methodology for Swainson's Hawk Nesting*	Project Applicant	Pre-Construction	City of Fresno	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
Surveys in California's Central Valley. These methods require six surveys, three in each of the two survey periods, prior to initiation of the project. Surveys shall be conducted within a minimum 0.5-mile radius around the project site. 3. If an active Swainson's hawk nest is found within 0.5 miles of the project site, and the qualified biologist determines that the project would disrupt the nesting birds, a construction-free buffer or limited operating period shall be implemented in consultation with the CDFW.				
Mitigation Measure BIO-2. Protect nesting birds. 1. To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from February through August. 2. If it is not possible to schedule construction between September and January, pre-construction surveys for nesting birds shall be conducted by a qualified biologist to ensure that no active nests would be disturbed during the implementation of the project. A pre-construction survey shall be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the qualified biologist shall inspect all potential nest substrates in and immediately adjacent to the impact areas. If an active nest is found close enough to the construction area to be disturbed by these activities, the qualified biologist shall determine the extent of a construction-free buffer to be established around the nest. If work cannot proceed without disturbing the nesting birds, work may need to be halted or redirected to other areas until nesting and fledging are completed or the nest has otherwise failed for non-construction related reasons.	Project Applicant	Pre-Construction	City of Fresno	
Mitigation Measure CULTURAL-1: If previously unknown resources are encountered before or during grading activities for the project, 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 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 historical artifacts 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.	Project Applicant	Ongoing During Construction	City of Fresno	
Mitigation Measure CULTURAL-2: In the event that buried prehistoric archaeological resources are discovered during excavation and/or construction activities for the project, 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 Section 15064.5 of the CEQA Guidelines. 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 City. 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 City approves the measures to protect these resources. Any prehistoric archaeological artifacts recovered as a result of mitigation shall be provided to a City-approved	Project Applicant	Ongoing During Construction	City of Fresno	

Mitigation Measure	Responsible Party for Implementation	Implementation Timing	Responsible Party for Monitoring	Verification
institution or person who is capable of providing long-term preservation to allow future scientific study.				
Mitigation Measure CULTURAL-3: In the event that human remains are unearthed during excavation and grading activities for the 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 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.	Project Applicant	Ongoing During Construction	City of Fresno	
Mitigation Measure GEO-1: During the project's excavation or construction activities within previously undisturbed soils, the following procedures shall be followed to address the inadvertent discovery of unique paleontological or geological resources: • If unique paleontological/geological resources are discovered during excavation or construction, all work shall cease in the immediate vicinity of the find. A qualified paleontologist shall be consulted to evaluate the significance of the resource and recommend appropriate measures to protect it. Recommendations may include, but are not limited to, excavation, documentation, and preservation of the resource. • The qualified paleontologist shall provide recommendations to the City on measures to protect the discovered resources, including potential excavation and evaluation of the find. If the resources are deemed significant, appropriate mitigation measures shall be developed and implemented, which may include avoidance, capping, incorporation of the site into green space, parks, or open space, or data recovery excavations. • No further grading shall occur in the area of the discovery until the City has approved the measures to protect these resources. Any paleontological or geological resources recovered as a result of mitigation shall be curated at a City-approved institution or by a person capable of providing long-term preservation for future scientific study. • If additional paleontological or geological resources are encountered during subsequent excavation or construction activities, the same protocol for inadvertent discoveries shall be followed, ensuring that any significant finds are appropriately managed and preserved.	Project Applicant	Ongoing During Construction	City of Fresno	
Mitigation Measures NOI-1: The project developer shall install mechanical ventilation and air conditioning systems in all apartment units within the project. These systems must be capable of maintaining comfortable indoor temperatures with all windows and doors closed.	Project Applicant	Pre-Construction	City of Fresno	

APPENDIX A

CalEEMod Report

Bella Vita Mixed Use Development Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

3.3. Site Preparation (2025) - Unmitigated

3.5. Grading (2025) - Unmitigated

3.7. Building Construction (2025) - Unmitigated

3.9. Building Construction (2026) - Unmitigated

3.11. Building Construction (2027) - Unmitigated

3.13. Paving (2027) - Unmitigated

3.15. Architectural Coating (2027) - Unmitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.3. Area Emissions by Source

4.3.1. Unmitigated

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Bella Vita Mixed Use Development
Construction Start Date	1/1/2025
Operational Year	2027
Lead Agency	City of Fresno
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	22.6
Location	36.83572121312815, -119.89957836826942
County	Fresno
City	Fresno
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2423
EDFZ	5
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.22

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Apartments Mid Rise	516	Dwelling Unit	24.8	213,553	449,786	—	1,651	—
Strip Mall	17.6	1000sqft	1.87	17,600	13,747	—	—	—
Fast Food Restaurant with Drive Thru	5.00	1000sqft	1.43	5,000	13,747	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.80	41.6	29.7	33.1	0.06	1.23	9.20	10.4	1.14	3.65	4.79	—	7,349	7,349	0.27	0.38	17.0	7,484
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.94	41.5	31.6	30.2	0.06	1.37	19.7	21.0	1.26	10.1	11.4	—	6,966	6,966	0.27	0.38	0.44	7,085
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.30	4.17	13.4	19.8	0.03	0.51	3.75	4.25	0.47	1.37	1.84	—	4,986	4,986	0.15	0.27	4.73	5,075
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.42	0.76	2.44	3.62	0.01	0.09	0.68	0.78	0.09	0.25	0.34	—	825	825	0.02	0.04	0.78	840

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.80	3.20	29.7	33.1	0.06	1.23	9.20	10.4	1.14	3.65	4.79	—	7,349	7,349	0.27	0.38	17.0	7,484
2026	3.06	2.69	12.8	31.4	0.03	0.40	3.48	3.88	0.37	0.83	1.20	—	7,249	7,249	0.19	0.38	15.4	7,382
2027	0.44	41.6	1.01	4.41	< 0.005	0.02	0.61	0.63	0.02	0.14	0.16	—	781	781	0.02	0.03	2.09	791
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.94	3.31	31.6	30.2	0.06	1.37	19.7	21.0	1.26	10.1	11.4	—	6,966	6,966	0.27	0.38	0.44	7,085
2026	2.81	2.52	13.1	27.1	0.03	0.40	3.48	3.88	0.37	0.83	1.20	—	6,874	6,874	0.21	0.38	0.40	6,993
2027	2.67	41.5	12.5	26.0	0.03	0.36	3.48	3.84	0.33	0.83	1.16	—	6,781	6,781	0.21	0.37	0.36	6,896
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	2.30	1.98	13.4	19.8	0.03	0.51	3.75	4.25	0.47	1.37	1.84	—	4,555	4,555	0.15	0.18	3.30	4,616
2026	2.09	1.82	9.26	19.8	0.02	0.29	2.45	2.74	0.26	0.59	0.85	—	4,986	4,986	0.14	0.27	4.73	5,075
2027	0.24	4.17	1.32	2.51	< 0.005	0.05	0.21	0.26	0.04	0.05	0.09	—	525	525	0.02	0.02	0.35	531
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.42	0.36	2.44	3.62	0.01	0.09	0.68	0.78	0.09	0.25	0.34	—	754	754	0.02	0.03	0.55	764
2026	0.38	0.33	1.69	3.62	< 0.005	0.05	0.45	0.50	0.05	0.11	0.16	—	825	825	0.02	0.04	0.78	840
2027	0.04	0.76	0.24	0.46	< 0.005	0.01	0.04	0.05	0.01	0.01	0.02	—	86.8	86.8	< 0.005	< 0.005	0.06	88.0

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	55.5	45.6	30.6	327	0.86	17.6	36.1	53.7	17.0	9.16	26.1	3,096	55,809	58,905	44.9	2.27	147	60,852
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	50.0	40.2	33.2	273	0.83	17.6	36.1	53.7	16.9	9.16	26.1	3,096	52,059	55,155	45.1	2.42	13.0	57,018
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	27.5	28.4	21.8	159	0.40	4.34	25.2	29.6	4.18	6.40	10.6	922	37,032	37,954	34.4	1.78	51.6	39,397
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.01	5.18	3.98	29.0	0.07	0.79	4.60	5.39	0.76	1.17	1.93	153	6,131	6,284	5.70	0.30	8.54	6,523

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	25.8	24.1	20.6	177	0.43	0.32	36.1	36.5	0.30	9.16	9.47	—	44,169	44,169	1.72	2.11	138	44,978
Area	29.3	21.3	6.47	149	0.41	17.0	—	17.0	16.4	—	16.4	2,804	5,515	8,319	13.2	0.01	—	8,653
Energy	0.41	0.20	3.49	1.57	0.02	0.28	—	0.28	0.28	—	0.28	—	6,063	6,063	0.66	0.04	—	6,091
Water	—	—	—	—	—	—	—	—	—	—	—	45.3	62.7	108	4.65	0.11	—	257
Waste	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.6	0.00	—	863
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.46	9.46
Total	55.5	45.6	30.6	327	0.86	17.6	36.1	53.7	17.0	9.16	26.1	3,096	55,809	58,905	44.9	2.27	147	60,852
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	23.2	21.5	23.5	153	0.40	0.32	36.1	36.5	0.31	9.16	9.47	—	40,501	40,501	1.98	2.26	3.57	41,227

Area	26.4	18.5	6.18	118	0.41	17.0	—	17.0	16.4	—	16.4	2,804	5,432	8,237	13.2	0.01	—	8,570
Energy	0.41	0.20	3.49	1.57	0.02	0.28	—	0.28	0.28	—	0.28	—	6,063	6,063	0.66	0.04	—	6,091
Water	—	—	—	—	—	—	—	—	—	—	—	45.3	62.7	108	4.65	0.11	—	257
Waste	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.6	0.00	—	863
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.46	9.46
Total	50.0	40.2	33.2	273	0.83	17.6	36.1	53.7	16.9	9.16	26.1	3,096	52,059	55,155	45.1	2.42	13.0	57,018
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	19.7	18.4	16.8	116	0.29	0.23	25.2	25.5	0.22	6.40	6.62	—	29,645	29,645	1.47	1.63	42.2	30,209
Area	7.36	9.73	1.53	41.5	0.09	3.82	—	3.82	3.68	—	3.68	630	1,261	1,891	2.97	< 0.005	—	1,966
Energy	0.41	0.20	3.49	1.57	0.02	0.28	—	0.28	0.28	—	0.28	—	6,063	6,063	0.66	0.04	—	6,091
Water	—	—	—	—	—	—	—	—	—	—	—	45.3	62.7	108	4.65	0.11	—	257
Waste	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.6	0.00	—	863
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.46	9.46
Total	27.5	28.4	21.8	159	0.40	4.34	25.2	29.6	4.18	6.40	10.6	922	37,032	37,954	34.4	1.78	51.6	39,397
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	3.60	3.37	3.07	21.1	0.05	0.04	4.60	4.65	0.04	1.17	1.21	—	4,908	4,908	0.24	0.27	6.98	5,002
Area	1.34	1.78	0.28	7.57	0.02	0.70	—	0.70	0.67	—	0.67	104	209	313	0.49	< 0.005	—	326
Energy	0.07	0.04	0.64	0.29	< 0.005	0.05	—	0.05	0.05	—	0.05	—	1,004	1,004	0.11	0.01	—	1,009
Water	—	—	—	—	—	—	—	—	—	—	—	7.49	10.4	17.9	0.77	0.02	—	42.6
Waste	—	—	—	—	—	—	—	—	—	—	—	40.8	0.00	40.8	4.08	0.00	—	143
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.57	1.57
Total	5.01	5.18	3.98	29.0	0.07	0.79	4.60	5.39	0.76	1.17	1.93	153	6,131	6,284	5.70	0.30	8.54	6,523

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	0.20	1.82	1.64	< 0.005	0.08	—	0.08	0.07	—	0.07	—	282	282	0.01	< 0.005	—	282
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.33	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.6	46.6	< 0.005	< 0.005	—	46.8
Demolition	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.94	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314

Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	0.18	1.73	1.65	< 0.005	0.07	—	0.07	0.07	—	0.07	—	290	290	0.01	< 0.005	—	291
Dust From Material Movement	—	—	—	—	—	—	1.08	1.08	—	0.55	0.55	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.32	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	48.0	48.0	< 0.005	< 0.005	—	48.2
Dust From Material Movement	—	—	—	—	—	—	0.20	0.20	—	0.10	0.10	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622

Dust From Material Movement	—	—	—	—	—	—	9.20	9.20	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.39	3.66	3.49	0.01	0.15	—	0.15	0.14	—	0.14	—	814	814	0.03	0.01	—	816
Dust From Material Movement	—	—	—	—	—	—	1.13	1.13	—	0.45	0.45	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.67	0.64	< 0.005	0.03	—	0.03	0.03	—	0.03	—	135	135	0.01	< 0.005	—	135
Dust From Material Movement	—	—	—	—	—	—	0.21	0.21	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406

Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.60	0.51	4.68	5.84	0.01	0.19	—	0.19	0.18	—	0.18	—	1,074	1,074	0.04	0.01	—	1,078
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.85	1.07	< 0.005	0.04	—	0.04	0.03	—	0.03	—	178	178	0.01	< 0.005	—	179
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.82	1.69	1.14	19.4	0.00	0.00	3.06	3.06	0.00	0.72	0.72	—	3,375	3,375	0.07	0.13	12.8	3,427
Vendor	0.09	0.05	1.96	0.69	0.01	0.02	0.42	0.44	0.02	0.12	0.14	—	1,577	1,577	0.03	0.23	4.29	1,651
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.63	1.49	1.38	14.6	0.00	0.00	3.06	3.06	0.00	0.72	0.72	—	2,990	2,990	0.09	0.13	0.33	3,031
Vendor	0.08	0.05	2.10	0.72	0.01	0.02	0.42	0.44	0.02	0.12	0.14	—	1,578	1,578	0.03	0.23	0.11	1,648
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.74	0.68	0.56	6.88	0.00	0.00	1.35	1.35	0.00	0.32	0.32	—	1,389	1,389	0.04	0.06	2.47	1,409
Vendor	0.04	0.02	0.92	0.32	< 0.005	0.01	0.19	0.20	0.01	0.05	0.06	—	707	707	0.01	0.10	0.83	739
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.13	0.12	0.10	1.26	0.00	0.00	0.25	0.25	0.00	0.06	0.06	—	230	230	0.01	0.01	0.41	233
Vendor	0.01	< 0.005	0.17	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	117	117	< 0.005	0.02	0.14	122
Hauling	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	0.00

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.77	7.04	9.26	0.02	0.27	—	0.27	0.25	—	0.25	—	1,712	1,712	0.07	0.01	—	1,718
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.28	1.69	< 0.005	0.05	—	0.05	0.05	—	0.05	—	283	283	0.01	< 0.005	—	284

Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.70	1.57	1.03	17.8	0.00	0.00	3.06	3.06	0.00	0.72	0.72	—	3,304	3,304	0.07	0.13	11.6	3,356
Vendor	0.09	0.05	1.88	0.67	0.01	0.02	0.42	0.44	0.02	0.12	0.14	—	1,547	1,547	0.03	0.23	3.78	1,621
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.44	1.40	1.27	13.4	0.00	0.00	3.06	3.06	0.00	0.72	0.72	—	2,929	2,929	0.08	0.13	0.30	2,970
Vendor	0.08	0.05	2.02	0.69	0.01	0.02	0.42	0.44	0.02	0.12	0.14	—	1,548	1,548	0.03	0.23	0.10	1,618
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.11	1.02	0.82	10.1	0.00	0.00	2.15	2.15	0.00	0.50	0.50	—	2,168	2,168	0.05	0.09	3.57	2,200
Vendor	0.06	0.04	1.40	0.48	0.01	0.02	0.30	0.31	0.02	0.08	0.10	—	1,105	1,105	0.02	0.17	1.16	1,156
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.19	0.15	1.84	0.00	0.00	0.39	0.39	0.00	0.09	0.09	—	359	359	0.01	0.02	0.59	364
Vendor	0.01	0.01	0.26	0.09	< 0.005	< 0.005	0.05	0.06	< 0.005	0.02	0.02	—	183	183	< 0.005	0.03	0.19	191
Hauling	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	0.00

3.11. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.23	1.03	9.39	12.9	0.02	0.34	—	0.34	0.31	—	0.31	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.42	0.58	< 0.005	0.02	—	0.02	0.01	—	0.01	—	108	108	< 0.005	< 0.005	—	108
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	17.9	17.9	< 0.005	< 0.005	—	17.9
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.36	1.23	1.15	12.4	0.00	0.00	3.06	3.06	0.00	0.72	0.72	—	2,869	2,869	0.08	0.13	0.27	2,909
Vendor	0.08	0.05	1.93	0.66	0.01	0.02	0.42	0.44	0.02	0.12	0.14	—	1,515	1,515	0.03	0.22	0.09	1,582
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.06	0.06	0.05	0.59	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	134	134	< 0.005	0.01	0.20	136
Vendor	< 0.005	< 0.005	0.09	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	68.2	68.2	< 0.005	0.01	0.06	71.2
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.11	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	22.2	22.2	< 0.005	< 0.005	0.03	22.5
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.3	11.3	< 0.005	< 0.005	0.01	11.8
Hauling	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	0.00

3.13. Paving (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.88	0.74	6.94	9.95	0.01	0.30	—	0.30	0.27	—	0.27	—	1,511	1,511	0.06	0.01	—	1,516
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.07	0.67	0.95	< 0.005	0.03	—	0.03	0.03	—	0.03	—	145	145	0.01	< 0.005	—	145
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.12	0.17	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	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	0.00
Vendor	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	0.00
Hauling	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	0.00

3.15. Architectural Coating (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	41.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.11	0.83	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	—	41.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.8	12.8	< 0.005	< 0.005	—	12.8
Architectural Coatings	—	3.95	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.12	2.12	< 0.005	< 0.005	—	2.13
Architectural Coatings	—	0.72	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.30	0.30	0.18	3.29	0.00	0.00	0.61	0.61	0.00	0.14	0.14	—	647	647	0.01	0.02	2.09	657
Vendor	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	0.00
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.27	0.25	0.23	2.49	0.00	0.00	0.61	0.61	0.00	0.14	0.14	—	574	574	0.02	0.03	0.05	582
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.25	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	57.0	57.0	< 0.005	< 0.005	0.09	57.9
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.44	9.44	< 0.005	< 0.005	0.01	9.58
Vendor	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	0.00
Hauling	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	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	10.8	10.2	8.68	74.6	0.18	0.14	15.2	15.4	0.13	3.86	3.99	—	18,602	18,602	0.72	0.89	58.0	18,943
Strip Mall	3.01	2.82	2.41	20.7	0.05	0.04	4.23	4.26	0.04	1.07	1.11	—	5,166	5,166	0.20	0.25	16.1	5,260
Fast Food Restaurant with Drive Thru	11.9	11.2	9.52	81.8	0.20	0.15	16.7	16.8	0.14	4.23	4.37	—	20,401	20,401	0.79	0.97	63.7	20,775
Total	25.8	24.1	20.6	177	0.43	0.32	36.1	36.5	0.30	9.16	9.47	—	44,169	44,169	1.72	2.11	138	44,978
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	9.76	9.03	9.90	64.3	0.17	0.14	15.2	15.4	0.13	3.86	3.99	—	17,058	17,058	0.83	0.95	1.51	17,364
Strip Mall	2.71	2.51	2.75	17.9	0.05	0.04	4.23	4.26	0.04	1.07	1.11	—	4,737	4,737	0.23	0.26	0.42	4,822
Fast Food Restaurant with Drive Thru	10.7	9.91	10.9	70.6	0.18	0.15	16.7	16.8	0.14	4.23	4.37	—	18,707	18,707	0.92	1.04	1.65	19,042
Total	23.2	21.5	23.5	153	0.40	0.32	36.1	36.5	0.31	9.16	9.47	—	40,501	40,501	1.98	2.26	3.57	41,227
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	1.71	1.59	1.62	11.2	0.03	0.02	2.60	2.63	0.02	0.66	0.68	—	2,753	2,753	0.12	0.14	3.94	2,803
Strip Mall	0.46	0.43	0.43	2.99	0.01	0.01	0.70	0.70	0.01	0.18	0.18	—	736	736	0.03	0.04	1.06	750

Fast Food Restaurant with Drive Thru	1.42	1.35	1.01	6.98	0.02	0.01	1.31	1.32	0.01	0.33	0.34	—	1,418	1,418	0.09	0.09	1.98	1,448
Total	3.60	3.37	3.07	21.1	0.05	0.04	4.60	4.65	0.04	1.17	1.21	—	4,908	4,908	0.24	0.27	6.98	5,002

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,418	1,418	0.23	0.03	—	1,432
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	104	104	0.02	< 0.005	—	105
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	125	125	0.02	< 0.005	—	126
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,647	1,647	0.27	0.03	—	1,663
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,418	1,418	0.23	0.03	—	1,432
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	104	104	0.02	< 0.005	—	105

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	125	125	0.02	< 0.005	—	126
Total	—	—	—	—	—	—	—	—	—	—	—	—	1,647	1,647	0.27	0.03	—	1,663
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	235	235	0.04	< 0.005	—	237
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	17.2	17.2	< 0.005	< 0.005	—	17.4
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	20.7	20.7	< 0.005	< 0.005	—	20.9
Total	—	—	—	—	—	—	—	—	—	—	—	—	273	273	0.04	0.01	—	275

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.38	0.19	3.28	1.39	0.02	0.26	—	0.26	0.26	—	0.26	—	4,160	4,160	0.37	0.01	—	4,172
Strip Mall	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	55.2	55.2	< 0.005	< 0.005	—	55.4
Fast Food Restaurant with Drive Thru	0.02	0.01	0.17	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	200	200	0.02	< 0.005	—	201

Total	0.41	0.20	3.49	1.57	0.02	0.28	—	0.28	0.28	—	0.28	—	4,416	4,416	0.39	0.01	—	4,428
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.38	0.19	3.28	1.39	0.02	0.26	—	0.26	0.26	—	0.26	—	4,160	4,160	0.37	0.01	—	4,172
Strip Mall	0.01	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	55.2	55.2	< 0.005	< 0.005	—	55.4
Fast Food Restaurant with Drive Thru	0.02	0.01	0.17	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	200	200	0.02	< 0.005	—	201
Total	0.41	0.20	3.49	1.57	0.02	0.28	—	0.28	0.28	—	0.28	—	4,416	4,416	0.39	0.01	—	4,428
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.07	0.03	0.60	0.25	< 0.005	0.05	—	0.05	0.05	—	0.05	—	689	689	0.06	< 0.005	—	691
Strip Mall	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.14	9.14	< 0.005	< 0.005	—	9.17
Fast Food Restaurant with Drive Thru	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	33.2	33.2	< 0.005	< 0.005	—	33.3
Total	0.07	0.04	0.64	0.29	< 0.005	0.05	—	0.05	0.05	—	0.05	—	731	731	0.06	< 0.005	—	733

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	26.4	13.1	6.18	118	0.41	17.0	—	17.0	16.4	—	16.4	2,804	5,432	8,237	13.2	0.01	—	8,570
Consumer Products	—	5.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.39	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	2.89	2.73	0.29	30.3	< 0.005	0.02	—	0.02	0.01	—	0.01	—	82.3	82.3	< 0.005	< 0.005	—	82.6
Total	29.3	21.3	6.47	149	0.41	17.0	—	17.0	16.4	—	16.4	2,804	5,515	8,319	13.2	0.01	—	8,653
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	26.4	13.1	6.18	118	0.41	17.0	—	17.0	16.4	—	16.4	2,804	5,432	8,237	13.2	0.01	—	8,570
Consumer Products	—	5.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.39	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	26.4	18.5	6.18	118	0.41	17.0	—	17.0	16.4	—	16.4	2,804	5,432	8,237	13.2	0.01	—	8,570
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	1.08	0.54	0.25	4.85	0.02	0.70	—	0.70	0.67	—	0.67	104	202	306	0.49	< 0.005	—	319
Consumer Products	—	0.92	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscape	0.26	0.25	0.03	2.72	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.72	6.72	< 0.005	< 0.005	—	6.74
Total	1.34	1.78	0.28	7.57	0.02	0.70	—	0.70	0.67	—	0.67	104	209	313	0.49	< 0.005	—	326

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	39.8	56.0	95.8	4.09	0.10	—	227
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	2.50	3.13	5.62	0.26	0.01	—	13.9
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	2.91	3.60	6.50	0.30	0.01	—	16.1
Total	—	—	—	—	—	—	—	—	—	—	—	45.3	62.7	108	4.65	0.11	—	257
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	39.8	56.0	95.8	4.09	0.10	—	227
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	2.50	3.13	5.62	0.26	0.01	—	13.9

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	2.91	3.60	6.50	0.30	0.01	—	16.1
Total	—	—	—	—	—	—	—	—	—	—	—	45.3	62.7	108	4.65	0.11	—	257
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	6.60	9.27	15.9	0.68	0.02	—	37.7
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	0.41	0.52	0.93	0.04	< 0.005	—	2.30
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	0.48	0.60	1.08	0.05	< 0.005	—	2.67
Total	—	—	—	—	—	—	—	—	—	—	—	7.49	10.4	17.9	0.77	0.02	—	42.6

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	206	0.00	206	20.6	0.00	—	719
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	9.96	0.00	9.96	1.00	0.00	—	34.8

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	31.0	0.00	31.0	3.10	0.00	—	109
Total	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.6	0.00	—	863
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	206	0.00	206	20.6	0.00	—	719
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	9.96	0.00	9.96	1.00	0.00	—	34.8
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	31.0	0.00	31.0	3.10	0.00	—	109
Total	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.6	0.00	—	863
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	34.0	0.00	34.0	3.40	0.00	—	119
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	1.65	0.00	1.65	0.16	0.00	—	5.77
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	5.14	0.00	5.14	0.51	0.00	—	18.0
Total	—	—	—	—	—	—	—	—	—	—	—	40.8	0.00	40.8	4.08	0.00	—	143

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.53	1.53
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.11	0.11
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.82	7.82
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.46	9.46
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.53	1.53
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.11	0.11
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.82	7.82
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.46	9.46
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.25
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.29	1.29
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.57	1.57

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	1/1/2025	2/12/2025	5.00	30.0	—
Site Preparation	Site Preparation	2/13/2025	3/13/2025	5.00	20.0	—
Grading	Grading	3/14/2025	5/16/2025	5.00	45.0	—
Building Construction	Building Construction	5/17/2025	1/23/2027	5.00	440	—
Paving	Paving	1/24/2027	3/14/2027	5.00	35.0	—
Architectural Coating	Architectural Coating	3/15/2027	5/3/2027	5.00	35.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40

Site Preparation	Tractors/Loaders/Backh	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	0.00	11.4	LDA,LDT1,LDT2
Demolition	Vendor	—	8.53	HHDT,MHDT
Demolition	Hauling	0.00	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—

Site Preparation	Worker	0.00	11.4	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.53	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	0.00	11.4	LDA,LDT1,LDT2
Grading	Vendor	—	8.53	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	379	11.4	LDA,LDT1,LDT2
Building Construction	Vendor	58.9	8.53	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	0.00	11.4	LDA,LDT1,LDT2
Paving	Vendor	—	8.53	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	75.9	11.4	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.53	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	432,445	144,148	33,900	11,300	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	—	—
Site Preparation	—	—	30.0	0.00	—
Grading	—	—	135	0.00	—
Paving	0.00	0.00	0.00	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Mid Rise	—	0%
Strip Mall	0.00	0%
Fast Food Restaurant with Drive Thru	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	204	0.03	< 0.005
2026	0.00	204	0.03	< 0.005
2027	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	2,807	2,534	2,110	973,987	21,523	19,426	16,182	7,468,142
Strip Mall	780	740	360	260,695	5,977	5,669	2,755	1,997,422
Fast Food Restaurant with Drive Thru	2,355	3,081	2,363	897,757	6,028	23,603	18,104	3,746,322

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	0
Gas Fireplaces	258
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	258
Conventional Wood Stoves	0

Catalytic Wood Stoves	26
Non-Catalytic Wood Stoves	26
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
432444.82499999995	144,148	33,900	11,300	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Mid Rise	2,538,099	204	0.0330	0.0040	12,980,868
Strip Mall	185,857	204	0.0330	0.0040	172,345
Fast Food Restaurant with Drive Thru	223,416	204	0.0330	0.0040	625,169

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Mid Rise	20,792,736	7,546,376
Strip Mall	1,303,676	188,708
Fast Food Restaurant with Drive Thru	1,517,669	188,708

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	382	—
Strip Mall	18.5	—
Fast Food Restaurant with Drive Thru	57.6	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

Fast Food Restaurant with Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Fast Food Restaurant with Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant with Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	31.7	annual days of extreme heat
Extreme Precipitation	1.05	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	1	1	4
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A

Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	78.0
AQ-PM	93.7
AQ-DPM	84.4
Drinking Water	84.4
Lead Risk Housing	1.92
Pesticides	0.00
Toxic Releases	69.9
Traffic	27.4
Effect Indicators	—
CleanUp Sites	0.00
Groundwater	0.00
Haz Waste Facilities/Generators	1.80
Impaired Water Bodies	23.9
Solid Waste	22.1

Sensitive Population	—
Asthma	92.3
Cardio-vascular	65.9
Low Birth Weights	79.2
Socioeconomic Factor Indicators	—
Education	50.5
Housing	23.4
Linguistic	—
Poverty	52.1
Unemployment	75.4

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	67.04735019
Employed	68.92082638
Median HI	63.96766329
Education	—
Bachelor's or higher	46.04131913
High school enrollment	100
Preschool enrollment	89.51623252
Transportation	—
Auto Access	53.75336841
Active commuting	3.182343128
Social	—
2-parent households	46.07981522

Voting	49.108174
Neighborhood	—
Alcohol availability	92.33927884
Park access	30.47606827
Retail density	21.09585525
Supermarket access	8.905427948
Tree canopy	4.157577313
Housing	—
Homeownership	76.49172334
Housing habitability	87.38611574
Low-inc homeowner severe housing cost burden	80.68779674
Low-inc renter severe housing cost burden	69.07481073
Uncrowded housing	70.98678301
Health Outcomes	—
Insured adults	71.51289619
Arthritis	79.8
Asthma ER Admissions	9.6
High Blood Pressure	81.9
Cancer (excluding skin)	63.4
Asthma	49.0
Coronary Heart Disease	85.5
Chronic Obstructive Pulmonary Disease	74.0
Diagnosed Diabetes	79.4
Life Expectancy at Birth	37.8
Cognitively Disabled	10.2
Physically Disabled	62.2
Heart Attack ER Admissions	14.7

Mental Health Not Good	50.5
Chronic Kidney Disease	85.5
Obesity	54.0
Pedestrian Injuries	19.6
Physical Health Not Good	68.2
Stroke	84.7
Health Risk Behaviors	—
Binge Drinking	11.3
Current Smoker	56.0
No Leisure Time for Physical Activity	55.3
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	23.1
Elderly	77.9
English Speaking	59.1
Foreign-born	25.2
Outdoor Workers	72.5
Climate Change Adaptive Capacity	—
Impervious Surface Cover	67.8
Traffic Density	40.5
Traffic Access	0.0
Other Indices	—
Hardship	33.1
Other Decision Support	—
2016 Voting	31.1

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	64.0
Healthy Places Index Score for Project Location (b)	62.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Lot Acreage and Square footage already determined

APPENDIX B

Biological Resources Evaluation

Colibri
Ecological Consulting

Biological Resource Evaluation

March 2024

Bella Vita Mixed-Use Development Project
Fresno County, CA

Prepared for:
4Creeks, Inc.
324 S Santa Fe Street, Suite A
Visalia, CA 93292

Prepared by:
Colibri Ecological Consulting, LLC
9493 N Fort Washington Road, Suite 108
Fresno, CA 93730
colibri-ecology.com

Executive Summary

The project applicant proposes to construct a mixed-use commercial and residential development in northwest Fresno, Fresno County, California. The proposed mixed-use development project (Project) will involve construction on approximately 24 acres that currently supports disturbed grassland dominated by ruderal vegetation.

To evaluate whether the Project may affect biological resources under California Environmental Quality Act (CEQA) purview, we (1) obtained lists of special-status species from the United States Fish and Wildlife Service, the California Department of Fish and Wildlife, and the California Native Plant Society; (2) reviewed other relevant background information such as satellite imagery and topographic maps; and (3) conducted a field reconnaissance survey at the Project site.

This biological resource evaluation summarizes (1) existing biological conditions on the Project site, (2) the potential for special-status species and regulated habitats to occur on or near the Project site, (3) the potential impacts of the proposed Project on biological resources and regulated habitats, and (4) measures to reduce those potential impacts to less-than-significant levels under CEQA.

We concluded the Project could affect the state listed as threatened Swainson's hawk (*Buteo swainsoni*) and nesting migratory birds. However, effects can be reduced to less-than-significant levels with mitigation.

Contents

Abbreviations 5
1.0 Introduction 6
1.1 Background 6
1.2 Project Description 6
1.3 Project Location 6
1.4 Regulatory Framework 9
1.4.1 State Requirements 9
1.4.2 Federal Requirements 11
2.0 Methods 13
2.1 Desktop Review 13
2.2 Reconnaissance Survey 13
2.3 Significance Criteria 14
3.0 Results 17
3.1 Desktop Review 17
3.2 Reconnaissance Survey 28
3.2.1 Land Use and Habitats 28
3.2.2 Plant and Animal Species Observed 31
3.2.3 Nesting Birds 33
3.2.4 Regulated Habitats 34
3.3 Special-Status Species 34
3.3.1 San Joaquin Kit Fox 34
4.0 Environmental Impacts 35
4.1 Significance Determinations 35
4.1.1 Direct and Indirect Effects 36
5.0 Literature Cited 38

Figures

Figure 1. Project site vicinity map. 7

Figure 2. Project site map. 8

Figure 3. Reconnaissance survey area map. 16

Figure 4. CNDDB occurrence map. 27

Figure 5. Photograph from the southeast corner of the Project site, looking northwest, showing vegetated spoil piles and ruderal vegetation. 28

Figure 6. Photograph from the southeast side of the Project site, looking west, showing spoil piles with debris and trash. 29

Figure 7. Photograph of a defunct, concrete-lined ditch on the northeast side of the Project site, looking southwest. 29

Figure 8. Photograph showing disturbed grassland, a nonnative oak tree, and a defunct ditch on the west side of the Project site, looking east. 30

Tables

Table 1. Special-status species, their listing status, habitats, and potential to occur on or near the Project site. 18

Table 2. Plant and animal species observed during the reconnaissance survey. 31

Appendices

Appendix A. USFWS list of threatened and endangered species. 40

Appendix B. CNDDB occurrence records. 58

Appendix C. CNPS plant list. 64

Appendix D. Recommended timing and methodology for Swainson's hawk nesting surveys in California's Central Valley. 68

Abbreviations

Abbreviation	Definition
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
FE	Federally listed as Endangered
FC	Federal Candidate for listing under the FESA
FESA	Federal Endangered Species Act
FP	State Fully Protected
FT	Federally listed as Threatened
MBTA	Migratory Bird Treaty Act
NRCS	Natural Resources Conservation Service
SC	State Candidate for listing under the CESA
SE	State listed as Endangered
SSSC	State Species of Special Concern
ST	State listed as Threatened
SWRCB	State Water Resources Control Board
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 Introduction

1.1 Background

The applicant proposes to construct a mixed-use development (the Project) on approximately 24 acres in northwest Fresno, Fresno County, California. The Project site currently supports disturbed grassland dominated by ruderal vegetation.

The purpose of this biological resource evaluation is to assess whether the Project will affect protected biological resources pursuant to California Environmental Quality Act (CEQA) guidelines. Such resources include species of plants or animals listed or proposed for listing under the Federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA) as well as those covered under the Migratory Bird Treaty Act (MBTA), the California Native Plant Protection Act, and various other sections of California Fish and Game Code (CFGC). This biological resource evaluation also addresses Project-related impacts to regulated habitats, which are those under the jurisdiction of the United States Army Corps of Engineers (USACE), State Water Resources Control Board (SWRCB), or California Department of Fish and Wildlife (CDFW).

1.2 Project Description

This Project will involve constructing three commercial and retail buildings with associated parking and drive-thru facilities and a 516-unit multi-story residential development.

1.3 Project Location

The approximately 24-acre Project site is at the southeast corner of Herndon Avenue and Hayes Avenue in northwest Fresno, Fresno County, California (Figures 1 and 2).

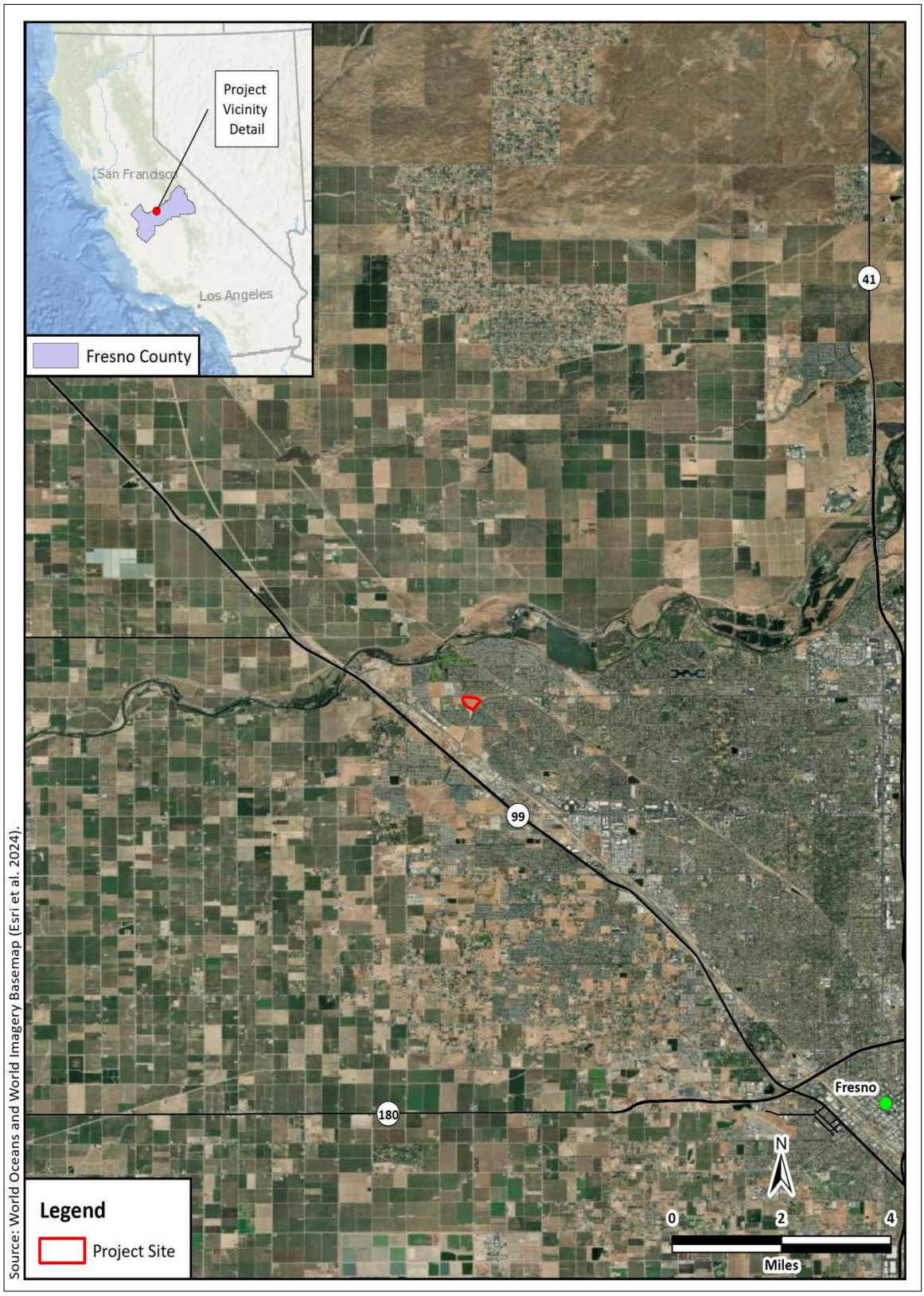


Figure 1. Project site vicinity map.

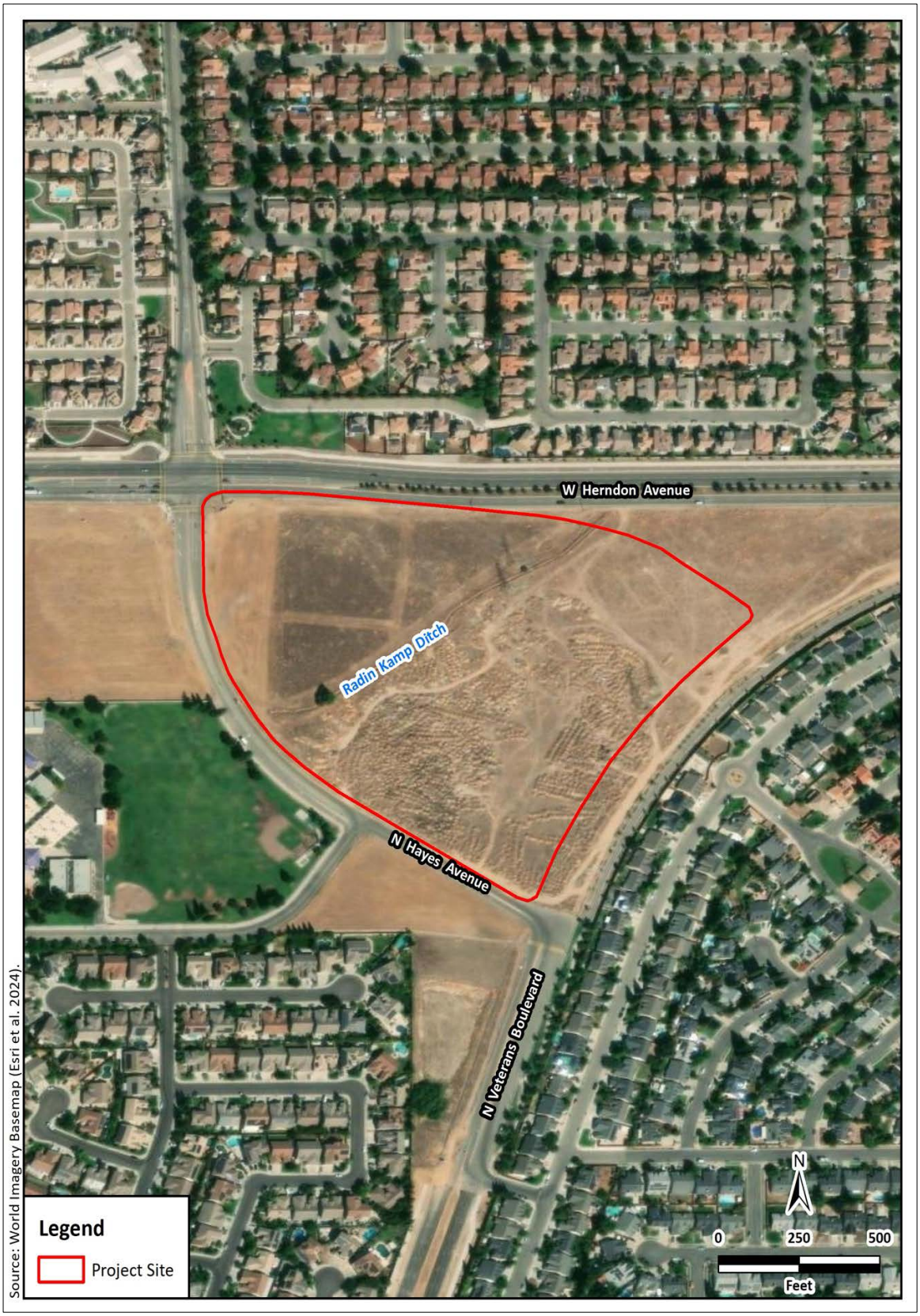


Figure 2. Project site map.

1.4 Regulatory Framework

The relevant regulatory requirements and policies that guide the impact analysis of the Project are summarized below.

1.4.1 State Requirements

California Department of Fish and Wildlife Jurisdiction. The CDFW has regulatory jurisdiction over lakes and streams in California. Activities that divert or obstruct the natural flow of a stream; substantially change its bed, channel, or bank; or use any materials (including vegetation) from the streambed may require that the project applicant enter into a Lake and Streambed Alteration Agreement with the CDFW in accordance with California Fish and Game Code [CFGC] Section 1602.

California Endangered Species Act. The CESA of 1970 (CFGC Section 2050 et seq. and California Code of Regulations (CCR) Title 14, Subsections 670.2 and 670.51) prohibits the take of species listed under CESA (14 CCR Subsections 670.2 and 670.5). Take is defined as hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture, or kill. Under CESA, state agencies are required to consult with the CDFW when preparing CEQA documents. Consultation ensures that proposed projects or actions do not adversely affect state listed species. During consultation, CDFW determines whether take would occur and identifies "reasonable and prudent alternatives" for the project and conservation of special-status species. CDFW can authorize take of state listed species under Sections 2080.1 and 2081(b) of the CFGC in those cases where it is demonstrated the impacts are minimized and mitigated. Take authorized under section 2081(b) must be minimized and fully mitigated. A CESA permit must be obtained if a project will result in take of listed species, either during construction or over the life of the project. Under CESA, CDFW is responsible for maintaining a list of threatened and endangered species designated under state law (CFGC Section 2070). CDFW also maintains lists of species of special concern, which serve as "watch lists." Pursuant to the requirements of CESA, a state or local agency reviewing a proposed project within its jurisdiction must determine whether the proposed project will have a potentially significant impact upon such species. Project-related impacts to species on the CESA list would be considered significant and would require mitigation. Impacts to species of concern or fully protected species would be considered significant under certain circumstances.

California Environmental Quality Act. The California Environmental Quality Act (CEQA) of 1970 (Subsections 21000–21178) requires that CDFW be consulted

during the CEQA review process regarding impacts of proposed projects on special-status species. Special-status species are defined under CEQA Guidelines subsection 15380(b) and (d) as those listed under FESA and CESA and species that are not currently protected by statute or regulation but would be considered rare, threatened, or endangered under these criteria or by the scientific community. Therefore, species considered rare or endangered are addressed in this biological resource evaluation regardless of whether they are afforded protection through any other statute or regulation. The California Native Plant Society (CNPS) inventories the native flora of California and ranks species according to rarity (CNPS 2024). Plants with Rare Plant Ranks 1A, 1B, 2A, or 2B are considered special-status species under CEQA.

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380(d) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if it can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the FESA and the section of the CFGC dealing with rare and endangered plants and animals. Section 15380(d) allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the United States Fish and Wildlife Service (USFWS) or CDFW (i.e., candidate species) would occur. Thus, CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agency has an opportunity to designate the species as protected, if warranted.

California Native Plant Protection Act. The California Native Plant Protection Act of 1977 (CFGC Sections 1900–1913) requires all state agencies to use their authority to carry out programs to conserve endangered and otherwise rare species of native plants. Provisions of the act prohibit the taking of listed plants from the wild and require the project proponent to notify CDFW at least 10 days in advance of any change in land use, which allows CDFW to salvage listed plants that would otherwise be destroyed.

Nesting birds. CFGC Sections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds, their nests, and eggs. CFGC Section 3511 lists birds that are “Fully Protected” as those that may not be taken or possessed except under specific permit.

Porter-Cologne Water Quality Control Act. The Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et. sec.) was established in 1969 and entrusts the SWRCB and nine Regional Water Quality Control Boards (collectively Water Boards) with the responsibility to preserve and enhance all

beneficial uses of California's diverse waters. The Act grants the Water Boards authority to establish water quality objectives and regulate point- and nonpoint-source pollution discharge to the state's surface and ground waters. Under the auspices of the United States Environmental Protection Agency, the Water Boards are responsible for certifying, under Section 401 of the federal Clean Water Act, that activities affecting waters of the United States comply with California water quality standards. The Porter-Cologne Water Quality Control Act addresses all "waters of the State," which are more broadly defined than waters of the Unites States. Waters of the State include any surface water or groundwater, including saline waters, within the boundaries of the state. They include artificial as well as natural water bodies and federally jurisdictional and federally non-jurisdictional waters. The Water Boards may issue a Waste Discharge Requirement permit for projects that will affect only federally non-jurisdictional waters of the State.

1.4.2 Federal Requirements

Federal Endangered Species Act. The USFWS and the National Oceanographic and Atmospheric Administration's National Marine Fisheries Service enforce the provisions stipulated in the FESA of 1973 (FESA, 16 United States Code [USC] Section 1531 et seq.). Threatened and endangered species on the federal list (50 Code of Federal Regulations [CFR] 17.11 and 17.12) are protected from take unless a Section 10 permit is granted to an entity other than a federal agency or a Biological Opinion with incidental take provisions is rendered to a federal lead agency via a Section 7 consultation. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. Pursuant to the requirements of the FESA, an agency reviewing a proposed action within its jurisdiction must determine whether any federally listed species may be present in the proposed action area and determine whether the proposed action may affect such species. Under the FESA, habitat loss is considered an effect to a species. In addition, the agency is required to determine whether the proposed action is likely to jeopardize the continued existence of any species that is listed or proposed for listing under the FESA (16 USC Section 1536[3], [4]). Therefore, proposed action-related effects to these species or their habitats would be considered significant and would require mitigation.

Migratory Bird Treaty Act. The federal MBTA (16 USC Section 703, Supp. I, 1989) prohibits killing, possessing, trading, or other forms of take of migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. "Take" is defined as the pursuing, hunting, shooting, capturing, collecting, or killing of birds, their nests, eggs, or young (16 USC Section 703 and Section 715n).

This act encompasses whole birds, parts of birds, and bird nests and eggs. The MBTA specifically protects migratory bird nests from possession, sale, purchase, barter transport, import, and export, and take. For nests, the definition of take per 50 CFR 10.12 is to collect. The MBTA does not include a definition of an "active nest." However, the "Migratory Bird Permit Memorandum" issued by the USFWS in 2003 and updated in 2018 clarifies the MBTA in that regard and states that the removal of nests, without eggs or birds, is legal under the MBTA, provided no possession (which is interpreted as holding the nest with the intent of retaining it) occurs during the destruction (USFWS 2018).

United States Army Corps of Engineers Jurisdiction. Areas meeting the regulatory definition of "waters of the United States" (jurisdictional waters) are subject to the jurisdiction of the USACE under provisions of Section 404 of the Clean Water Act (1972) and Section 10 of the Rivers and Harbors Act (1899). These waters may include all waters used, or potentially used, for interstate commerce, including all waters subject to the ebb and flow of the tide, the territorial seas, all interstate waters, all impoundments of waters otherwise defined as waters of the United States, tributaries of waters otherwise defined as waters of the United States that are relatively permanent, standing, or continuously flowing bodies of water, and relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to waters of the United States (33 CFR part 328.3). Waters of the United States do not include prior converted cropland, waste treatment systems, ditches, artificially irrigated areas, artificial lakes or ponds, artificial reflecting pools or swimming pools, waterfilled depressions, and swales and erosional features. Under the 2006 Supreme Court ruling *Rapanos v. United States*, waters of the United States include non-navigable tributaries of traditional navigable waters that are relatively permanent. The 2023 Supreme Court ruling *Sackett v. Environmental Protection Agency* removed the significant nexus standard for tributaries and adjacent waters of the United States and requires tributaries and adjacent waters to have a continuous surface connection to a water of the United States. Wetlands on non-agricultural lands are identified using the *Corps of Engineers Wetlands Delineation Manual and related Regional Supplement* (USACE 1987 and 2008). Construction activities, including direct removal, filling, hydrologic disruption, or other means in jurisdictional waters are regulated by the USACE. The placement of dredged or fill material into such waters must comply with permit requirements of the USACE. No USACE permit will be effective in the absence of state water quality certification pursuant to Section 401 of the Clean Water Act. The State Water Resources Control Board is the state agency, together with the Regional Water Quality Control Boards, charged with implementing water quality certification in California.

2.0 Methods

2.1 Desktop Review

As a framework for the evaluation and reconnaissance survey, we obtained a USFWS species list for the Project (USFWS 2024a, Appendix A). In addition, we searched the California Natural Diversity Database (CNDDB, CDFW 2024, Appendix B) and the CNPS Inventory of Rare and Endangered Plants (CNPS 2024, Appendix C) for records of special-status plant and animal species from the vicinity of the Project site. Regional lists of special-status species were compiled using CNDDB and CNPS database searches confined to the Herndon 7.5-minute United States Geological Survey (USGS) topographic quadrangle, which encompasses the Project site, and the eight surrounding quadrangles (Fresno North, Fresno South, Kearney Park, Kerman, Biola, Madera, Gregg, and Lanes Bridge). A local list of special-status species was compiled using CNDDB records from within 5 miles of the Project site. Species that lacked a CEQA-recognized special-status designation by state or federal regulatory agencies or public interest groups were omitted from the final list. Species for which the Project site does not provide habitat were eliminated from further consideration. We also reviewed satellite imagery from Google Earth (Google 2024) and other sources, USGS topographic maps, the Web Soil Survey (NRCS 2024), the National Wetlands Inventory (USFWS 2024b), and relevant literature.

2.2 Reconnaissance Survey

Colibri Senior Scientist Ryan Slezak and Staff Scientist Ruby Rebensdorf conducted a field reconnaissance survey at the Project site on 8 March 2024. The Project site and a 50-foot buffer (Figure 3) surrounding the Project site were walked and thoroughly inspected to evaluate and document the potential for the area to support state or federally protected resources. All plants except those under cultivation or planted in residential areas and all vertebrate wildlife species observed within the survey area were identified and documented. The survey area was evaluated for the presence of regulated habitats, including lakes, streams, and other waters as defined by the USACE, CDFW, and under the Porter-Cologne Water Quality Control Act. An additional buffer of 0.5 miles around the Project site was inspected for potential nesting habitat for special-status raptors. The 0.5-mile buffer was surveyed by driving public roads and identifying the presence of large trees or other potentially suitable substrates for nesting raptors as well as open areas that could provide foraging habitat.

2.3 Significance Criteria

CEQA defines "significant effect on the environment" as "a substantial, or potentially substantial, adverse change in the environment" (California Public Resource Code § 21068). Under CEQA Guidelines Section 15065, a Project's effects on biological resources are deemed significant where the Project would do the following:

a) Substantially reduce the habitat of a fish or wildlife species,
b) Cause a fish or wildlife population to drop below self-sustaining levels,
c) Threaten to eliminate a plant or animal community, or
d) Substantially reduce the number or restrict the range of a rare or endangered plant or animal.

In addition to the Section 15065 criteria, Appendix E within the CEQA Guidelines includes six additional impacts to consider when analyzing the effects of a project. Under Appendix E, a project's effects on biological resources are deemed significant where the project would do any of the following:

e) 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 CDFW or USFWS;
f) 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 CDFW or USFWS;
g) 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;
h) 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;
i) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
j) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

These criteria were used to determine whether the potential effects of the Project on biological resources qualify as significant.

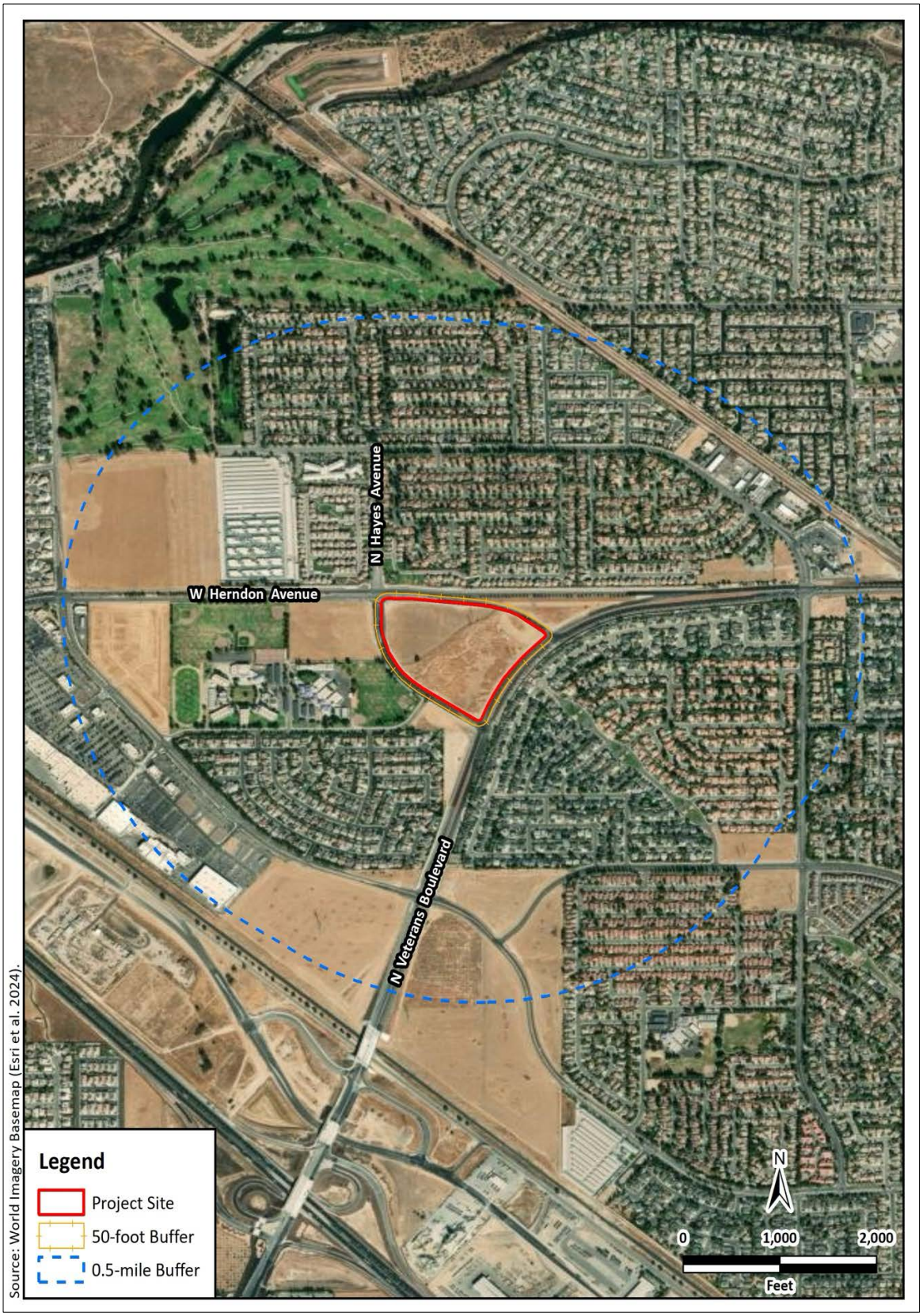


Figure 3. Reconnaissance survey area map.

3.0 Results

3.1 Desktop Review

The USFWS species list for the Project included nine species listed as threatened, endangered, or proposed for listing under the FESA (USFWS 2024a, Table 1, Appendix A). None of those species are expected to occur on or near the Project site due to the lack of habitat or because the Project site is outside the known range of the species (Table 1). As stated in the species list, the Project site occurs outside any proposed or designated USFWS critical habitat (USFWS 2024a, Appendix A).

Searching the CNDDB for records of special-status species from the Herndon 7.5-minute USGS topographic quadrangle and the eight surrounding quadrangles produced 242 records of 52 species (Table 1, Appendix B). Of those 52 species, 16 were not considered further because they are not CEQA-recognized as special-status species by state or federal regulatory agencies or public interest groups or are considered extirpated in California (Appendix B). Of the remaining 36 species, 16 are known from within 5 miles of the Project site (Table 1, Figure 4). Of those species, one could occur on or near the Project site: Swainson's hawk (*Buteo swainsoni*) (Table 1). None of the other species identified in the nine-quad search could occur on or near the Project site due to the lack of habitat or because the Project site is outside the known range of the species (Table 1).

Searching the CNPS inventory of rare and endangered plants of California yielded 19 species (CNPS 2024, Appendix C), 17 of which have a CRPR of 1 or 2 and five of which are also state or federally listed (Table 1). Of those 17 plant species, none could occur on or near the Project site due to the lack of habitat or because the Project site is outside the known range of the species (Table 1).

The Project site is underlain by San Joaquin loam, 0 to 3 percent slopes (61.2%); and Exeter loam (38.8%) (NCRS 2024). The Project site has little topographic relief, is at an elevation of 304–313 feet above mean sea level, and was dominated by orchard trees through 2005, with the remaining trees removed between September 2009 and September 2010 (Google 2024).

Table 1. Special-status species, their listing status, habitats, and potential to occur on or near the Project site.

Species	Status[1]	Habitat	Potential to Occur[2]
Federally and State-Listed Endangered or Threatened Species			
California jewelflower[3] (*Caulanthus californicus*)	FE, SE, 1B.1	Flats and slopes in non-alkaline grassland at 230–3280 feet elevation	**None.** Habitat lacking; the Project site consisted of disturbed grassland surrounded by residential development.
Hairy Orcutt grass[3] (*Orcuttia pilosa*)	FE, SE, 1B.1	Vernal pools below 650 feet elevation.	**None.** Habitat lacking; no vernal pool habitat was present in the survey area.
Palmate-bracted bird's-beak (*Chloropyron palmatum*)	FE, SE, 1B.1	Alkaline flats below 195 feet elevation.	**None.** Habitat lacking; the Project site is above the known elevational range of this species.
San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*)	FT, SE, 1B.1	Vernal pools at or below 2700 feet elevation.	**None.** Habitat lacking; no vernal pool habitat was present in the survey area.
Succulent owl's clover (*Castilleja campestris* var. *succulenta*)	FT, SE, 1B.2	Vernal pools with heavy clay soils at or below 2500 feet elevation.	**None.** Habitat lacking; no vernal pool habitat was present in the survey area.
Crotch bumble bee[3] (*Bombus crotchii*)	SCE	Open grassland and scrub habitats with *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia*, and *Eriogonum* as food plants.	**None.** Habitat lacking; the Project site contained grassland; however, the grassland was disturbed, dominated by ruderal vegetation, and surrounded by development. No potential food plants were found in the reconnaissance survey.

Species	Status[1]	Habitat	Potential to Occur[2]
Monarch California overwintering population (*Danaus plexippus*)	FC	Groves of trees within 1.5 miles of the ocean that produce suitable micro-climates for overwintering such as high humidity, dappled sunlight, access to water and nectar, and protection from wind.	**None.** Habitat lacking; the Project site is not within 1.5 miles of the ocean.
Valley elderberry longhorn beetle[3] (*Desmocerus californicus dimorphus*)	FT	Elderberry (*Sambucus* sp.) plants having basal stem diameter greater than 1" at ground level.	**None.** Habitat lacking; the Project site contained a single, isolated elderberry shrub that was too small to support the species.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	Vernal pools; some artificial depressions, ditches, stock ponds, vernal swales, ephemeral drainages, and seasonal wetlands.	**None.** Habitat lacking; no vernal pools or other aquatic habitat was present in the survey area.
California tiger salamander[3] (*Ambystoma californiense*)	FT, ST	Vernal pools or seasonal ponds for breeding; small mammal burrows for upland refugia in natural grasslands.	**None.** Habitat lacking; although small mammal burrows were present on the Project site, the site was surrounded by development. The Project site and adjacent land lacked vernal pools or seasonal ponds for breeding. The Project site is outside the current known local range of this species.

Species	Status[1]	Habitat	Potential to Occur[2]
Blunt-nosed leopard lizard (*Gambelia sila*)	FE, SE, FP	Upland scrub and sparsely vegetated grassland with small mammal burrows.	**None.** Habitat lacking; the Project site is outside the current known local range of this species.
Northwestern pond turtle (*Actinemys marmorata*)	FPT, SSSC	Ponds, rivers, marshes, streams, and irrigation ditches, usually with aquatic vegetation. Basking sites and suitable upland areas for egg laying.	**None.** Habitat lacking; the Project site and surrounding areas lacked the aquatic habitat this species requires.
Western spadefoot[3] (*Spea hammondii*)	FPT, SSSC	Open areas with sandy or gravelly soil that allow rain pools to gather for breeding.	**None.** Habitat lacking; no rain pools or other aquatic habitat was present in the survey area.
Swainson's hawk[3] (*Buteo swainsoni*)	ST	Large trees for nesting with adjacent grasslands, alfalfa fields, or grain fields for foraging.	**Low.** One potential nest tree was present on the Project site, additional potential nest trees were present within the 0.5-mile survey area. Disturbed grassland on the Project site may provide foraging habitat.
Tricolored blackbird (*Agelaius tricolor*)	ST, SSSC	Freshwater emergent wetlands, some agricultural fields, grassland, and silage fields near dairies.	**None.** Habitat lacking; the Project site lacked freshwater emergent wetlands, agricultural fields, and silage fields. Grassland on the Project site was disturbed, surrounded by development, and unsuitable for nesting.

Species	Status[1]	Habitat	Potential to Occur[2]
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FT, SE	Open woodlands with dense, low vegetation along waterways, orchards, and dense leafy groves and thickets.	**None.** Habitat lacking; the Project site is outside the current known range of this species. The lone CNDDB occurrence record is from 1883 and presumed extirpated due to habitat modification.
Fresno kangaroo rat[3] (*Dipodomys nitratoides exilis*)	FE, SE	Sandy, alkaline, saline, and clay-based soils in upland scrub and grassland.	**None.** Habitat lacking; the Project site is outside the current known range of this species.
San Joaquin kit fox[3] (*Vulpes macrotis mutica*)	FE, ST	Grassland and upland scrub and fallowed agricultural lands adjacent to natural grasslands or upland scrub.	**None.** Habitat lacking; although the Project site contained grassland, the grassland was disturbed and surrounded by development. The Project site is outside the current known local range of this species.
State Species of Special Concern			
Hardhead (*Mylopharodon conocephalus*)	SSSC	Small to large streams at low to mid-elevations; lakes; reservoirs.	**None.** Habitat lacking; the Project site lacked streams, lakes, or reservoirs.
California glossy snake[3] (*Arizona elegans occidentalis*)	SSSC	Arid scrub, rocky washes, grasslands, and chaparral with microhabitats of open areas and areas with soil loose enough for easy burrowing.	**None.** Habitat lacking; the Project site contained friable soils, but soils were disturbed, and the site was surrounded by developed areas.

Species	Status[1]	Habitat	Potential to Occur[2]
Northern California legless lizard[3] (*Anniella pulchra*)	SSSC	Moist, warm, loose soil with plant cover in beach dunes, chaparral, pine-oak woodlands, sandy areas, and stream terraces.	**None.** Habitat lacking; the Project site lacked moist, warm, loose soil in beach dunes, chaparral, pine-oak woodlands, sandy areas, and stream terraces.
Coast horned lizard[3] (*Phrynosoma blainvillii*)	SSSC	Open, generally sandy areas, washes, and flood plains in a variety of habitats.	**None.** Habitat lacking; no open, generally sandy areas, washes, or flood plains were present in the survey area.
Burrowing owl (*Athene cunicularia*)	SSSC	Grassland and upland scrub with friable soil; some agricultural or other developed and disturbed areas with ground squirrel burrows.	**None.** Habitat lacking; although the Project site contained grassland and scattered ground squirrel burrows, the grassland was disturbed and surrounded by development. The Project site and surrounding areas lacked sufficient natural lands to support the species, and ongoing anthropogenic disturbance is incompatible with species occupation.

Species	Status[1]	Habitat	Potential to Occur[2]
American badger[3] (*Taxidea taxus*)	SSSC	Variable. Open, dry areas with friable soils and small mammal populations in grassland, conifer forest, and desert.	**None.** Habitat lacking; although the Project site contained grassland and small mammal burrows, the grassland was disturbed and surrounded by development. The Project site and surrounding areas lack sufficient natural lands to support the species, and ongoing anthropogenic disturbance is incompatible with species occupation.
Pallid bat (*Antrozous pallidus*)	SSSC	Arid or semi-arid locations in rocky areas and sparsely vegetated grassland near water. Rock crevices, caves, mine shafts, bridges, buildings, and tree hollows for roosting.	**None.** Habitat lacking; the Project site lacked rock crevices, caves, mine shafts, bridges, buildings, and trees hollows for roosting.
Western mastiff bat (*Eumops perotis californicus*)	SSSC	Roosts in crevices in cliff faces, tall buildings, trees, and tunnels in open semi-arid habitats.	**None.** Habitat lacking; the Project site lacked crevices in cliff faces, tall buildings, trees, and tunnels for roosting.
California Rare Plants			
Alkali sink goldfields (*Lasthenia chrysantha*)	1B.1	Vernal pools and wet saline flats below 320 feet elevation.	**None.** Habitat lacking; no vernal pools or wet saline flats were present in the survey area.

Species	Status[1]	Habitat	Potential to Occur[2]
California alkali grass (*Puccinellia simplex*)	1B.2	Saline flats and mineral springs below 3000 feet elevation.	**None.** Habitat lacking; the survey area lacked saline flats and mineral springs.
California satintail[3] (*Imperata brevifolia*)	2B.1	Mesic areas in chaparral or riparian scrub below 3985 feet elevation.	**None.** Habitat lacking; the survey area lacked chaparral or riparian scrub.
Heartscale (*Atriplex cordulata* var. *cordulata*)	1B.2	Saline or alkaline soils in grassland, meadows and seeps, and chenopod scrub communities below 230 feet elevation.	**None.** Habitat lacking; the Project site lacked saline or alkaline soils.
Hoover's calycadenia (*Calycadenia hooveri*)	1B.3	Rocky, exposed places in grassland and oak savanna at 328—1312 feet elevation.	**None.** Habitat lacking; the Project site is below the known elevational range of this species.
Lesser saltscale (*Atriplex minuscula*)	1B.1	Sandy, alkaline soils in chenopod scrub, playa, and grassland in the San Joaquin Valley below 328 feet elevation.	**None.** Habitat lacking; the Project site lacked sandy, alkaline soils is was below the known elevational range of this species.
Madera leptosiphon[3] (*Leptosiphon serrulatus*)	1B.2	Openings in chaparral, cismontane woodland, and low elevation conifer forest at 980–4300 feet elevation.	**None.** Habitat lacking; the Project site is below the known elevational range of this species.

Species	Status[1]	Habitat	Potential to Occur[2]
Munz's tidy tips (*Layia munzii*)	1B.2	Alkaline clay soils in chenopod scrub and valley and foothill grassland at 300–2100 feet elevation.	**None.** Habitat lacking; the Project site lacked alkaline soils.
Pincushion navarretia (*Navarretia myersii* ssp. *myersii*)	1B.1	Vernal pools at 66–295 feet elevation.	**None.** Habitat lacking; the Project site lacked vernal pools.
Recurved larkspur (*Delphinium recurvatum*)	1B.2	Poorly drained, fine, alkaline soils in grassland and saltbush scrub at 98–1969 feet elevation.	**None.** Habitat lacking; the Project site lacked poorly drained, fine, alkaline soils.
Sanford's arrowhead[3] (*Sagittaria sanfordii*)	1B.2	Ponds, sloughs, and ditches at sea level to 650 feet elevation.	**None.** Habitat lacking; no freshwater marshes or other suitable aquatic features were present in the survey area.
Spiny-sepaled button-celery (*Eryngium spinosepalum*)	1B.2	Vernal pools, swales, and roadside ditches in valley and foothill grassland.	**None.** Habitat lacking; no vernal pools or other aquatic habitat was present in the survey area.

CDFW (2024), CNPS (2024), USFWS (2024a).

Status[1]	**Potential to Occur**[2]	
FC = Federal Candidate for listing	None:	Species or sign not observed; conditions unsuitable for occurrence.
FE = Federally listed as Endangered	Low:	Neither species nor sign observed; conditions marginal for occurrence.
FT = Federally listed as Threatened	Moderate:	Neither species nor sign observed; conditions suitable for occurrence.
FPT = Federally Proposed Threatened	High:	Neither species nor sign observed; conditions highly suitable for occurrence.
FP = State Fully Protected	Present:	Species or sign observed; conditions suitable for occurrence.
SC = State Candidate for listing		
SE = State listed as Endangered		
ST = State listed as Threatened		
SSSC = State Species of Special Concern		

CNPS California Rare Plant Rank[1]**:**	**Threat Ranks**[1]**:**
1B – plants rare, threatened, or endangered in California and elsewhere.	0.1 – seriously threatened in California (> 80% of occurrences).
2B – plants rare, threatened, or endangered in California but more common elsewhere.	0.2 – moderately threatened in California (20-80% of occurrences).
3 – plants about which more information is needed.	0.3 – not very threatened in California (<20% of occurrences).
4 – plants have limited distribution in California.	

[3]Record from within 5 miles of the Project site.

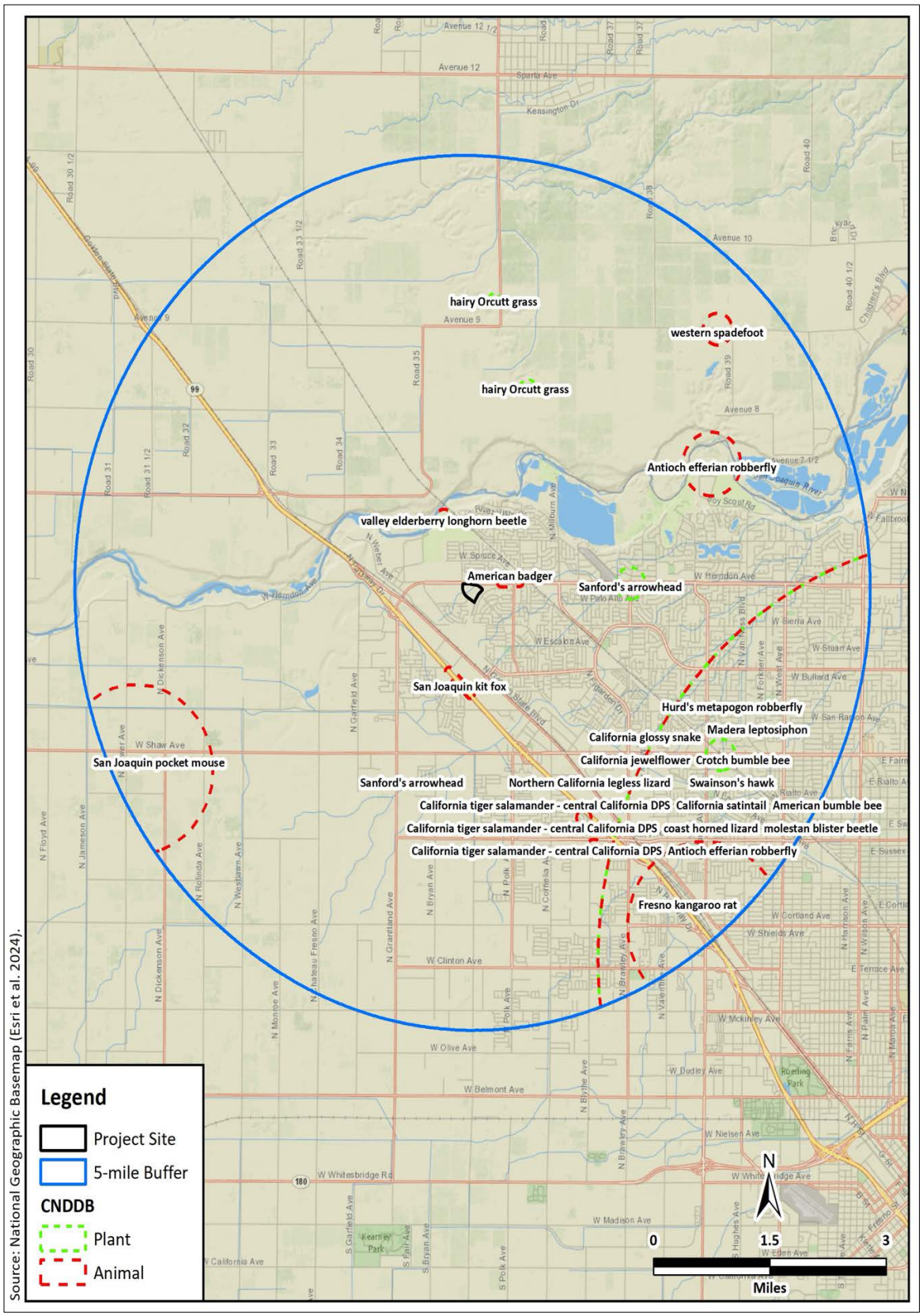


Figure 4. CNDDB occurrence map.

3.2 Reconnaissance Survey

3.2.1 Land Use and Habitats

The Project site consisted of disturbed grassland dominated by ruderal, nonnative grasses and forbs. The southeastern two-thirds of the Project site was covered with vegetated spoil piles (Figures 5 and 6). Trash, debris, and homeless encampments were present throughout the Project site (Figure 6). A defunct, concrete-lined ditch (Radin Kamp Ditch) divided the northwestern third and the southeastern two-thirds of the Project site (Figures 7 and 8). Vegetation along the perimeter of the Project site had been recently disturbed by road construction. The site was bordered by residential development to the north, east, and south, and a school and empty field to the west.

Figure 5. Photograph from the southeast corner of the Project site, looking northwest, showing vegetated spoil piles and ruderal vegetation.

Figure 6. Photograph from the southeast side of the Project site, looking west, showing spoil piles with debris and trash.

Figure 7. Photograph of a defunct, concrete-lined ditch on the northeast side of the Project site, looking southwest.

Figure 8. Photograph showing disturbed grassland, a nonnative oak tree, and a defunct ditch on the west side of the Project site, looking east.

3.2.2 Plant and Animal Species Observed

A total of 31 plant species (nine native and 22 nonnative), 10 bird species, and two mammal species were observed during the survey (Table 2).

Table 2. Plant and animal species observed during the reconnaissance survey.

Common Name	Scientific Name	Status
Plants		
Family Amaranthaceae		
Pigweed amaranth	*Amaranthus albus*	Nonnative
Family Asteraceae		
Common groundsel	*Senecio vulgaris*	Nonnative
Common sunflower	*Helianthus annuus*	Native
Family Boraginaceae		
Common fiddleneck	*Amsinckia intermedia*	Native
Valley popcornflower	*Plagiobothrys canescens*	Native
Family Brassicaceae		
Hairy bittercress	*Cardamine hirsuta*	Nonnative
Jointed charlock	*Raphanus raphanistrum*	Nonnative
London rocket	*Sisymbrium irio*	Nonnative
Peppergrass	*Lepidium nitidum*	Native
Shepherd's purse	*Capsella bursa-pastoris*	Nonnative
Family Caryophyllaceae		
Chickweed	*Stellaria media*	Nonnative
Family Chenopodiaceae		
Russian thistle	*Salsola tragus*	Nonnative
Family Euphorbiaceae		
Spotted spurge	*Euphorbia maculata*	Nonnative
Turkey-mullein	*Croton setiger*	Native
Family Fabaceae		
California burclover	*Medicago polymorpha*	Nonnative

Common Name	Scientific Name	Status
Family Fagaceae		
Cork oak	*Quercus suber*	Nonnative
Family Geraniaceae		
Redstem stork's bill	*Erodium cicutarium*	Nonnative
Family Lamiaceae		
White horehound	*Marrubium vulgare*	Nonnative
Family Montiaceae		
Miner's lettuce	*Claytonia perfoliata*	Native
Red maids	*Calandrinia menziesii*	Native
Family Oleaceae		
Olive	*Olea europaea*	Nonnative
Family Oxalidaceae		
Bermuda buttercup	*Oxalis pes-caprae*	Nonnative
Family Poaceae		
Bermuda grass	*Cynodon dactylon*	Nonnative
Foxtail brome	*Bromus madritensis*	Nonnative
Ripgut brome	*Bromus diandrus*	Nonnative
Wild oat	*Avena fatua*	Nonnative
Family Polygonaceae		
Curly dock	*Rumex crispus*	Nonnative
Family Solanaceae		
Sacred datura	*Datura wrightii*	Native
Tree tobacco	*Nicotiana glauca*	Nonnative
Family Urticaeae		
Dwarf nettle	*Urtica urens*	Nonnative
Family Viburnaceae		
Blue elderberry	*Sambucus mexicana*	Native
Birds		

Common Name	Scientific Name	Status
Family Columbidae		
Eurasian collared-dove	*Streptopelia orientalis*	Nonnative
Rock pigeon	*Columba livia*	Nonnative
Family Corvidae		
American crow	*Corvus brachyrhynchos*	MBTA, CFGC
California scrub-jay	*Aphelocoma californica*	MBTA, CFGC
Family Mimidae		
Northern mockingbird	*Mimus polyglottos*	MBTA, CFGC
Family Passerellidae		
Savannah sparrow	*Passerculus sandwichensis*	MBTA, CFGC
Family Picidae		
Northern flicker	*Colaptes auratus*	MBTA, CFGC
Family Regulidae		
Ruby-crowned kinglet	*Regulus calendula*	MBTA, CFGC
Family Trochilidae		
Anna's hummingbird	*Calypte anna*	MBTA, CFGC
Family Tyrannidae		
Black phoebe	*Sayornis nigricans*	MBTA, CFGC
Mammals		
Family Leporidae		
Desert cottontail	*Sylvilagus audubonii*	--
Family Sciuridae		
California ground squirrel	*Otospermophilus beecheyi*	--

MBTA = Protected under the MBTA (16 USC § 703 et seq.); CFGC = Protected under CFGC §§ 3503 and 3513

3.2.3 Nesting Birds

Migratory birds could nest on or near the Project site. Bird species that may nest on or near the property include, but are not limited to, California scrub-jay (*Aphelocoma californica*) and northern mockingbird (*Mimus polyglottos*). Large

trees within 0.5 miles of the Project site could provide nesting substrates for raptors, including Swainson's hawk.

3.2.4 Regulated Habitats

No regulated habitats were found in the survey area. Radin Kamp Ditch was constructed in uplands and is defunct, isolated, and confined to the boundaries of the Project site. It does not contain surface water and has no potential to support aquatic life. Consequently, it would not qualify as a regulated habitat under the jurisdiction of the USACE, SWRCB, or CDFW.

3.3 Special-Status Species

The following special-status species could occur on or near the Project site based on the presence of habitat:

3.3.1 Swainson's hawk

Swainson's hawk is a state listed as threatened raptor in the family Accipitridae. It is a migratory breeding resident of Central California. It uses open areas including grassland, sparse shrubland, pasture, open woodland, and annual agricultural fields such as grain and alfalfa to forage on small mammals, birds, and reptiles. After breeding, it eats mainly insects, especially grasshoppers (Bechard et al. 2020). Swainson's hawks build small to medium-sized nests in medium to large trees near foraging habitat. The nesting season begins in March or April in Central California when this species returns to its breeding grounds from wintering areas in Mexico and Central and South America. Nest building commences within one to two weeks of arrival to the breeding area and lasts about one week (Bechard et al. 2020). One to four eggs are laid and incubated for about 35 days. Young typically fledge in about 38–46 days and tend to leave the nest territory within 10 days of fledging (Bechard et al. 2020). Swainson's hawks depart for the non-breeding grounds between August and September.

There is one CNDDB occurrence record of Swainson's hawk, from 1956, from within 5 miles of the Project site. There was one potential nest tree on the Project site: an oak tree adjacent to Radin Kamp Ditch. Additional potential nest trees were present northwest of the Project site within the 0.5-mile survey radius. Grassland on the Project site and adjacent lands provide potential foraging habitat, although anthropogenic disturbance limits habitat quality. Consequently, this species has a low potential to occur on the Project site.

4.0 Environmental Impacts

4.1 Significance Determinations

This Project, which will result in permanent impacts to disturbed grassland, will not: (1) substantially reduce the habitat of a fish or wildlife species (criterion a) as no such habitat is present on the Project site; (2) cause a fish or wildlife population to drop below self-sustaining levels (criterion b) as no such potentially vulnerable population is known from the area; (3) threaten to eliminate a plant or animal community (criterion c) as no such potentially vulnerable communities are known from the area; (4) substantially reduce the number or restrict the range of a rare or endangered plant or animal (criterion d) as no such potentially vulnerable species are known from the area; (5) 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 CDFW or USFWS (criterion f) as no riparian habitat or other sensitive natural community was present in the survey area; (6) 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 (criterion g) as no impacts to wetlands will occur; (7) conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (criterion i) as no such ordinances are pertinent to the Project; or (8) conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan (criterion j) as no such plan has been adopted. Thus, these significance criteria are not analyzed further.

The remaining statutorily defined criteria provide the framework for Criterion BIO1 and Criterion BIO2 below. These criteria are used to assess the impacts to biological resources stemming from the Project and provide the basis for determinations of significance:

- Criterion BIO1: 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 CDFW or USFWS (significance criterion e).

- Criterion BIO2: 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 (significance criterion h).

4.1.1 Direct and Indirect Effects

4.1.1.1 Potential Effect #1: Have a Substantial Effect on Any Special-Status Species (Criterion BIO1)

The Project could adversely affect, either directly or through habitat modifications, one special-status animal species that occurs or may occur on or near the Project site. Construction activities such as excavating, trenching, or using other heavy equipment that disturbs or harms a special-status species or substantially modifies its habitat could constitute a significant impact. We recommend that Mitigation Measure BIO1 (below) be included in the conditions of approval to reduce the potential impacts to less-than-significant levels.

Mitigation Measure BIO1. Protect nesting Swainson's hawks.

1. To the extent practicable, construction shall be scheduled to avoid the Swainson's hawk nesting season, which extends from March through August.
2. If it is not possible to schedule construction between September and February, a qualified biologist shall conduct surveys for Swainson's hawk in accordance with the *Swainson's Hawk Technical Advisory Committee's Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (SWTAC 2000, Appendix D). These methods require six surveys, three in each of the two survey periods, prior to initiation of the Project. Surveys shall be conducted within a minimum 0.5-mile radius around the Project site.
3. If an active Swainson's hawk nest is found within 0.5 miles of the Project site, and the qualified biologist determines that the Project would disrupt the nesting birds, a construction-free buffer or limited operating period shall be implemented in consultation with the CDFW.

4.1.1.2 Potential Effect #1: Interfere Substantially with Native Wildlife Movements, Corridors, or Nursery Sites (Criterion BIO2)

The Project has the potential to impede the use of nursery sites for native birds protected under the MBTA and CFGC. Migratory birds are expected to nest on and near the Project site. Construction disturbance during the

breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Disturbance that causes nest abandonment or loss of reproductive effort can be considered take under the MBTA and CFGC. Loss of fertile eggs or nesting birds, or any activities resulting in nest abandonment, could constitute a significant effect if the species is particularly rare in the region. Construction activities such as excavating, trenching, and grading that disturb a nesting bird on the Project site or immediately adjacent to the construction zone could constitute a significant effect. We recommend that the mitigation measure BIO2 (below) be included in the conditions of approval to reduce the potential effect to a less-than-significant level.

Mitigation Measure BIO2. Protect nesting birds.

1. To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from February through August.

2. If it is not possible to schedule construction between September and January, pre-construction surveys for nesting birds shall be conducted by a qualified biologist to ensure that no active nests will be disturbed during the implementation of the Project. A pre-construction survey shall be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the qualified biologist shall inspect all potential nest substrates in and immediately adjacent to the impact areas. If an active nest is found close enough to the construction area to be disturbed by these activities, the qualified biologist shall determine the extent of a construction-free buffer to be established around the nest. If work cannot proceed without disturbing the nesting birds, work may need to be halted or redirected to other areas until nesting and fledging are completed or the nest has otherwise failed for non-construction related reasons.

5.0 Literature Cited

Bechard, M. J., C. S. Houston, J. H. Saransola, and A. S. England. 2020. Swainson's Hawk (*Buteo swainsoni*), version 1.0. *In* Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.swahaw.01.

California Department of Fish and Wildlife (CDFW). 2024. California Natural Diversity Database (CNDDB) RareFind 5. https://apps.wildlife.ca.gov. Accessed 8 March 2024.

California Native Plant Society (CNPS), Rare Plant Program. 2024. Rare Plant Inventory (online edition, v9.5). http://www.rareplants.cnps.org. Accessed 14 March 2024.

Google. 2024. Google Earth Pro. Version 7.3.6.9750 (https://www.google.com/earth/download/gep/agree.html). Accessed 7 March 2024.

Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture. 2024. Web Soil Survey, National Cooperative Soil Survey: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed 7 March 2024.

Swainson's Hawk Technical Advisory Committee (SWTAC). 2000. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley. 5 pages.

United States Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual. Wetland Research Program Technical Report Y-87-1.

_____. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). ERDC/EL TR-08-28. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046489.pdf. Accessed 7 March 2024.

United States Fish and Wildlife Service (USFWS). 2018. Migratory Bird Permit Memorandum: Destruction and Relocation of Migratory Bird Nest Contents. FWS/DMBM/AMB/068029, 4 pages.

_____. 2024a. IPaC: Information for Planning and Conservation. https://ecos.fws.gov/ipac/. Accessed 7 March 2024.

_____. 2024b. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. http://www.fws.gov/wetlands/. Accessed 7 March 2024.

Appendix A. USFWS list of threatened and endangered species.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Fresno County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

NOT FOR CONSULTATION

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Fresno Kangaroo Rat Dipodomys nitratoides exilis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5150	Endangered
San Joaquin Kit Fox Vulpes macrotis mutica Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

NAME	STATUS
Northwestern Pond Turtle Actinemys marmorata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened
Western Spadefoot Spea hammondii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5425	Proposed Threatened

Insects

NAME	STATUS

NOT FOR CONSULTATION

Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Hairy Orcutt Grass Orcuttia pilosa Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2262	Endangered

NOT FOR CONSULTATION

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31

NOT FOR CONSULTATION

Golden Eagle *Aquila chrysaetos* Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

NOT FOR CONSULTATION

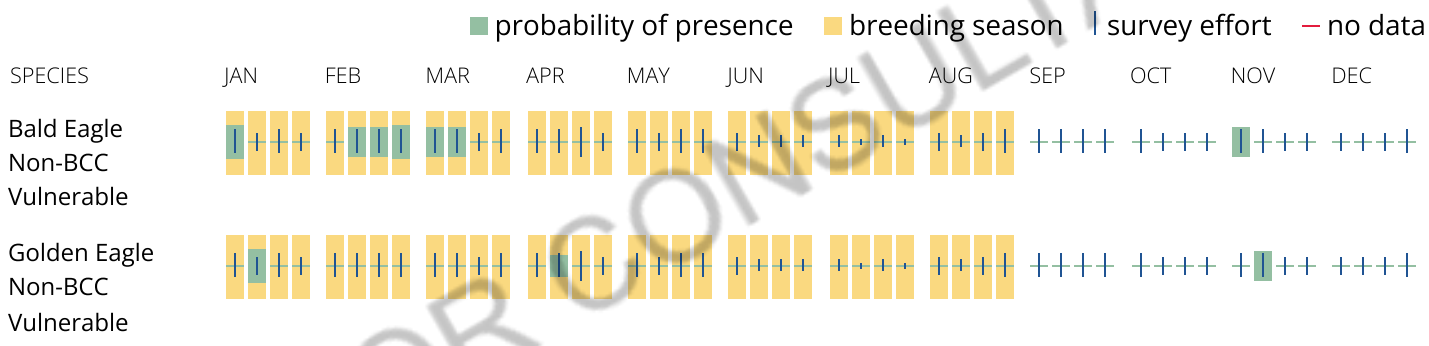
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



NOT FOR CONSULTATION

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional

NOT FOR CONSULTATION

information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow *Passerculus sandwichensis beldingi* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole *Icterus bullockii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull *Larus californicus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
California Thrasher *Toxostoma redivivum* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat *Geothlypis trichas sinuosa* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31

NOT FOR CONSULTATION

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe aechmophorus occidentalis — Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read

"Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

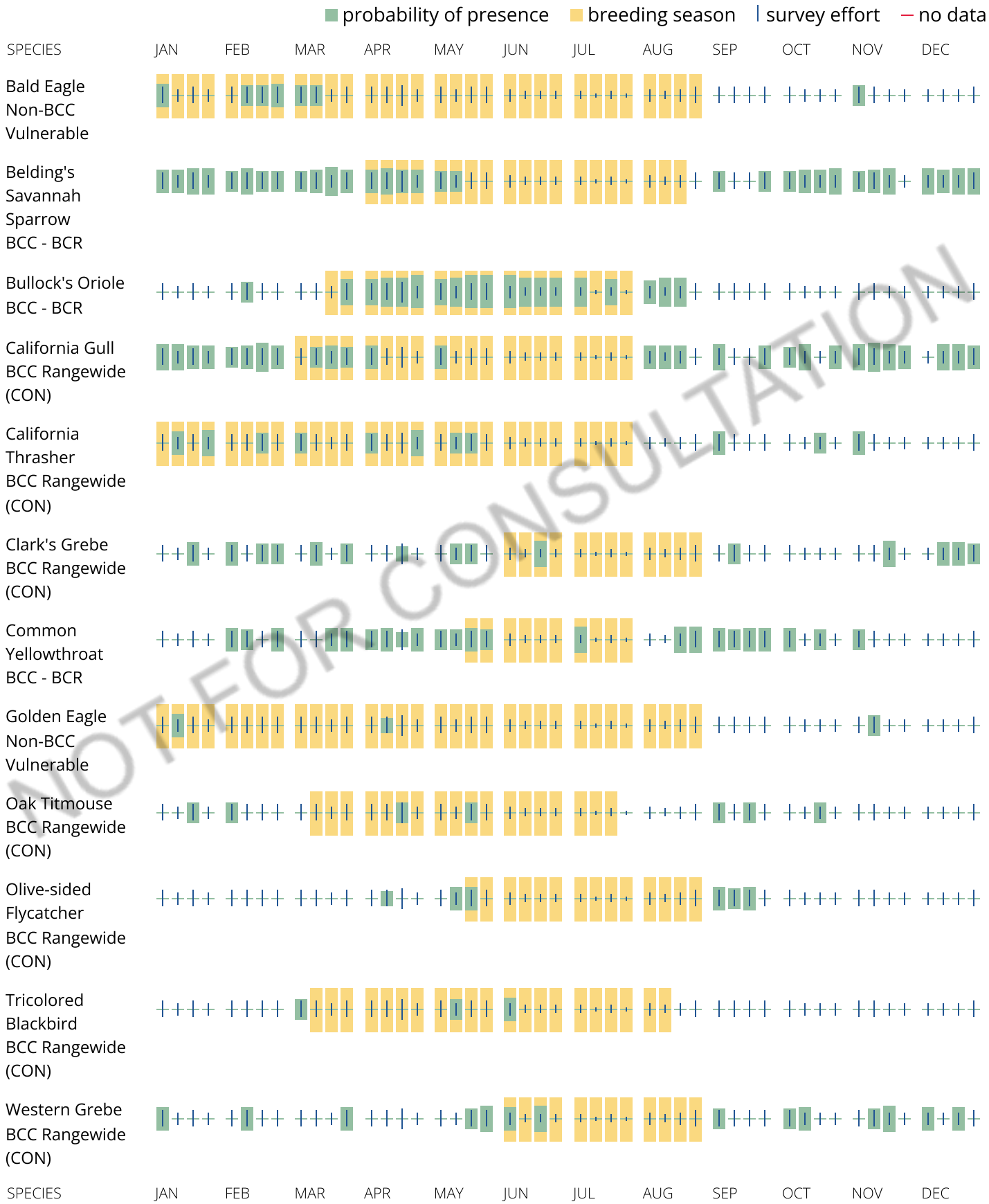
No Data (–)

A week is marked as having no data if there were no survey events for that week.

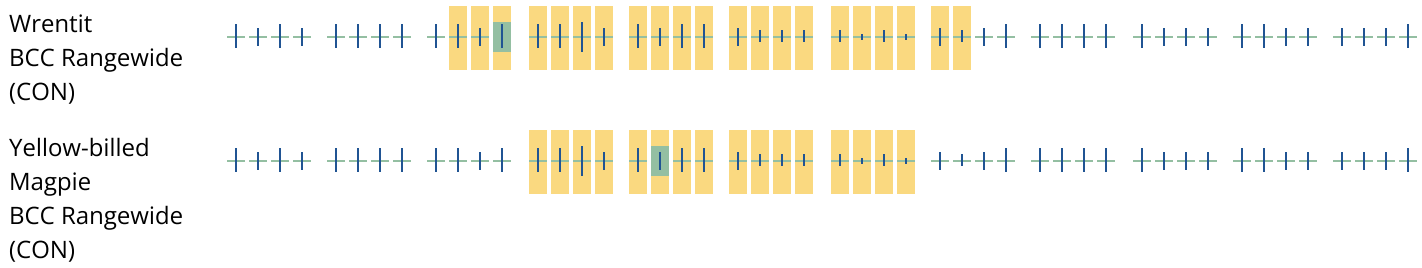
Survey Timeframe

NOT FOR CONSULTATION

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



NOT FOR CONSULTATION



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your

NOT FOR CONSULTATION

migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a

NOT FOR CONSULTATION

low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

NOT FOR CONSULTATION

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE

R5UBFx

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Appendix B. CNDDB occurrence records.

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Herndon (3611978) OR Fresno North (3611977) OR Fresno South (3611967) OR Kearney Park (3611968) OR Kerman (3612061) OR Biola (3612071) OR Gregg (3611988) OR Lanes Bridge (3611987))

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Agelaius tricolor tricolored blackbird	G1G2 S2	None Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered USFWS_BCC-Birds of Conservation Concern	330 365	960 S:3	0	0	0	0	2	1	3	0	1	1	1
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	G2G3T3 S3	Threatened Threatened	CDFW_WL-Watch List IUCN_VU-Vulnerable	274 471	1326 S:29	4	6	4	4	4	7	11	18	25	3	1
Anniella pulchra Northern California legless lizard	G3 S2S3	None None	CDFW_SSC-Species of Special Concern USFS_S-Sensitive	300 300	386 S:1	0	0	0	0	0	1	1	0	1	0	0
Antrozous pallidus pallid bat	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	310 310	420 S:1	0	0	0	0	0	1	1	0	1	0	0
Ardea alba great egret	G5 S4	None None	CDF_S-Sensitive IUCN_LC-Least Concern	296 296	43 S:1	0	0	0	0	0	1	0	1	1	0	0
Arizona elegans occidentalis California glossy snake	G5T2 S2	None None	CDFW_SSC-Species of Special Concern	300 300	260 S:1	0	0	0	0	0	1	1	0	1	0	0
Athene cunicularia burrowing owl	G4 S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	208 405	2057 S:6	1	3	0	1	0	1	3	3	6	0	0
Atriplex cordulata var. cordulata heartscale	G3T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	200 200	66 S:1	0	0	0	0	1	0	1	0	0	0	1

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Atriplex minuscula lesser saltscale	G2 S2	None None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	200 200	52 S:1	0	0	0	0	0	1	1	0	1	0	0
Bombus crotchii Crotch's bumble bee	G2 S2	None Candidate Endangered	IUCN_EN-Endangered	300 300	437 S:1	0	0	0	0	0	1	1	0	1	0	0
Bombus pensylvanicus American bumble bee	G3G4 S2	None None	IUCN_VU-Vulnerable	300 300	365 S:1	0	0	0	0	0	1	1	0	1	0	0
Branchinecta lynchi vernal pool fairy shrimp	G3 S3	Threatened None	IUCN_VU-Vulnerable	273 440	804 S:25	0	11	4	0	0	10	10	15	25	0	0
Branchinecta mesovallensis midvalley fairy shrimp	G2 S2S3	None None		371 444	147 S:9	0	0	0	0	0	9	0	9	9	0	0
Buteo swainsoni Swainson's hawk	G5 S4	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern	237 430	2576 S:6	0	1	1	0	0	4	1	5	6	0	0
Calycadenia hooveri Hoover's calycadenia	G2 S2	None None	Rare Plant Rank - 1B.3		37 S:1	0	0	0	0	0	1	0	1	1	0	0
Castilleja campestris var. succulenta succulent owl's-clover	G4?T2T3 S2S3	Threatened Endangered	Rare Plant Rank - 1B.2	300 405	99 S:7	0	4	1	0	1	1	4	3	6	1	0
Caulanthus californicus California jewelflower	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_SBBG-Santa Barbara Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley		67 S:1	0	0	0	0	1	0	1	0	0	0	1
Chloropyron palmatum palmate-bracted bird's-beak	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	195 195	25 S:1	0	0	0	0	1	0	1	0	0	0	1
Coccyzus americanus occidentalis western yellow-billed cuckoo	G5T2T3 S1	Threatened Endangered	BLM_S-Sensitive USFS_S-Sensitive	270 270	165 S:1	0	0	0	0	1	0	1	0	0	0	1

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Delphinium recurvatum recurved larkspur	G2? S2?	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden		119 S:1	0	0	0	0	1	0	1	0	0	0	1
Desmocerus californicus dimorphus valley elderberry longhorn beetle	G3T3 S3	Threatened None		225 270	271 S:2	0	0	1	0	0	1	2	0	2	0	0
Dipodomys nitratoides exilis Fresno kangaroo rat	G3TH SH	Endangered Endangered	IUCN_VU-Vulnerable	200 225	12 S:4	0	0	0	0	2	2	4	0	2	0	2
Efferia antiochi Antioch efferian robberfly	G1G2 S1S2	None None		260 300	4 S:2	0	0	0	0	0	2	2	0	2	0	0
Egretta thula snowy egret	G5 S4	None None	IUCN_LC-Least Concern	296 296	20 S:1	0	0	0	0	0	1	0	1	1	0	0
Eremophila alpestris actia California horned lark	G5T4Q S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	370 370	94 S:1	0	0	0	1	0	0	1	0	1	0	0
Eriastrum hooveri Hoover's eriastrum	G3 S3	Delisted None	Rare Plant Rank - 4.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	200 200	47 S:1	0	0	0	0	1	0	1	0	0	0	1
Eryngium spinosepalum spiny-sepaled button-celery	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden	405 405	108 S:2	2	0	0	0	0	0	0	2	2	0	0
Eumops perotis californicus western mastiff bat	G4G5T4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern	310 320	296 S:4	0	0	0	0	0	4	4	0	4	0	0
Great Valley Mixed Riparian Forest Great Valley Mixed Riparian Forest	G2 S2.2	None None		280 280	68 S:1	0	0	0	0	0	1	1	0	1	0	0
Imperata brevifolia California satintail	G3 S3	None None	Rare Plant Rank - 2B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_SBBG-Santa Barbara Botanic Garden USFS_S-Sensitive	300 300	32 S:1	0	0	0	0	0	1	1	0	1	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Lasiurus cinereus hoary bat	G3G4 S4	None None	IUCN_LC-Least Concern	270 270	238 S:1	0	0	0	0	0	1	1	0	1	0	0
Lasthenia chrysantha alkali-sink goldfields	G2 S2	None None	Rare Plant Rank - 1B.1	200 220	55 S:2	0	0	0	0	2	0	2	0	0	2	0
Layia munzii Munz's tidy-tips	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden		68 S:1	0	0	0	0	0	1	1	0	1	0	0
Leptosiphon serrulatus Madera leptosiphon	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden USFS_S-Sensitive		26 S:1	0	0	0	0	0	1	1	0	1	0	0
Linderiella occidentalis California linderiella	G2G3 S2S3	None None	IUCN_NT-Near Threatened	285 435	508 S:11	1	4	1	0	0	5	5	6	11	0	0
Lytta molesta molestan blister beetle	G2 S2	None None		275 360	17 S:2	0	0	0	0	0	2	2	0	1	1	0
Metapogon hurdi Hurd's metapogon robberfly	G1G2 S1S2	None None		325 325	3 S:1	0	0	0	0	0	1	1	0	0	1	0
Mylopharodon conocephalus hardhead	G3 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	255 255	33 S:1	0	0	0	0	0	1	1	0	1	0	0
Navarretia myersii ssp. myersii pincushion navarretia	G2T2 S2	None None	Rare Plant Rank - 1B.1	400 400	16 S:1	0	0	0	0	0	1	0	1	1	0	0
Northern Claypan Vernal Pool Northern Claypan Vernal Pool	G1 S1.1	None None		350 350	21 S:1	0	0	0	0	0	1	1	0	1	0	0
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	G3 S3.1	None None		315 400	126 S:6	0	1	0	2	0	3	6	0	6	0	0
Nycticorax nycticorax black-crowned night heron	G5 S4	None None	IUCN_LC-Least Concern	296 296	37 S:1	0	0	0	0	0	1	0	1	1	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Orcuttia inaequalis San Joaquin Valley Orcutt grass	G1 S1	Threatened Endangered	Rare Plant Rank - 1B.1	300 410	47 S:8	0	2	2	1	3	0	3	5	5	0	3
Orcuttia pilosa hairy Orcutt grass	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	275 410	35 S:7	0	3	0	0	4	0	4	3	3	4	0
Perognathus inornatus San Joaquin pocket mouse	G2G3 S2S3	None None	BLM_S-Sensitive IUCN_LC-Least Concern	265 265	140 S:3	0	0	0	0	1	2	3	0	2	0	1
Phrynosoma blainvillii coast horned lizard	G4 S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	300 300	841 S:1	0	0	0	0	1	0	1	0	0	1	0
Puccinellia simplex California alkali grass	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	200 220	80 S:2	0	0	0	0	2	0	2	0	0	1	1
Sagittaria sanfordii Sanford's arrowhead	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	295 360	143 S:5	0	0	0	0	0	5	4	1	5	0	0
Spea hammondii western spadefoot	G2G3 S3S4	Proposed Threatened None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	202 447	1444 S:43	4	6	4	5	0	24	11	32	43	0	0
Taxidea taxus American badger	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	315 374	647 S:2	0	0	0	0	0	2	1	1	2	0	0
Vulpes macrotis mutica San Joaquin kit fox	G4T2 S3	Endangered Threatened		302 302	1020 S:1	0	0	0	0	0	1	1	0	1	0	0

Appendix C. CNPS plant list.

CALIFORNIA NATIVE PLANT SOCIETY

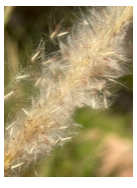
CNPS Rare Plant Inventory

Search Results

19 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [3611968:3611988:3611967:3611978:3611987:3611977:3612061:3612071:3612081]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Atriplex cordulata var. *cordulata*	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	Yes	1988-01-01	© 1994 Robert E. Preston, Ph.D.
Atriplex minuscula	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	None	None	G2	S2	1B.1	Yes	1994-01-01	© 2000 Robert E. Preston, Ph.D.
Calycadenia hooveri	Hoover's calycadenia	Asteraceae	annual herb	Jul-Sep	None	None	G2	S2	1B.3	Yes	1980-01-01	No Photo Available
Castilleja campestris var. *succulenta*	succulent owl's-clover	Orobanchaceae	annual herb (hemiparasitic)	(Mar)Apr-May	FT	CE	G4? T2T3	S2S3	1B.2	Yes	1984-01-01	No Photo Available
Caulanthus californicus	California jewelflower	Brassicaceae	annual herb	Feb-May	FE	CE	G1	S1	1B.1	Yes	1984-01-01	No Photo Available
Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	FE	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	None	None	G2?	S2?	1B.2	Yes	1988-01-01	No Photo Available

Eriastrum hooveri	Hoover's eriastrum	Polemoniaceae	annual herb	Mar-Jul	FD	None	G3	S3	4.2	Yes	1974-01-01	© 2011 Chris Winchell
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	1980-01-01	No Photo Available
Imperata brevifolia	California satintail	Poaceae	perennial rhizomatous herb	Sep-May	None	None	G3	S3	2B.1		2006-12-26	 © 2020 Matt C. Berger
Lasthenia chrysantha	alkali-sink goldfields	Asteraceae	annual herb	Feb-Apr	None	None	G2	S2	1B.1	Yes	2019-09-30	© 2009 California State University, Stanislaus
Layia munzii	Munz's tidy-tips	Asteraceae	annual herb	Mar-Apr	None	None	G2	S2	1B.2	Yes	1988-01-01	© 2017 Neal Kramer
Leptosiphon serrulatus	Madera leptosiphon	Polemoniaceae	annual herb	Apr-May	None	None	G3	S3	1B.2	Yes	1980-01-01	© 2008 Chris Winchell
Navarretia myersii ssp. ..	pincushion navarretia	Polemoniaceae	annual herb	Apr-May	None	None	G2T2	S2	1B.1	Yes	1994-01-01	© 2020 Leigh Johnson
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	FT	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Orcuttia pilosa	hairy Orcutt grass	Poaceae	annual herb	May-Sep	FE	CE	G1	S1	1B.1	Yes	1980-01-01	© 2003 George W. Hartwell
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G2	S2	1B.2		2015-10-15	© 2017 Chris Winchell

Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	Yes	1984-01-01	©2013 Debra L. Cook
Trichostema ovatum	San Joaquin bluecurls	Lamiaceae	annual herb	(Apr-Jun)Jul-Oct	None	None	G3	S3	4.2	Yes	1974-01-01	No Photo Available

Showing 1 to 19 of 19 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2024. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 14 March 2024].

Appendix D. Recommended timing and methodology for Swainson's hawk nesting surveys in California's Central Valley.

RECOMMENDED TIMING AND METHODOLOGY FOR SWAINSON'S HAWK NESTING SURVEYS IN CALIFORNIA'S CENTRAL VALLEY

Swainson's Hawk Technical Advisory Committee

May 31, 2000

This set of survey recommendations was developed by the Swainson's Hawk Technical Advisory Committee (TAC) to maximize the potential for locating nesting Swainson's hawks, and thus reducing the potential for nest failures as a result of project activities/disturbances. The combination of appropriate surveys, risk analysis, and monitoring has been determined to be very effective in reducing the potential for project-induced nest failures. As with most species, when the surveyor is in the right place at the right time, Swainson's hawks may be easy to observe; but some nest sites may be very difficult to locate, and even the most experienced surveyors have missed nests, nesting pairs, mis-identified a hawk in a nest, or believed incorrectly that a nest had failed. There is no substitute for specific Swainson's hawk survey experience and acquiring the correct search image.

METHODOLOGY

Surveys should be conducted in a manner that maximizes the potential to observe the adult Swainson's hawks, as well as the nest/chicks second. To meet the California Department of Fish and Game's (CDFG) recommendations for mitigation and protection of Swainson's hawks, surveys should be conducted for a ½ mile radius around all project activities, and if active nesting is identified within the ½ mile radius, consultation is required. In general, the TAC recommends this approach as well.

Minimum Equipment

Minimum survey equipment includes a high-quality pair of binoculars and a high quality spotting scope. Surveying even the smallest project area will take hours, and poor optics often result in eye-strain and difficulty distinguishing details in vegetation and subject birds. Other equipment includes good maps, GPS units, flagging, and notebooks.

Walking vs Driving

Driving (car or boat) or "windshield surveys" are usually preferred to walking if an adequate roadway is available through or around the project site. While driving, the observer can typically approach much closer to a hawk without causing it to fly. Although it might appear that a flying bird is more visible, they often fly away from the observer using trees as screens; and it is difficult to determine from where a flying bird came. Walking surveys are useful in locating a nest after a nest territory is identified, or when driving is not an option.

Angle and Distance to the Tree

Surveying subject trees from multiple angles will greatly increase the observer's chance of detecting a nest or hawk, especially after trees are fully leafed and when surveying multiple trees

in close proximity. When surveying from an access road, survey in both directions. Maintaining a distance of 50 meters to 200 meters from subject trees is optimal for observing perched and flying hawks without greatly reducing the chance of detecting a nest/young: Once a nesting territory is identified, a closer inspection may be required to locate the nest.

Speed
Travel at a speed that allows for a thorough inspection of a potential nest site. Survey speeds should not exceed 5 miles per hour to the greatest extent possible. If the surveyor must travel faster than 5 miles per hour, stop frequently to scan subject trees.

Visual and Aural Ques
Surveys will be focused on both observations and vocalizations. Observations of nests, perched adults, displaying adults, and chicks during the nesting season are all indicators of nesting Swainson's hawks. In addition, vocalizations are extremely helpful in locating nesting territories. Vocal communication between. hawks is frequent during territorial displays; during courtship and mating; through the nesting period as mates notify each other that food is available or that a threat exists; and as older chicks and fledglings beg for food.

Distractions
Minimize distractions while surveying. Although two pairs of eyes may be better than one pair at times, conversation may limit focus. Radios should be off, not only are they distracting, they may cover a hawk's call.

Notes and Species Observed
Take thorough field notes. Detailed notes and maps of the location of observed Swainson's hawk nests are essential for filling gaps in the Natural Diversity Data Base; please report all observed nest sites. Also document the occurrence of nesting great homed owls, red-tailed hawks, red-shouldered hawks and other potentially competitive species. These species will infrequently nest within 100 yards of each other, so the presence of one species will not necessarily exclude another.

TIMING

To meet **the minimum level** of protection for the species, surveys should be completed for **at least** the two survey periods immediately prior to a project's initiation. For example, if a project is scheduled to begin on June 20, you should complete 3 surveys in Period III and 3 surveys in Period V. However, it is always recommended that surveys be completed in Periods II, III and V. **Surveys should not be conducted in Period IV.**

The survey periods are defined by the timing of migration, courtship, and nesting in a "typical" year for the majority of Swainson's hawks from San Joaquin County to Northern Yolo County. Dates should be adjusted in consideration of early and late nesting seasons, and geographic differences (northern nesters tend to nest slightly later, etc). If you are not sure, contact a TAC member or CDFG biologist.

Survey dates **Justification and search image**	**Survey time**	**Number of Surveys**
I. *January-March 20 (recommended optional)*	*All day*	*1*

Prior to Swainson's hawks returning, it may be helpful to survey the project site to determine potential nest locations. Most nests are easily observed from relatively long distances, giving the surveyor the opportunity to identify potential nest sites, as well as becoming familiar with the project area. It also gives the surveyor the opportunity to locate and map competing species nest sites such as great homed owls from February on, and red-tailed hawks from March on. After March 1, surveyors are likely to observe Swainson's hawks staging in traditional nest territories.

II. *March 20 to April 5*	*Sunrise to 1000* *1600 to sunset*	*3*

Most Central Valley Swainson's hawks return by April 1, and immediately begin occupying their traditional nest territories. For those few that do not return by April 1, there are often hawks ("floaters") that act as place-holders in traditional nest sites; they are birds that do not have mates, but temporarily attach themselves to traditional territories and/or one of the site's "owners." Floaters are usually displaced by the territories' owner(s) if the owner returns.

Most trees are leafless and are relatively transparent; it is easy to observe old nests, staging birds, and competing species. The hawks are usually in their territories during the survey hours, but typically soaring and foraging in the mid-day hours. Swainson's hawks may often be observed involved in territorial and courtship displays, and circling the nest territory. Potential nest sites identified by the observation of staging Swainson's hawks will usually be active territories during that season, although the pair may not successfully nest/reproduce that year.

III. *April 5 to April 20*	*Sunrise to 1200* *1630 to Sunset*	***3***

Although trees are much less transparent at this time, 'activity at the nest site increases significantly. Both males and females are actively nest building, visiting their selected site frequently. Territorial and courtship displays are increased, as is copulation. The birds tend to vocalize often, and nest locations are most easily identified. This period may require a great deal of "sit and watch" surveying.

IV. *April 21 to June 10*	*Monitoring known nest sites only* ***Initiating Surveys is not recommended***	

Nests are extremely difficult to locate this time of year, and even the most experienced surveyor will miss them, especially if the previous surveys have not been done. During this phase of nesting, the female Swainson's hawk is in brood position, very low in the nest, laying eggs, incubating, or protecting the newly hatched and vulnerable chicks; her head may or may not be visible. Nests are often well-hidden, built into heavily vegetated sections of trees or in clumps of mistletoe, making them all but invisible. Trees are usually not viewable from all angles, which may make nest observation impossible.

Following the male to the nest may be the only method to locate it, and the male will spend hours away from the nest foraging, soaring, and will generally avoid drawing attention to the nest site. Even if the observer is fortunate enough to see a male returning with food for the female, if the female determines it is not safe she will not call the male in, and he will not approach the nest; this may happen if the observer, or others, are too close to the nest or if other threats, such as rival hawks, are apparent to the female or male.

V. ***June 10 to JuIy 30 (post-fledging)*** ***Sunrise to 1200*** ***3***
1600 to sunset

Young are active and visible, and relatively safe without parental protection. Both adults make numerous trips to the nest and are often soaring above, or perched near or on the nest tree. The location and construction of the nest may still limit visibility of the nest, young, ‘and adults.

DETERMINING A PROJECT'S POTENTIAL
FOR IMPACTING SWAINSON'S HAWKS

LEVEL OF RISK	REPRODUCTIVE SUCCESS (Individuals)	LONGTERM SURVIVABILITY (Population)	NORMAL SITE CHARACTERISTICS (Daily Average)	NEST MONI-TORING
HIGH	Direct physical contact with the nest tree while the birds are on eggs or protecting young. (Helicopters in close proximity)	Loss of available foraging area.	Little human-created noise, little human use: nest is well away from dwellings, equipment yards, human access areas, etc. *Do not include general cultivation practices in evaluation.*	**MORE**
		Loss of nest trees.		
	Loss of nest tree after nest building is begun prior to laying eggs.	Loss of potential nest trees.		
	Personnel within 50 yards of nest tree (out of vehicles) for extended periods while birds are on eggs or protecting young that are < 10 days old.	Cumulative: Multi-year, multi-site projects with substantial noise/personnel disturbance.		
	Initiating construction activities (machinery and personnel) within 200 yards of the nest after eggs are laid and before young are > 10 days old.	Cumulative: Single-season projects with substantial noise/personnel disturbance that is greater than or significantly different from the daily norm.		
	Heavy machinery only working within 50 yards of nest.		Substantial human-created noise and occurrence: nest is near roadways, well-used waterways, active airstrips, areas that have high human use. *Do not include general cultivation practices in evaluation.*	
	Initiating construction activities within 200 yards of nest before nest building begins or after young > 10 days old.	Cumulative: Single-season projects with activities that "blend" well with site's "normal' activities.		
LOW	All project activities (personnel and machinery) greater than 200 yards from nest.			**LESS**

APPENDIX C

Cultural Resources Evaluation

Phase I Cultural Resources Assessment for the Bella Vita Mixed-Use Project, City of Fresno, Fresno County, California

Consuelo Y. Sauls, M.A., RPA

Prepared By

Taylored Archaeology
6083 N. Figarden Dr., Ste. 616
Fresno, CA 93722

Prepared For
4Creeks, Inc.
324 S. Santa Fe St., Suite A
Visalia, CA 93292

April 2024

USGS Herndon 7.5' topographic quadrangle,
24 total project acres; 24 acres surveyed
Keywords: Raiden-Kamp Ditch

MANAGEMENT SUMMARY

Taylored Archaeology completed a cultural resource assessment for the Bella Vita Mixed-Use Project (Project) in the City of Fresno, Fresno County, California. The Project is subject to the California Environmental Quality Act (CEQA), with the City of Fresno as the lead agency under CEQA. In order to meet this state standard, the objective of this assessment is to identify and evaluate potential cultural resources within the 24-acre Project site. The Project proposes to construct a multi-family residential development as well as commercial and retail development.

This Phase I cultural resource assessment includes background research, review of cultural resource records from the Southern San Joaquin Valley Information Center (SSJVIC), a search of the Sacred Lands File from the Native American Heritage Commission (NAHC), local Native American outreach, archival research, an archaeological pedestrian survey of the Project area, and documentation of cultural resources identified within the Project boundary.

The cultural resource records search of the SSJVIC identified 10 prior cultural resources studies and one historic-era resource in the Project boundary, the Radin-Kamp Ditch (P-10-006642). The SSJVIC also reported 11 prior cultural studies and four previously recorded cultural resources within a 0.5-mile radius of the surrounding area. According to the records search results, the Project site was previously surveyed in 1997 and 2010. Both prior surveys found no cultural resources on the Project site except for the Radin-Kamp Ditch, which was evaluated in 2000 and recommended as not eligible for listing in the National Register of Historic Places or the California Register of Historical Resources.

Taylored Archaeology requested a review of the NAHC's Sacred Lands File on March 11, 2024. Taylored Archaeology also sent outreach letters to a list of Native American contacts regarding the Project and the surrounding area on March 25, 2024. To date, no responses have been received.

A pedestrian survey of the Project site was conducted on March 22, 2024, and the results of the survey confirmed that the remnant of the Radin-Kamp Ditch is present on the Project site. Taylored Archaeology also observed and noted two transmission lines, including four metal transmission towers on the site. No other cultural resources were identified in the Project boundary. Based on archival research, these two transmission lines are the Herndon-Ashlan 230kV (circa 1965) and Herndon-Manchester 115kV (circa 1947) transmission lines. Because the transmission lines and towers are older than 50 years, they may potentially be historical resources under CEQA. Neither transmission line nor any of the transmission towers were previously recorded as cultural resources.

Based on the results of this investigation, Taylored Archaeology makes the following recommendations:

- Should the Project propose changes to the transmission lines and towers on the Project site then they may need to be assessed by an architectural historian to determine if they qualify as historical resources under CEQA.

- In the event of accidental discovery of unidentified archaeological resources during development or ground-disturbing activities in the Project area, all work shall be halted in the immediate vicinity (within a 100-foot radius) until a qualified archaeologist can identify the discovery and assess its significance.

- If human remains are uncovered during construction, the Fresno County Coroner shall be notified to investigate the remains and arrange proper treatment and disposition. If the remains are identified on the basis of archaeological context, age, cultural associations, or biological traits to be those of a Native American, the State of California Health and Safety Code 7050.5 and PRC 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent who will make recommendations regarding the treatment and disposition of the remains.

A copy of this report and Department of Parks and Recreation 523 forms will be provided to the SSJVIC at California State University, Bakersfield.

CONTENTS

1 INTRODUCTION 1
1.1 PROJECT LOCATION AND DESCRIPTION 1
1.2 REGULATORY SETTING 1
1.2.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT 2
1.3 PROFESSIONAL QUALIFICATIONS 2
1.4 REPORT STRUCTURE 6

2 PROJECT SETTING 7
2.1 NATURAL ENVIRONMENT 7
2.2 PREHISTORIC SETTING 8
2.3 ETHNOGRAPHY 10
2.4 HISTORIC SETTING 11
2.4.1 Central California History 11
2.4.2 Local History 12

3 METHODS 14
3.1 RECORDS SEARCH 14
3.2 ARCHIVAL RESEARCH 14
3.3 NATIVE AMERICAN OUTREACH 14
3.4 ARCHAEOLOGICAL PEDESTRIAN SURVEY 14

4 FINDINGS 16
4.1 RECORDS SEARCH 16
4.2 ARCHIVAL RESEARCH 20
4.3 NATIVE AMERICAN OUTREACH 20
4.4 ARCHAEOLOGICAL PEDESTRIAN SURVEY RESULTS 22

5 CONCLUSIONS AND RECOMMENDATIONS 26

6 REFERENCES 28

APPENDICIES

A Personnel Qualifications
B Records Search Results
C Native American Outreach
D DPR 523 Cultural Resource Record Forms

FIGURES

Figure 1-1 Project vicinity in Fresno County, California. 3
Figure 1-2 Project location on the USGS Herndon, CA 7.5-minute quadrangle. 4
Figure 1-3 Aerial view of the Project boundary showing survey coverage. 5
Figure 2-1 Map of Figarden circa 1913. Arrow showing Project site (Hattersley-Drayton 2013). 13
Figure 4-1 Central portion of Project site, facing northwest. 23
Figure 4-2 Ground visibility in central portion of Project site, facing east. 23
Figure 4-3 Soil piles in southern portion of Project site, facing northwest. 24
Figure 4-4 Raiden-Kamp ditch in western Project site, facing east. 1.6-meter archaeologist for scale. 24
Figure 4-5 Transmission towers in southeast Project site, facing southeast. 115kV on left, 230kV on right. 25

TABLES

Table 4-1 Previous Recorded Cultural Resources within the Project Area 16
Table 4-2 Previous Recorded Cultural Resources within 0.5-miles radius of the Project Area 16
Table 4-3 Previous Cultural Resource Investigation Reports within the Project Area 17
Table 4-4 Previous Cultural Resource Investigation Reports within 0.5-mile radius of the Project Area 19

1
INTRODUCTION

Taylored Archaeology was retained by 4Creeks, Inc. to conduct a Phase I cultural resources assessment for the Bella Vita Mixed-Use Project (Project) in the City of Fresno, Fresno County, California. The proposed Project is subject to the California Environmental Quality Act (CEQA) with the City of Fresno (City) acting as the CEQA lead agency. Taylored Archaeology conducted a Phase I cultural resources assessment in accordance with CEQA to evaluate potential Project impacts to cultural resources under the CEQA guidelines further described in Section 1.2.1 of this report.

1.1 PROJECT LOCATION AND DESCRIPTION

The proposed Project site is within the City of Fresno, in Fresno County (Figure 1-1). The Project site is on the southeast corner of West Herndon Avenue and Hayes Avenue and along North Veterans Boulevard in northwest Fresno. More specifically, the Project site consists of Fresno County Assessor's Parcel Number 504-092-09, 504-092-10ST, 504-092-15, 504-092-16 and 506-010-14T within Sections 3 and 4 of Township 13 South, Range 19 East, Mount Diablo Meridian of the Herndon, California 7.5-minute United States Geological Survey (USGS) topographic quadrangle (Figure 1-2). The site consists of an open field and is surrounded by single-family residential development, a park, and an elementary school.

The Project proposes to build a new mixed-use development located on an approximately 24-acre site. It would include commercial and retail development with a 13,000 square feet strip commercial retail building, two 5,000 square feet restaurants with associated parking and drive-thru facilities, and 18.75 acres of high-density residential development.

1.2 REGULATORY SETTING

In this report "cultural resources" are defined as prehistoric or historical archaeological sites as well as historical objects, buildings, or structures. In accordance with 30 Code of Federal Regulations (CFR) §60.4, "historical" in this report applies to cultural resources which are at least 50 years old. The significance or importance of a cultural resource is dependent upon whether the resource qualifies for inclusion at the local or state level in the California Register of Historical Resources (CRHR), or at the federal level in the National Register of Historic Places (NRHP). Cultural resources that are determined to be eligible for inclusion in the CRHR are called "historical resources" (California Code of Regulations [CCR] 15064.5[a]). Under this statue the determination of eligibility is partially based on the consideration of the criteria of significance as defined in 14 CCR 15064.5(a)(3). Cultural resources eligible for inclusion in the NRHP are deemed "historic properties".

1.2.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

Pursuant to CEQA, a historical resource is a resource listed in, or determined to be eligible for listing in, the CRHR. Historical resources may include, but are not limited to, "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically or archaeologically significant" (PRC §5020.1[j]). In addition, a resource included in a local register of historical resources or identified as significant in a local survey conducted in accordance with the state guidelines are also considered historic resources under California Public Resources Code (PRC) Section 5020.1.

CEQA details appropriate measures for the evaluation and protection of cultural resources in §15064.5 of the CEQA Guidelines. According to CEQA guidelines §15064.5 (a)(3), criteria for listing on the CRHR includes 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.*
> *(D) Has yielded, or may be likely to yield, information important in prehistory or history.*

According to CEQA guidelines §21074 (a)(1), criteria for tribal cultural resources includes the following:

> *(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:*
> *(A) included or determined to be eligible for inclusion in the California Register of Historical Resources.*
> *(B) included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.*

Protection of cultural resources within California is additionally regulated by PRC §5097.5, which prohibits destruction, defacing, or removal of any historic or prehistoric cultural features on land under the jurisdiction of State or local authorities.

1.3 PROFESSIONAL QUALIFICATIONS

Archaeologist Consuelo Y. Sauls (M.A.), a Registered Professional Archaeologist (RPA 41591505), managed the assessment and compiled this report for the Project. Ms. Sauls also conducted the records search, literature review, requested Sacred Lands File and performed the pedestrian field survey of the Project site. Ms. Sauls meets the Secretary of the Interior's Standards for Professional Qualifications in Archaeology. Statement of Qualifications for key personnel is provided in Appendix A.

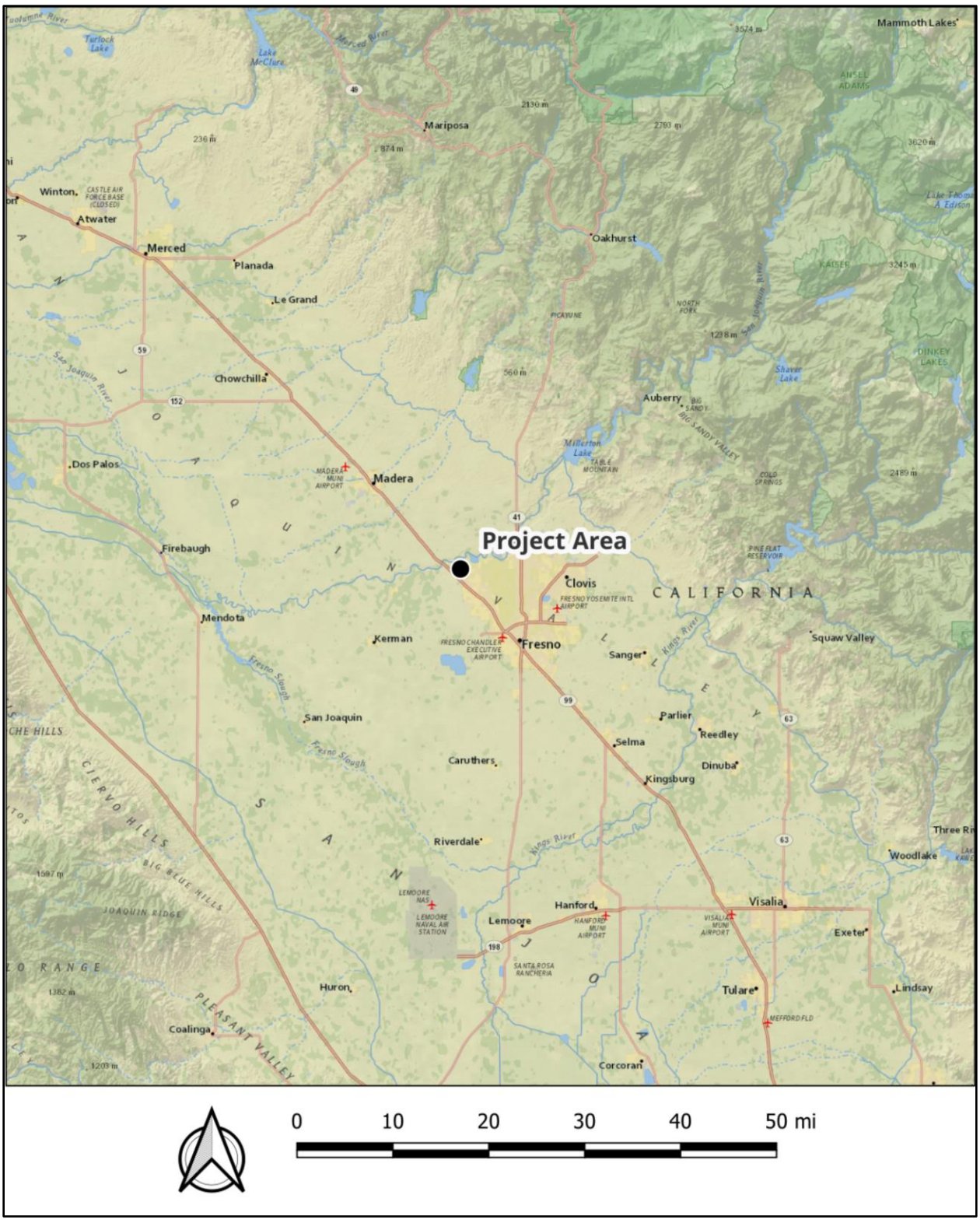


Figure 1-1 Project vicinity in Fresno County, California.

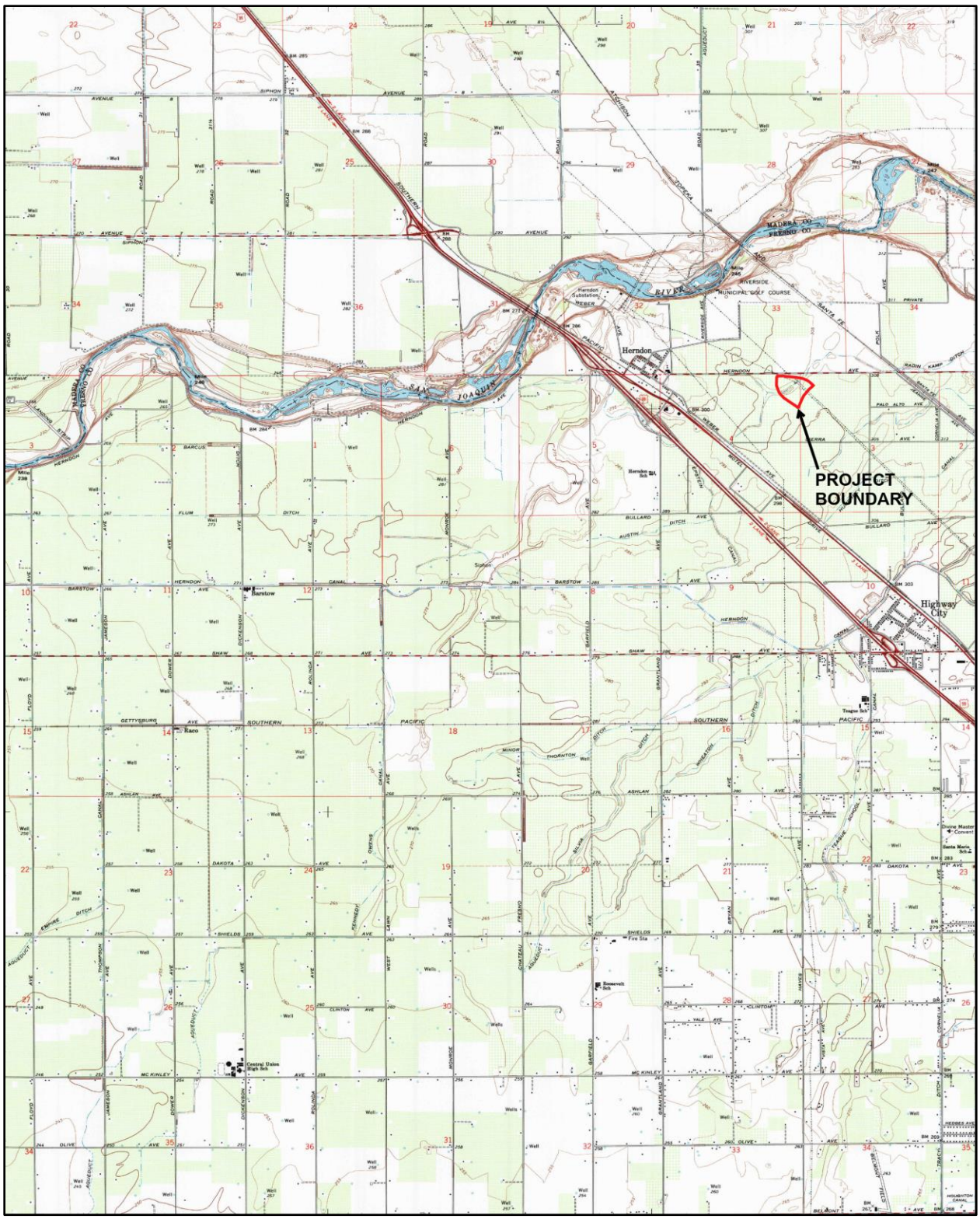


Figure 1-2 Project location on the USGS Herndon, CA 7.5-minute quadrangle.

Figure 1-3 Aerial view of the Project boundary showing survey coverage.

1.4 REPORT STRUCTURE

This report documents the results of an archaeological survey report of the proposed Project area. In order to assess potential project impacts to archaeological and historical resources pursuant to CCR §15064.5, the following specific tasks were completed: (1) requesting a records search from the Southern San Joaquin Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS), at California State University, Bakersfield; (2) requesting a Sacred Lands File Search from the Native American Heritage Commission (NAHC); (3) archival research; (4) conducting an archaeological pedestrian survey; and (5) preparing Department of Parks and Recreation (DPR) 523 series record forms.

Taylored Archaeology prepared this report following the California Office of Historic Preservation standards in the 1990 Archaeological Resources Management Report Recommended Contents and Format. Chapter 1 describes the introduction of the Project and its location, and identifies the key personnel involved in this report. Chapter 2 summarizes the Project setting, including the natural, prehistoric, historic, and ethnographic background for the Project area and surrounding area. Chapters 3 details the methods used for cultural records search, archival research, local Native American outreach, and archaeological pedestrian survey. Chapter 4 summarizes the results of the cultural resource investigation. Chapter 5 discusses the Project results and offers management recommendations. Chapter 6 is a bibliography of references cited within this report. The report also contains the following appendices: Qualifications of key personnel (Appendix A), the CHRIS records search results (Appendix B), the NAHC letter of the SLF results (Appendix C), and DPR Forms (Appendix D).

2
PROJECT SETTING

2.1 NATURAL ENVIRONMENT

The Project site is in the City of Fresno within the central northern portion of Fresno County in the San Joaquin Valley, which forms the southern half of the Central Valley of California. The Central Valley dominates the landscape within Central and Northern California, running approximately 450 miles from north to south, and ranging east to west between 40 to 60 miles with an average width of 55 miles (Frayer et al. 1989). The Central Valley is divided into two subunits named after the primary rivers within each area, the Sacramento Valley in the north and the San Joaquin Valley in the south (Madden 2020). Climate within the San Joaquin Valley is classified as a hot Mediterranean climate, with hot and dry summers, and cool damp winters characterized by periods of dense fog known as tule fog (Prothero 2017).

The Project area is located at approximately 312 feet above mean sea level on the flat plains of the southern half of the San Joaquin Valley. The San Joaquin Valley is a comprised of a structural trough created approximately 65 million years ago and is filled with nearly 6 miles of sediment (Bull 1964). The San Joaquin Valley ranges from Stockton and the San Joaquin-Sacramento River Delta in the north to Wheeler Ridge to the south (Zack 2017). It is split by late Pleistocene alluvial fans between the San Joaquin River hydrologic area in the north and the Tulare Lake Drainage Basin in the south (Rosenthal et al 2007). Northern Fresno County is located within the later of these two hydrologic units. In the eastern portion of the San Joaquin Valley, sediments are primarily deposited from the Sierra Nevada Mountains and consist of highly permeable sands with medium to coarse grains within the broad alluvial fans. These deposits range from coarsest near the upper parts of the alluvial fan to the east, to finest nearest the lowest and central portions of the valley (USGS 1999).

The Project is in central northern Fresno County on the valley floor of the San Joaquin Valley, within the broader plains south of the San Joaquin River. Specifically, the project is located one mile south of the Lower San Joaquin River with surface hydrology draining to the southwest (Google Earth 2024). Before the appearance of agriculture in the nineteenth century, the general Project location would have been comprised of prairie grasslands with scattered oak tree savannas near the foothills, and riparian forest along the various streams and drainages (Preston 1981).

Riparian environments would also have been present along various waterways, including drainages and marshes. Riparian forest vegetation would have been comprised of multiple layers of dense undergrowth. The upper canopy species would have consisted of Western sycamore (*Platanus racemosa*), willow (*Salix* spp.), valley oak (*Quercus lobata*), and Fremont cottonwood (*Populus fremonti*) (Katibah 1984). Intermediate layers were likely dominated by Oregon ash (*Fraxinus latifolia*), willow (*Salix* spp.), and California box elder (*Acernegundo* subsp. *californicum*), while riparian forest undergrowth would have included California wild grape (*Vitis californica*), poison oak (*Rhus diversiloba*), California mugwort (*Artemisia douglasiana*), California

wild rose (*Rosa californica*), and blackberry (*Rubus* spp.) Drier portions of the southern end of the San Joaquin Valley would have been dominated by saltbrush (*Atriplex* spp.) desert. (Katibah 1984).

The region around the Project site and the Lower San Joaquin River was largely dominated by annual grasslands in drier upland habitat, and riparian forest, rivers and marshland near the river. Historically, these habitats provided a lush environment for a variety of animals, including rodents, insects, reptiles, birds and other waterfowl, California grizzly bear (*Ursus arctos californicus*), tule elk (*Cervus canadensis nannodes*), pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), American black bear (*Ursus americanus*), and mountain lion (*Puma concolor*) (Preston 1981). Native trees and plants observed in the Project vicinity include various blue, live, and white oaks (*Quercus* spp.), cottonwood (*Populus* spp.), and willow (*Salix* spp.). The introduction of agriculture to the region resulted in large animals being forced out of their habitat. Common land mammals now include coyote (*Canis latrans*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), kit fox (*Vulpes macrotis*), and rabbits (*Leporidae* spp.).

Rivers and lakes throughout the valley provide habitat for freshwater fish, including rainbow trout (*Oncorhynchus mykiss*), Sacramento sucker (*Catostomus occidentalis*), and Sacramento perch (*Archoplites interruptus*) (Preston 1981). Chinook salmon (*Oncorhynchus tshawytscha*) were also found throughout the valley, including as far south as the San Joaquin River, and occasionally the Kings River, though it is estimated that chinook salmon have lost as much as 72 percent of their original habitat throughout the Central Valley (Yoshiyama et al. 2001).

2.2 PREHISTORIC SETTING

Research into San Joaquin Valley prehistory began in the early 1900s with several archaeological investigations (Rosenthal et al. 2007). The Southern San Joaquin Valley is of one of the least understood areas within California due to a lack of well-grounded chronologies for large segments of the valley (Rosenthal et al. 2007). This is largely due to the valley floor being filled with thick alluvial deposits, and from human activity largely disturbing much of the valley floor due to a century and a half of agricultural use (Dillon 2002; Siefken 1999). Mound sites may have occurred as frequently as one every two or three miles along major waterways but studying such mounded occupations sites is difficult as most surface sites have been destroyed (Schenck and Dawson 1929). Much of the early to middle Holocene archaeological sites may be buried as deep as 10 meters due to millennia of erosion and alluvial deposits from the western Sierras (Moratto 1984).

Mass agricultural development has heavily disturbed and changed the landscape of the Southern San Joaquin Valley, from the draining of marshes and the vanishing of the extensive Tulare Lake, known as “Pa’ashi” meaning “Big Water” in the Yokut language, to grading nearly the entire valley for agricultural operations (Garone 2011; Underhill 2023). These activities have impacted or scattered much of the shallow surface deposits and mounds throughout the valley (Rosenthal et al 2007). Some researchers have suggested that potentially as much as 90 percent of all Central California archaeological sites have been destroyed from these activities (Riddell 2002).

The cultural traits and chronologies which are summarized below are largely based upon information discussed in multiple sources, including Bennyhoff and Fredrickson (Fredrickson 1973, 1974), Garfinkel (2015), McGuire and Garfinkel (1980), Moratto (1984), and Rosenthal et al. (2007). The most recent comprehensive approach to compiling a chronology of the Southern San Joaquin Valley prehistory is by Garfinkel in 2015, which builds off Rosenthal's 2007 previous work. Both Garfinkel's and Rosenthal's chronologies are calculated in years B.C. In the interest of maintaining cohesiveness with modern anthropological research, the dates of these chronologies have been adapted into years before present (B.P.).

The Paleo-Indian Period (13,500-10,600 cal B.P.) was largely represented by ephemeral lake sites which were characterized by atlatl and spear projectile points. Around 14,000 years ago, California was largely a cooler and wetter place, but with the retreat of continental Pleistocene glaciers, California largely experienced a warming and drying period. Lakes filled with glacial meltwater were located in the valley floor and used by populations of now extinct large game animals. A few prehistoric sites were discovered near the southwestern shore of Tulare Lake (Garfinkel 2015). Foragers appear to have operated in small groups which migrated on a regular basis.

During the Lower Archaic Period (10,500-7450 cal B.P.), climate change created a largely different environment which led to the creation of larger alluvial fans and flood plains. Most of the archaeological records of the prior period wound up being buried by geological processes. During this time, cultural patterns appear to have emerged between the foothill and valley populations of the local people. The foothill sites were often categorized by dense flaked and ground stone assemblages, while the valley sites were instead characterized by a predominance of crescents and stemmed projectile points. Occupation within the area is represented mostly by isolated discoveries, and along the former shoreline of Tulare Lake finds are typically characterized by chipped stone crescents, stemmed points, and other distinctive flakes stone artifacts (Rosenthal et al. 2007). Variations in consumption patterns emerged as well, with the valley sites more marked by consumption of waterfowl, mussels, and freshwater fish, while the foothills sites saw an increase in nuts, seeds, and a more narrowly focused diet than the valley sites.

The Middle Archaic (7450-2500 cal B.P.) saw an increase in semi-permanent villages along river and creek settings, with more permanent sites located along lakes with a more stable supply of water and wildlife. Due to the warmer and drier weather of this period, many lakes within the valley dramatically reduced in size, while some vanished completely (Garone 2011). Cultural patterns during this time saw an increase in stone tools, while a growth in shell beads, ornaments, and obsidian evidence an extensive and ever-growing long-distance trade network. Little is known of cultural patterns in the valley during the Upper Archaic (2500-850 B.P.), but large village structures appeared to be more common around local rivers. An overall reduction of projectile point size suggests changing bow and arrow technologies. Finally, the Emergent Period (850 cal B.P. - Historic Era) was generally marked by an ever-increasing specialization in tools, and the bow and arrow generally replaced the dominance of the dart and atlatl. Cultural traditions ancestral to those recorded during ethnographic research in the early 1900s are identifiable.

2.3 ETHNOGRAPHY

The Project area is in the Valley Yokuts ethnographic territory of the San Joaquin Valley (Kroeber 1976). The Yokuts are a sub-group of the Penutian language that covers much of coastal and central California and Oregon (Callaghan 1958). The Yokuts language contained multiple dialects spoken throughout the region, though many of them were mutually understandable (Merriam 1904). The Yokuts were generally divided into three major groups: the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts.

The Yokuts have been extensively researched and recorded by ethnographers, including Powers (1877), Kroeber (1976), Gifford and Schenck (1926, 1929), Gayton (1930, 1945), Driver (1937), Harrington (1957), Latta (1977), and Wallace (1978). Much of the research from these ethnographers focuses on the central Yokuts tribes due to the northernmost tribes being impacted by Euro-Americans during the California Gold Rush of the mid 1800s, and by the southernmost tries often being removed and relocated by the Spanish to various Bay Area or coastal missions. The central Yokuts tribes, and especially the western Sierra Nevada foothill tribes, were the most intact at the time of ethnographic study.

Based upon Kroeber's map of Southern and Central Yokuts (1925: Plate 47), the Project area is within the Pitkachi Yokuts territory. The closest village for this area was *Kohuou*, which was located along the San Joaquin River near the modern-day community of Herndon, approximately 1 mile northwest of the Project site (Kroeber 1925). Primary Yokuts villages were typically located along lakeshores and major stream courses, with scattered secondary or temporary camps and settlements located near gathering areas in the foothills. Yokuts were known for using controlled burns to actively maintain tule grass marshlands, clover fields, oak savannas for hunting, gathering, and land management practices (Anderson 2005).

Yokuts were organized into local tribes, with one or more linked villages and smaller settlements within a territory (Kroeber 1925). Each local tribe was a land-owning group that was organized around a central village, and shared common territory and ancestry. Most local tribe populations ranged from 150 to 500 people (Kroeber 1925). These local tribes were often led by a chief, who was often advised by a variety of assistants including the winatum, who served as a messenger and assistant chief (Gayton 1930). Early studies by Kroeber (1925), Gifford (1926), and Gayton (1930) concluded that social and political authority within local tribes was derived from male lineage and patriarchy. However, more recent reexaminations (Dick-Bissonnette 1998) argue that this assumption of patriarchal organization was based on male bias by early 20th century researchers, and instead Yokuts sociopolitical authority was matriarchal in nature and centered around matrilineal use-rights and women's work groups.

2.4 HISTORIC SETTING

2.4.1 Central California History

European contact in California started along the coast in the early 1500s, but the San Joaquin Valley was not contacted by Europeans until the late 1700s (Starr 2007). Likely the earliest exploration of the San Joaquin Valley by Europeans was by Spaniards in the fall of 1772. At that time a group known as the Catalonian Volunteers traveled through Tejon Pass into the valley searching for deserters from the Spanish missions in Southern California (Zack 2017). The Catalonian Volunteers only traveled as far north as Buena Vista Lake in modern-day west Kern County before turning around due to extensive marshes and swampland. Other expeditions, such as one led by Lieutenant Bariel Moraga in 1806, had multiple purposes including exploration, hunting Native Americans fleeing the coastal missions, and finding sites for suitable missions (Cook 1958).

Subsequent expeditions were also sent to pursue outlaws from the coast who would often flee to the valley for safety. One of the subsequent explorations was an expedition in 1814 to 1815 with Sargent Juan Ortega and Father Juan Cabot, who left the Mission San Miguel with a company of approximately 30 Spanish soldiers and explored the San Joaquin Valley (Smith 2004). As the valley was still relatively lawless in the 1830s, those drawn to it were often either trappers like Jedediah Smith or horse thieves like Pegleg Smith (Clough and Secrest 1984). In fact, horse and other livestock theft was so rampant that ranching operations on the Rancho Laguna de Tache by the Kings River and Rancho del San Joaquin Rancho along the San Joaquin River could not be properly established (Cook 1962). With the end of the Mexican-American War and the beginning of the gold rush in 1848, the San Joaquin Valley became more populated with ranchers and prospectors. By 1850, California became a state and Fresno County was established in 1856 from portions of the existing Mariposa, Merced, and Tulare Counties.

The original county seat for Fresno was the town of Millerton along the south bank of the San Joaquin River near the crossing of the Stockton – Los Angeles Road that ran along the eastern side of the San Joaquin Valley (Clough and Secrest 1984). The town was founded in 1856 but suffered multiple years of flooding throughout the 1860s, and the county seat was later moved to the City of Fresno once the Union Pacific Railroad established a railroad stop at Fresno on the new San Joaquin Valley line in 1872.

With it the rail line brought an increase in agriculture and farms that clashed with existing ranching operations in the local area. Escalating conflicts and livestock disputes between ranchers and farmers lead to the “No Fence Law” in 1874, which forced ranchers to pay for crop and property damage caused by their cattle (Ludeke 1980). With the passage of this law and the expansion of irrigation systems, predominant land use in the 1870s switched from grazing to farming (Mitchell 1974). This led to the beginning of the vast change of the San Joaquin Valley from native vegetation and grasslands to irrigated crops (Varner and Stuart 1975).

Because water rights within California originally arose from the ‘first come, first served’ policy of the Gold Rush era, diverting surface water to farms became big business but a convoluted mess

of customs, traditions, and conflicting claims (Zack 2017). To solve this mess, the Wright Act of 1887 was passed that allowed residents to petition a local county board of supervisors to create irrigation districts that had the power to issues bonds, and tax land within the district boundaries to pay for the creation and maintenance of canals and ditches for irrigation purposes.

At the same time, an important step forward was made in ditch-digging technology that allowed irrigation systems to be built at a faster pace. From the 1840s to 1890s, farm ditches and canals were largely constructed using buckboards and slip-scoops, which involved the use of a board pulled by horses in an upright position to level ground (Bulls 2010). Between 1883 and 1885, Scottish immigrant James Porteous had moved to Fresno and made significant improvements to the buckboard style scraper that allowed the new scraper to be pulled by two horses and scrape and move soil while dumping it at a controlled depth. This new design was patented and sold as the "Fresno Scraper", which lead to an explosion of ditch digging efforts within the San Joaquin Valley (Zack 2017).

2.4.2 Local History

In 1870 the Central Pacific Railroad began its diagonal push down the San Joaquin Valley. New towns were surveyed along the corridor, several were planned by the railroad itself, and earlier villages situated away from the tracks often vanished overnight. In 1872 the railroad reached what is now Fresno. The Contract and Finance Company, a subsidiary of the Central Pacific Railroad, bought 4,480 acres in a desolate area where Dry Creek drained into the plains. Surveyor Edward H. Mix laid out the new town in blocks 320 feet by 400 feet, with 20-foot alleys, lots 25×150 feet fronting on 80-foot wide streets parallel to and on both sides of the tracks (Clough and Secrest 1984). The gridiron plan was filed in 1873 and was remarkably rigid, broken only by the space reserved for a future courthouse and the broad swaths through the center of town for the tracks, depot and yards (Reps 1979).

Fresno's location was uninviting at best, with barren sand plains in all directions. The nearest substantial supplies of water were the San Joaquin River to the north (Reps 1979) and the Kings River further south. Fresno grew slowly but in 1874 it was able to wrestle the county seat away from the former mining town of Millerton (Hoover et al. 1990).

The 1880s, however, were prosperous years and the desert was turned into profitable farmland with the introduction of irrigation and agricultural colonies. The model for the system that ultimately served throughout the San Joaquin Valley was the Central California Colony, established in 1875 three miles south of Fresno. The Colony was the "brainchild" of Bernard Marks, a German immigrant who approached William S. Chapman, one of the wealthiest landowners in California, with his vision of 20-acre family-owned farms sharing a secured source of water. Marks saw the potential for farming in the desert-like environment of the San Joaquin Valley if irrigation could be guaranteed (Panter 1994). Six sections of land owned by Chapman and investor William Martin in Township 14 South, Range 20 East were subdivided into 192 20-acre parcels. Three laterals from the Kings River via the Fresno Canal and Irrigation Company were extended into the tracts and water rights were sold to the prospective farmers. Twenty-three miles of roads were laid out and bordered with trees (Panter 1994). By 1903 there were 48

separate colonies or tracts in Fresno County representing approximately 71,080 acres (Panter 1994). These colonies helped to break up the vast estates and initiated what agricultural historian Donald Pisani has termed "the horticultural small-farm phase" of California agriculture (Datel 1999).

Fresno was incorporated in 1885. With incorporation, street grades and town lot numbers were established (Clough and Secrest 1984). In November 1887, 1,100 deeds were filed at the county courthouse and the last of the original railroad lots in Fresno were sold. By 1890 the population of Fresno was over 10,000, and land outside of the original town site was subdivided into streets and lots (Reps 1979).

The raisin industry developed in the 1870s, after the scorching heat of 1875 dried some of Francis T. Eisen's grapes on the vine. These early raisins were sent to San Francisco as a “Peruvian importation,” and caused an “immediate sensation” (Clough and Secrest 1984; Hoover et al. 1990). The Sun-Maid Raisin Cooperative was founded in 1911 and became one of the most successful in America. Fresno became the principal-packing center for the raisin grape industry with numerous packinghouses in the city. Other crops such as figs and stone fruits helped to diversify the local economy and Fresno became the market town for a large portion of the San Joaquin Valley (Reps 1979). The northwest side of Fresno was turned into a massive 12,000-acre fig orchard by J.C Forkner, who between 1910 to 1913 used Fresno scrapers and dynamite to level the soil and blast through hardpan (Hattersley-Drayton 2013; Figure 2-1).

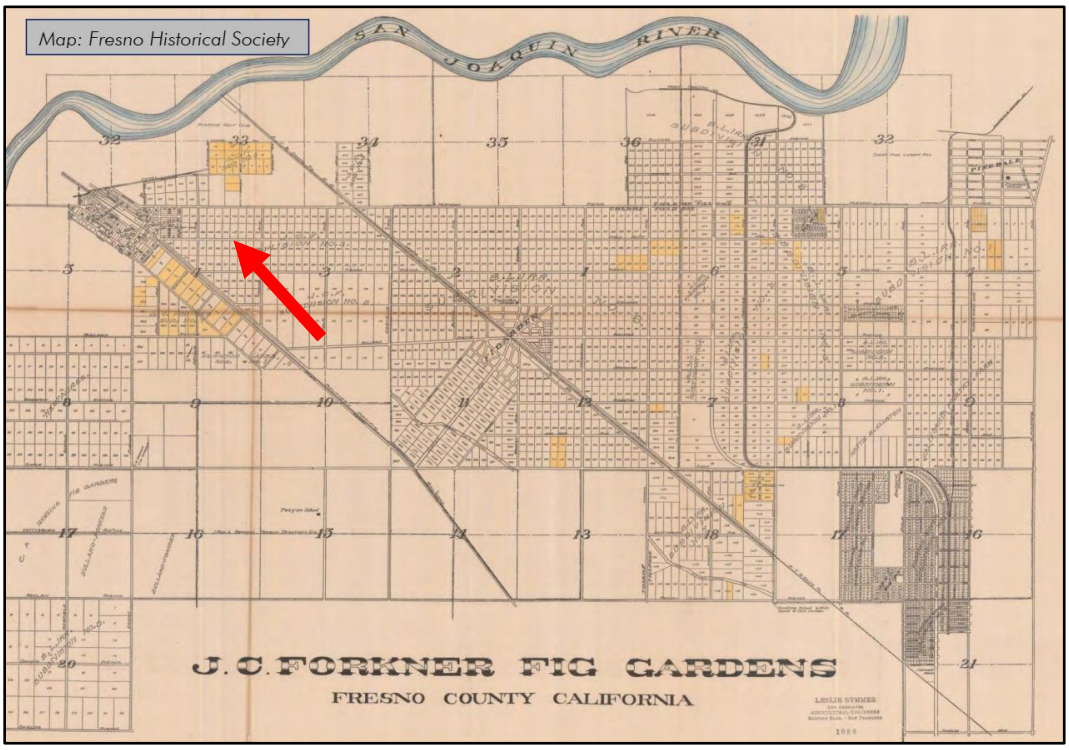


Figure 2-1 Map of Figarden circa 1913. Arrow showing Project site (Hattersley-Drayton 2013).

3
METHODS

3.1 RECORDS SEARCH

On March 7, 2024, Taylored Archaeology requested a cultural resource records search from the SSJVIC of the CHRIS at California State University in Bakersfield, California. The purpose of this request was to identify all previous cultural resource work and previously recorded cultural resources on or near the Project site. The records search included prior cultural resources investigation reports conducted, previously recorded resources within the Project area and the 0.5- mile radius of the Project area (Appendix B). Also included in research were cultural resource records (DPR forms) as well as the Historic Properties Directory of the Office of Historic Preservation list, General Land Office Maps, Archaeological Determinations of Eligibility list, and the California Inventory of Historic Resources list.

3.2 ARCHIVAL RESEARCH

Archival research was conducted to obtain information on the history of land use and to identify potential historical structures or buildings within the Project boundary. Historical maps, historical aerial photographs, historical USGS topographic maps, Google Street View photos, books, scholarly articles, and other records were used to better understand the historic background of the Project area and surrounding area. Research data was used from California State University, Fresno's database (http://malt.lib.csufresno.edu/MALT/), Google Earth and historicaerials.com. The results of this research are presented in Chapter 4.

3.3 NATIVE AMERICAN OUTREACH

Taylored Archaeology requested a Sacred Lands File (SLF) search from the Native American Heritage Commission (NAHC) on March 7, 2024. The purpose of this request is to identify places in or near the Project area that may be tribal cultural resources, including sacred sites or other resources of importance. The NAHC also included contact information of local Native American representatives who may have knowledge or interest in sharing information of resources of sacred or spiritual significance in the Project area and surrounding area. Each Native American representative listed was sent an outreach letter and a map notifying them of the Project and asking if they had any knowledge of the Project area or surrounding vicinity. Follow-up communication was performed via email and phone calls, as appropriate. The SLF results are in Chapter 4.

3.4 ARCHAEOLOGICAL PEDESTRIAN SURVEY

Archaeologist Consuelo Sauls conducted an archaeological pedestrian survey of the Project boundary on March 22, 2024. Ms. Sauls surveyed the Project boundary using transects spaced from 10 meters apart. Ms. Sauls used meandering transects spaced 5 meters apart in the southern part of the Project site due to so numerous large soil piles covered over with tall grass

and vegetation. The entire 24-acre Project site was surveyed to identify any prehistoric deposits and potential historical features, structures, and artifacts more than 50 years old that may be present on the ground surface. Exposed ground surface and rodent burrow back-dirt piles were carefully inspected for soil changes and artifacts. Ms. Sauls photographed portions of the Project boundary using an iPhone 11 Pro digital camera. Ms. Sauls used a plan map, surveyed, and recorded observations on field notes, and collected locational data on a Gaia Global Positioning System application.

4
FINDINGS

4.1 RECORDS SEARCH

The SSJVIC provided the records search results in a letter dated March 18, 2024 (Records Search File No. 24-113; Appendix B). The results of this search indicate that there was one recorded resource within the Project area. Resource P-10-006642 is a segment of the Radin-Kamp Ditch (Table 4-1). The Radin-Kamp Ditch was evaluated in 2000 by Architectural Historian Kelly Hobbs of the California Department of Transportation, District 6, who determined the ditch does not appear eligible for listing in the NRHP, nor does it constitute a historical resource for the purposes of CEQA.

Table 4-1 Previous Recorded Cultural Resources within the Project Area

Resource Number	Age Association	Resource Type	NRHP/CRHR Eligibility Status	Year Recorded	Distance from Project Boundary
P-10-006642	Historic	Canal	Not eligible for NRHP and CRHP	2000 (Caltrans)	Within Project Boundary

There are four recorded resources within the 0.5-mile radius of the Project area (Table 4-2). The first resource is a segment of the Burlington Northern and Santa Fe Railway (P-10-004675). The second resource is a segment of the Unnamed Lateral of the Bullard Canal (P-10-005720). The third resource is a 1,737-foot-long recorded segment that is part of the Herndon-Kearney 230 kV Transmission Line (P-10-006130). The last resource is a 1,737-foot-long recorded segment of the Gates-Gregg 203kV Transmission Line (P-10-006640).

Table 4-2 Previous Recorded Cultural Resources within 0.5-miles radius of the Project Area

Resource Number	Age Association	Resource Type	NRHP/CRHR Eligibility Status	Year Recorded	Distance from Project Boundary
P-10-004675	Historic	Structure; Railroad (a segment of Burlington Northern and Santa Fe Railway)	Not eligible for NRHP and CRHP	2019 (ASM Affiliates)	0.44 miles northeast
P-10-005720	Historic	Structure; Canal (a segment of an unnamed lateral of the Bullard Canal)	Not eligible for NRHP and CRHP	2007 (Applied Earthworks)	0.38 miles southeast
P-10-006130	Historic	Structure; Engineering structure (Herndon-Kearney	Not eligible for NRHP and CRHP	2010 (LSA Associates)	0.41 miles southwest

Resource Number	Age Association	Resource Type	NRHP/CRHR Eligibility Status	Year Recorded	Distance from Project Boundary
		Transmission Line)			
P-10-006640	Historic	Structure; Engineering structure (Gates-Gregg 230 kV Transmission Line)	Not eligible for NRHP and CRHP	2016 (Applied Earth Works)	0.40 miles southwest

Ten previous cultural resource studies were conducted in the Project area. A list of previous studies and their relation to the Project area is included in Table 4-3. Further review of prior studies identified only three of these studies (FR-00040, FR-02431, and FR-02454) which had surveys intersecting the Project boundary. FR-00040 was a 1997 archaeological survey for the Rio Vista Middle School/Elementary School and covered the western half of the Project boundary. No prehistoric cultural resources were discovered during the FR-00040 survey. The second and third surveys (FR-02431 and FR-02454) were archaeological and built environment surveys for the Veterans Boulevard/State Route 99 Interchange and Grade Separations Project. These surveys covered the entire Project boundary. One historic resource, the Radin Kamp Ditch (P-10-006642), was encountered within the Project boundary during the survey. No prehistoric cultural resources were observed on the Project site during the surveys.

All seven other cultural resource studies were either literature reviews or archaeological surveys outside of the Project boundary.

Table 4-3 Previous Cultural Resource Investigation Reports within the Project Area

Report Number	Author(s)	Date	Report Title	Study
FR-00040	Wren, Donald G.	1997	An Archaeological Survey Hayes/Palo Alto Middle School and Elementary School Site Central Unified School District, Fresno County, California	Archaeological Field Survey
FR-00357	Crist Michael K. and Varner Dudley M.	1981	Archaeological Overview and Locational Analysis of the Fresno Area	Archaeological Literature Review
FR-00405	Granskog, Jane	1985	Archaeological Survey and Historical Research Report on the Santa Fe Railroad Track Consolidation from Escalon Avenue to Gregory Avenue and	Archaeological and Architectural/ Historical Survey

Report Number	Author(s)	Date	Report Title	Study
			the Herndon Avenue Grade Separation over the New Track Alignment for the City of Fresno, California	
FR-00641	Peck, Billy J.	1977	The Distribution of Aboriginal Occupational Sites in Fresno County, California	Anthropological Literature Review
FR-01156	Unknown	1968	A Proposal for an Archaeological Element in the Fresno County, General Plan	Archaeological Management and Planning
FR-01162	Stuart, David R.	1990	A Summary of the Present Archaeological Resources of Fresno County	Archaeological Literature Review
FR-02380	Byrd, Brian F., Wee, Stephen, and Costello, Julia	2009	Cultural Resources Sensitivity Study and Research Design for the San Joaquin River Restoration Program, Fresno, Madera, Merced, and Stanislaus Counties, California	Archaeological Literature Review
FR-02431	Hibma, Michael	2010	Historical Resources Evaluation Report for the Veterans Boulevard/State Route 99 Interchange and Grade Separations Project, Fresno, Fresno County, California	Architectural/ Historical Survey
FR-02454	Whitehouse, John and Blind, Heather	2010	Historic Property Survey Report for the Veterans Boulevard/State Route 99 Interchange and Grade Separations Project, Fresno, Fresno County, California, Caltrans District 6, EA#06-OH3600	Architectural/ Historical Field Survey
FR-02701	Greenwald, Alexandra	2011	Archaeological Survey Report for the California High Speed Train Fresno to Bakersfield Section	Archaeological Field Survey

The SSJVIC records search identified 11 cultural resource studies that were conducted in the Project within a 0.5-mile radius of the Project area (Table 4-4). None of these studies intersect the Project boundary.

Table 4-4 Previous Cultural Resource Investigation Reports within 0.5-mile radius of the Project Area

Report Number	Author(s)	Date	Report Title	Study
FR-00092	Jensen, Sean M.	1996	Archaeological Inventory Survey for the Tracy to Fresno Longhaul Fiberoptics Data Transmission Line, Portions of Fresno, Madera, Merced, Stanislaus, and San Joaquin Counties, California	Archaeological Field Survey
FR-00135	Hatoff, Brian, Voss, Barb, Waechter, Sharon, Benté, Vance, and Wee, Stephen	1995	Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project	Archaeological Field Survey
FR-00302	Bissonnette, Linda Dick	1994	Grantland Avenue Sewer Trunk and Herndon Expressway Cultural Resources Assessment	Archaeological Field Survey
FR-00385	Jackson, Scott R.	1990	Environment Impact Evaluation: An Archaeological Assessment of God's Family Church Property, Fresno County, California	Archaeological Field Survey
FR-00386	Brady, Jon L.	2008	Historic Property Survey for the Horizon Enterprises Property 6785 & 6825 West Barstow Avenue in the City of Fresno, California	Architectural/Built Environment Survey
FR-00407	Granskog, Jane	1985	Archeological Survey and Historical Resarch Reort on the Shaw Avenue Grade Separation Project over the Souther Pacific Railraod for the City of Fresno, California	Archaeological and Architectural/ Historical Survey
FR-00826	Wren, Donald G.	1974	An Archaeological Survey of the Figarden Area, Fresno County, Fresno, California	Archaeological Field Survey

Report Number	Author(s)	Date	Report Title	Study
FR-01651	Nelson, Wendy J.	2000	Cultural Resources Survey for the Level (3) Communications Long Haul Fiber Optics Project: Segment WS04: Sacramento to Bakersfield	Archaeological Field Survey
FR-02019	Losee, Carolyn	2004	Cultural Resources Analysis for Cingular Wireless Site CC-530-01 "Herndon/Polk"	Archaeological Field Survey
FR-02051	Hogan, Michael and Tang, Bai "Tom"	2003	Historical/Archaeological Resources Survey BNSF Fig Garden Extension Siding (MP 1008.60-1003.20) In the City of Fresno, Fresno County, California	Archaeological and Architectural/Historical Survey and Evaluation
FR-02305	Baloian, Randy and Nettles, Wendy M.	2008	Cultural Resources Investigations for the Proposed El Paseo Development in Northwest Fresno, Fresno County, California.	Archaeological Field Survey

4.2 ARCHIVAL RESEARCH

A review of historical aerial photographs available on Fresno State's MALT and Google Earth indicates that from at least 1937 to 1998, the Project site was mostly used for agriculture purposes as a fig orchard. The recorded resource (P-10-006642) Radin-Kamp Ditch appears in the aerial photographs from 1937 onward and was used to irrigate water for the orchard. By 1998 the area surrounding the Project site was rapidly transitioning from fig orchards to suburban development. The elementary school was constructed in 2002, and soon afterwards the Project site appears to no longer be an active orchard field due to the removal of the orchard and grading. Lastly, from 2010 to present aerial photographs show that the Project site as an open field with no trace of fig trees except for the remnant of the Radin-Kamp Ditch.

Historic topographic coverage of the Project site began in 1923, with Herndon Avenue being depicted along the northern boundary of the site in its current alignment. The Herndon-Manchester 115kV transmission line first appears on the Project site in a 1947 topographic map. The Herndon-Ashlan 230kV transmission line first appears on the site in a 1965 topographic map.

4.3 NATIVE AMERICAN OUTREACH

On March 11, 2024, NAHC responded with a letter to Taylored Archaeology's request to review the SLF results. The SLF results were negative for the presence of cultural resources within the Project boundary. The NAHC also provided a list of Native American tribes or representatives who may have knowledge of cultural resources in the Project area (see Appendix C).

The following Native American organizations/individuals were contacted from the list provided by NAHC below:

1. Chairperson Robert Ledger of the Dumna Wo-Wah Tribal Government
2. Chairperson Fred Beihn of North Fork Rancheria of Mono Indians
3. Environmental/ Heritage Manager Mary Stalter of North Fork Rancheria of Mono Indians
4. Tribal Compliance Officer Timothy Perez of Northern Valley Yokut/ Ohlone Tribe
5. Tribal Historic Preservation Officer Heather Airey of Picayune Rancheria of the Chukchansi Indians
6. Chairperson Tracey Hopkins of Picayune Rancheria of the Chukchansi Indians
7. Cultural Specialist I Nichole Escalon of Santa Rosa Rancheria Tachi Yokut Tribe
8. Cultural Specialist II Samantha McCarty of Santa Rosa Rancheria Tachi Yokut Tribe
9. THPO Shana Powers of Santa Rosa Rancheria Tachi Yokut Tribe
10. Chairperson Michelle Heredia-Cordova of Table Mountain Rancheria
11. Cultural Resource Director Bob Pennell of Table Mountain Rancheria
12. Chairperson David Alvarez of the Traditional Choinumni Tribe
13. Chairperson Neil Peyron of the Tule River Tribe
14. Tribal Archaeologist Joey Garfield of the Tule River Tribe
15. Environmental Department Kerri Vera of the Tule River Tribe
16. Chairperson Kenneth Woodrow of the Wuksachi Indian Tribe/Eshom Valley Band

The outreach letters were sent to all the Native American representatives on the contact list on March 25, 2024 (Appendix C). The letters included a description of the proposed Project and a topographic map of the location. Follow-up emails were sent on April 8, 2024. As of the date of this report, no responses were received by the Native American representatives, nor was any information shared regarding tribal cultural resources pertaining to the Project area.

4.4 ARCHAEOLOGICAL PEDESTRIAN SURVEY RESULTS

Results of the survey indicate that the Project site consists primarily of a field with annual grasses and ruderal vegetation (Figure 4-1). The natural topography of the area has been altered by historical and modern agricultural practices and much of the land on the Project site was graded, plowed, planted and/or harvested, which caused additional disturbance to the soil. The ground surface visibility was generally poor (10-60 percent) due to overgrown ruderal plants and tall grass, though some areas were relatively clear due to vegetation disturbance (Figure 4-2). The southern half of the Project site consisted of three to five feet tall soil piles covered in vegetation (Figure 4-3). Concentrations of modern refuse and a homeless encampment were found on the site.

The remnant of the previously recorded Radin-Kamp Ditch (P-10-006642) was present on site (Figure 4-4). The ditch runs through the center of the Project site for approximately 975 feet in a northeast to southwest configuration before crossing North Hayes Avenue as a concrete culvert. The ditch is an unlined earthen ditch overgrown with annual grasses and is not in use.

Two high voltage transmission lines, including four metal transmission towers, were observed in the northeast part of the Project site (Figure 4-5). As noted in Section 4.2, these two transmission lines are the Herndon-Ashlan 230kV (circa 1965) and Herndon-Manchester 115kV (circa 1947). Because the transmission lines and towers are older than 50 years, they may potentially be historical resources under CEQA. Neither transmission line nor any of the transmission towers were previously recorded as cultural resources.

No prehistoric archaeological materials or features (e.g., lithic debitage, artifacts, or other evidence of prehistoric occupation) were observed throughout the ground surface of the Project site. While past agricultural activities may have potentially destroyed or obscured ground surface evidence of archaeological resources within the Project boundary, intact archaeological resources related to prior occupation of the area may potentially exist below the ground surface.

Figure 4-1 Central portion of Project site, facing northwest.

Figure 4-2 Ground visibility in central portion of Project site, facing east.

Figure 4-3 Soil piles in southern portion of Project site, facing northwest.

Figure 4-4 Raiden-Kamp ditch in western Project site, facing east. 1.6-meter archaeologist for scale.

Figure 4-5 Transmission towers in southeast Project site, facing southeast. 115kV on left, 230kV on right.

5
CONCLUSIONS AND RECOMMENDATIONS

Taylored Archaeology has completed a Phase I cultural resource assessment for the Bella Vita Mixed-Use Project in the city of Fresno, Fresno County, California. The Bella Vita Mixed-Use Project proposes to construct a mixed-use development that contains multifamily, commercial, and retail development.

The SSJVIC reported 10 prior cultural resources studies and one historic-era resource in the Project boundary, the Radin-Kamp Ditch (P-10-006642). The SSJVIC also reported 11 prior cultural studies and four previously recorded cultural resources within the 0.5-mile radius of the surrounding area. According to the records search results, the Project site was previously surveyed in 1997 and 2010. Both prior surveys found no cultural resources on the Project site except for the Radin-Kamp Ditch, which was evaluated in 2000 and recommended as not eligible for listing in the NRHP and CRHR.

A record search of the NAHC Sacred Lands File and outreach to local Native American representatives did not result in the identification of sacred sites within the Project area. Furthermore, an examination of historic topographic and aerial photographs indicates that the Project boundary has largely been used for agricultural purposes since the early 1900s.

The intensive pedestrian survey confirmed the remnant of the Radin-Kamp Ditch is present on the Project site. Taylored Archaeology also observed and noted two transmission lines, including four metal transmission towers on the site. Based on archival research, these two transmission lines are the Herndon-Ashlan 230kV (circa 1965) and Herndon-Manchester 115kV (circa 1947) transmission lines. Because the transmission lines and towers are older than 50 years, they may potentially be historical resources under CEQA. Neither transmission line nor any of the transmission towers were previously recorded as cultural resources.

Based on the results of this investigation, Taylored Archaeology makes the following recommendations:

- Should the Project propose changes to the transmission lines and towers on the Project site they may then need to be assessed by an architectural historian to determine if they qualify as historical resources under CEQA.

- In the event of accidental discovery of unidentified archaeological resources during development or ground-disturbing activities in the Project area, all work shall be halted in the immediate vicinity (within a 100-foot radius) until a qualified archaeologist can identify the discovery and assess its significance.

- If human remains are uncovered during construction, the Fresno County Coroner shall be notified to investigate the remains and arrange proper treatment and disposition. If the remains are identified on the basis of archaeological context, age, cultural associations,

CSU Bakersfield

Invoice No.	CMP1006593
Invoice Date	01/22/2024
Account No.	100000856
Payment Terms	Upon Recpt
Due Date	**01/22/2024**
Total Amount Due	**$438.15**

Bill To Taylored Archaeology
Consuelo Sauls
6083 N. Figarden Drive, Suite 616
Fresno CA 93722

Questions regarding this invoice can be directed to Valeria Rodriguez at 661/654-3975

Line No.	Description	Identifier	Amount
1	VIC Job# A13497	RS 24-011	300.00
	VIC Job # A13497; RS 24-011; 2 Research Hour @ $150.00= $300.00; Completed 1/17/2024		
2	VIC Job# A13497	RS 24-011	59.40
	VIC Job # A13497; RS 24-011; 396 Photocopies/PDF Pages @ $0.15 = $59.40; Completed 1/17/2024		
3	VIC Job# A13497	RS 24-011	3.75
	VIC Job # A13497; RS 24-011; 15 Digital Database Records @ $0.25 = $3.75; Completed 1/17/2024		
4	VIC Job# A13497	RS 24-011	75.00
	VIC Job # A13497; RS 24-011; 5-14 Custom GIS Map Features @ $75.00; Completed 1/17/2024		

---------- Please return this portion of invoice with payment ----------

Total Amount Due: $438.15
Please include the following on the payment:
Account No. 100000856
Invoice No. CMP1006593

Payable to:
CSU Bakersfield
Cashier's Office - 35 ADM
9001 Stockdale Hwy.
Bakersfield, CA 93311-1022

Southern San Joaquin Valley Information Center

California State University, Bakersfield

Mail Stop: 72 DOB
9001 Stockdale Highway
Bakersfield, CA 93311-1022
Telephone (661) 654-2289 Email: ssjvic@csub.edu

Consuelo Sauls
Taylored Archaeology
6083 N. Figarden Drive, Suite 616
Fresno, CA 93722

Telephone: 949-298-0249 Email: csaulsarchaeo@gmail.com

Date: 1/17/2024

VIC Job# A13497

ITEM	QTY.	RATE	PRICE	EXTENSION
Record Search 24-011				
Research Hours	2	$150.00	$300.00	
Photocopies/PDF Pages	396	$0.15	$59.40	
Digital Database Records	15	$0.25	$3.75	
Custom GIS Map Features	5-14	$75.00	$75.00	
TOTAL DUE				$438.15

RE: Lindsay Well 11 TA Project, Tulare County, CA.

Please note: This is back up documentation only. See California State University, Bakersfield Accounting Office generated invoice for associated invoice number to reference for payment.

6
REFERENCES

Anderson, Kat M.

2005 *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources.* University of California Press, Berkeley and Los Angeles, California.

Bull, William B.

1964 Geomorphology of Segmented Alluvial Fans in Western Fresno County, California. *Geological Survey Professional Paper 352-E.* United States Government Printing Office, Washington, D.C.

Bulls, Diana

2010 The Fresno Scraper: A Mechanical Engineering Marvel. *Kings River Life Magazine*. August 14.

Clough, Charles W. and William B. Secrest, Jr.

1984 *Fresno County The Pioneer Years: From the Beginnings to 1900.* Panorama West Publishing, Fresno, California.

Cook, Sherburne F.

1958 The Project Gutenberg eBook, *Colonial Expeditions to the Interior of California Central Valley, 1800-1820*

1962 *Expeditions to the Interior of California*: *Central Valley, 1820-1840*. Anthropological Records 20(5):151-212.

Datel, Robin Elisabeth

1999 "Picturing the Central Valley through Maps" In *Picturing California's Other Landscape: the Great Central Valley*, edited by Heath Schenkey. Heyday Books, Berkeley, California.

Dick-Bissonnette, Linda E.

1998 Gender and Authority among the Yokoch, Mono, and Miwok of Central California. *Journal of Anthropological Research* 54(1):49-72.

Dillon, Brian D.

2002 California Paleo-Indians: Lack of Evidence, or Evidence of a Lack? In *Essays in California Archaeology: A Memorial to Franklin Fenenga,* edited by William J. Wallace and Francis A. Riddell, pp. 110–128. Contributions of the University of California Archaeological Research Facility No. 60. Berkeley.

Driver, Harold E.
1937 Cultural Elements Distribution: VI, Southern Sierra Nevada. *University of California Anthropological Records* 1(2):53–154.

Frayer, W.E., Dennis D. Peters, and H. Ross Pywell.
1989 *Wetlands of the California Central Valley: Status and Trends, 1939 to mid-1980's.* United States Fish and Wildlife Service, Region 1. Portland, Oregon. https://www.nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=7701, accessed April 11, 2024.

Fredrickson, David A.
1973 Early Cultures of the North Coast Ranges, California. Ph.D. dissertation. Department of Anthropology, University of California, Davis.

1974 Cultural Diversity in Early Central California: A View from the North Coast Ranges. *Journal of California Anthropology* 1(1):41-54.

Garfinkel, Alan P.
2015 Archaeological Background and Cultural Sequence for The San Joaquin, Central California. Electronic document, https://www.academia.edu/14721089/ArchaeologicalBackgroundfor theSanJoaquinValleyCentralCalifornia, accessed July 13, 2020. Academia.edu

Garone, Philip
2011 *The Fall and Rise of the Wetlands of California's Great Central Valley.* University of the Press, Berkeley.

Gayton, Anna H.
1930 Yokuts-Mono Chiefs and Shamans. *University of California Publications in American Archaeology and Ethnology* 24(8):361–420.

1945 Yokuts and Western Mono Social Organization. *American Anthropologist* 47(3):409–426.

Gifford, E.W., and W. Egbert Schenck
1926 Archaeology of the Southern San Joaquin Valley, California. *Publications in American Archaeology and Ethnology* 23(1).

1929 Archaeology of the Northern San Joaquin Valley. *Publications in American Archaeology and Ethnology* 25(4).

Google Earth Pro.
2024 Google Earth Pro Software, accessed March 25, 2024.

Harrington, Mark R.
1957 *A Pinto Site at Little Lake, California*. No. 17. Southwest Museum.

Hattersley-Drayton, Karana
2013 *Garden of Eden: A Historic Context for Fresno's Fig Gardens*. City of Fresno, Fresno, California. https://www.fresno.gov/wp-content/uploads/2023/03/FinalHistoricContextFigGardenwithoutappendicessmallermb.pdf, accessed April 12, 2024.

Hoover, Mildred Brook, Hero Eugene Rensch, Ethel Grace Rensch, and William N. Abeloe.
1990 *Historic Spots in California*, 4th edition., revised by Douglas E. Kyle. Stanford University Press, Stanford, California.

Katibah, Edwin F.
1984 "A Brief History of Riparian Forests in the Central Valley of California". In *California Riparian Systems: Ecology, Conservation, and Productive Management.* edited by Richard E. Warner and Kathleen M. Hendrix. University of California Press, Berkley, California.

Kroeber, Alfred L.
1925 *Handbook of California Indians*. Bureau of American Ethnology Bulletin 78, Washington, D.C.

Latta, Frank F.
1977 *Handbook of Yokuts Indians*. Bear State Books, Santa Cruz, California.

Ludeke, John.
1980 The No Fence Law of 1874: Victor for San Joaquin Valley Farmers. *California History* 2(59):98-115. University of California Press, Berkley, California.

Madden, Derek.
2020 *The Naturalist's Illustrated Guide to the Sierra Foothills and Central Valley*. Heyday Publishing, Berkley, California.

McGuire, Kelly R. and Alan P. Garfinkel.
1980 Archaeological Investigations in the Southern Sierra Nevada: The Bear Mountain Segment of the Pacific Crest Trail. *Cultural Resources Publications, Archaeology*, unnumbered: xii – 304.

Merriam, Hart C.
1904 Distribution of Indian Tribes in the Southern Sierra and Adjacent Parts of the San Joaquin Valley, California. *Science* 19(494):912-917.

Mitchell, Annie R.
1974 *A Modern History of Tulare County.* Limited Edition of Visalia, Incorporated. Visalia, California.

Moratto, Michael J.
1984 *California Archaeology*. Academic Press, New York, NY.

Panter, John.
1994 Central California Colony: 'Marvel of the Desert. *Fresno Past And Present,* 36(2):1-11, Fresno Historical Society.

Powers, Stephen
1877 *Tribes of California.* Washington Press, Washington, D.C.

Preston, William L.
1981 *Vanishing Landscapes: Land and Life in the Tulare Lake Basin.* Olympic Marketing Corp, Hopkins.

Prothero, Donald R.
2017 *California's Amazing Geology.* Taylor and Francis Group.

Reps, John W.
1979 *Cities of the American West: A History of Frontier Urban Planning.* Princeton University Press, Princeton, New Jersey.

Riddell, Francis A.
2002 *The Status of San Joaquin Valley Archaeological.* In Essays in California Archaeology: A Memorial to Franklin Fenenga edited by William J. Wallace and Francis A. Riddell, pp. 55-61. University of California Archaeological Research Facility, Contribution Number 60. Berkeley, California.

Rosenthal, Jeffrey S., Gregory G. White, and Mark Q. Sutton
2007 The Central Valley: A View from the Catbirds's Seat. In *California Prehistory: Colonization, Cultural, and Complexity,* edited by Terry L. Jones and Kathryn A. Klar. AltaMira Press, Lanham, Maryland.

Schenck, W.E., and E.J. Dawson
1929 Archaeology of the Northern San Joaquin Valley. *University of California Publications in American Archaeology and Ethnology* 25:289-413. University of California, Bakersfield, California.

Siefken, Nelson.
1999 Archaeology of the Redfeldt Mound (CA-KIN-66), Tulare Basin, California. M.A. Thesis, Department of Anthropology, California State University, Bakersfield.

Smith, Wallace.
2004 *Garden of the Sun: A History of the San Joaquin Valley: 1772-1939.* 2nd ed., revised by William B. Secrest, Jr. Linden Publishing, Fresno, California.

Starr, Kevin.
2007 *California: A History.* Modern Library Publishing, New York, New York.

Underhill, Vivian.
2023 The Return of Pa'ashi: Colonial Unknowing and California's Tulare Lake. *Open Rivers: Rethinking Water, Place & Community* 24:7-31. https://doi.org/10.24926/2471190X.10562. Accessed April 13, 2024.

Varner, Dudley M. and David R. Stuart.
1975 *Survey of Archaeological and Historical Resources in the Central Yokohl Valley, Tulare County, California.* Sacramento: Report to the U.S. Bureau of Reclamation.

Wallace, William J.
1978 Southern Valley Yokuts. In *Handbook of North American Indians, Vol. 8, California*. Ed. Robert F. Heizer, pp. 448-461. The Geological Society of American, Inc., Boulder, Colorado

Yoshiyama, Ronald M., Eric R. Gerstung, Frank W. Fisher, and Peter B. Moyle
2001 Historical and Present Distribution of Chinook Salmon in the Central valley Drainage of California. *Fish Buulletin* 179(1):71-176.

Zack, Richard.
2017 *Quest for Water Tulare Irrigation District its History, People, and Progression.* PartnerPress.org, Carlsbad, California.

APPENDIX A

Personnel Qualifications

Consuelo Sauls, M.A., RPA 41591505
Archaeologist
csaulsarchaeo@gmail.com
559.797.1572

Areas of Expertise

- Cultural Resource Management
- CEQA and Federal regulations
- Prehistoric Archaeology
- Laboratory Management
- Technical Writing
- Phase I Assessments

Years of Experience

- 14

Education

- M.A., Archaeology, University of Durham, 2014
- B.A., Anthropology, California State University, Fresno, 2009

Registrations/Certifications

- Registered Professional Archaeologist 41591505

Professional Affiliations

- Coalition for Diversity in California Archaeology
- Society for American Archaeology
- Society for California Archaeology
- Society of Black Archaeologists

Professional Experience

2019 –Present Principal Investigator, Taylored Archaeology, Fresno, California

2018 – 2019 Staff Archaeologist, Applied EarthWorks, Inc., Fresno, California

2016 – 2018 Principal Investigator, Soar Environmental Consulting, Inc., Fresno, California

2015 Archivist/Database Technician, Development and Conservation Management, Inc., Laguna Beach, California

2013 Laboratory Research Assistant, Durham University Archaeology Department and Archaeology Museum, Durham, England, UK

2011 – 2012 Laboratory Technician, University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, Pennsylvania

2008 – 2009 Laboratory Technician, California State University, Fresno

2008 Field School, California State University, Fresno

Technical Qualifications

Ms. Sauls meets the Secretary of the Interior's Professional Qualification Standards as an archaeologist. She has conducted pedestrian surveys, supervised Extended Phase I survey, authored technical reports, and completed the Section 106 process with the State Historic Preservation Officer and Tribal Historic Preservation Officer. Her experience includes data recovery excavation at Western Mono sites and processing recovered artifacts in the laboratory as well as conducting archival research about prehistory and ethnography of Central California. Ms. Sauls has authored and contributed to technical and letter reports in compliance with of the National Historical Preservation Act (NHPA) Section 106 and the California Environmental Quality Act (CEQA). She also has supported NHPA tribal consultation and responded to Assembly Bill 52 tribal comments. Ms. Sauls also has an extensive background supervising laboratory processing, cataloging, and conservation of prehistoric and historical archaeological collections. In addition, she worked with the Rock Art Heritage Group in the management, preservation, and presentation of rock art in museums throughout England, including a thorough analysis of the British Museum's rock art collections. At Durham University Archaeology Museum, Ms. Sauls processed the excavated skeletal remains of 30 individuals from the seventeenth century.

APPENDIX B

Records Search Results

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

3/18/2024

Consuelo Sauls
Taylored Archaeology
6083 N. Figarden Drive, Suite 616
Fresno, CA 93722

Re: Bella Vita Mixed-Use Project
Records Search File No.: 24-113

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on Herndon USGS 7.5' quad. The following reflects the results of the records search for the project area and the 0.5 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☒ custom GIS maps ☐ GIS data

Resources within project area:	P-10-006642
Resources within 0.5 mile radius:	P-10-004675, 005720, 006130, 006640
Reports within project area:	FR-00040, 00357, 00405, 00641, 01156, 01162, 02380, 02431, 02454, 02701
Reports within 0.5 mile radius:	FR-00092, 00135, 00302, 00385, 00386, 00407, 00826, 01651, 02019, 02051, 02305

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 Built Environment Resources 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 https://dot.ca.gov/programs/environmental-analysis/cultural-studies/california-historical-bridges-tunnels

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 https://www.slc.ca.gov/shipwrecks/

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

APPENDIX C

Native American Outreach

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Reginald Pagaling
Chumash

VICE-CHAIRPERSON
Buffy McQuillen
Yokayo Pomo, Yuki, Nomlaki

SECRETARY
Sara Dutschke
Miwok

PARLIAMENTARIAN
Wayne Nelson
Luiseño

COMMISSIONER
Isaac Bojorquez
Ohlone-Costanoan

COMMISSIONER
Stanley Rodriguez
Kumeyaay

COMMISSIONER
Laurena Bolden
Serrano

COMMISSIONER
Reid Milanovich
Cahuilla

COMMISSIONER
Vacant

EXECUTIVE SECRETARY
Raymond C. Hitchcock
Miwok, Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

March 11, 2024

Consuelo Sauls
Taylored Archaeology

Via Email to: ***csaulsarchaeo@gmail.com***

Re: Bella Vita Mixed-Use Project, Fresno County

Dear Mr. Sauls:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Cameron.vela@nahc.ca.gov.

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Fresno County
3/11/2024

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Fresno	Dumna Wo-Wah Tribal Government	N	Robert Ledger, Chairperson	2191 West Pico Ave. Fresno, CA, 93705	(559) 540-6346		ledgerrobert@ymail.com	Foothill Yokut Mono	Fresno,Kern,Madera,Tulare	
	North Fork Rancheria of Mono Indians	F	Fred Beihn, Chairperson	P.O. Box 929 North Fork, CA, 93643	(559) 877-2461	(559) 877-2467	fbeihn@nfr-nsn.gov	Mono	Fresno,Inyo,Madera,Mariposa,Merced,Mono,Tuolumne	6/26/2023
	North Fork Rancheria of Mono Indians	F	Mary Stalter, Environmental/Heritage Manager	P.O. Box 929 North Fork, CA, 93643	(559) 877-2461		mstalter@nfr-nsn.gov	Mono	Fresno,Inyo,Madera,Mariposa,Merced,Mono,Tuolumne	6/26/2023
	Northern Valley Yokut / Ohlone Tribe	N	Timothy Perez, Tribal Compliance Officer	P.O. Box 717 Linden, CA, 95236	(209) 662-2788		huskanam@gmail.com	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Mader	11/21/2023
	Picayune Rancheria of the Chukchansi Indians	F	Heather Airey, Tribal Historic Preservation Officer	P.O. Box 2226 Oakhurst, CA, 93644	(559) 795-5986		hairey@chukchansi-nsn.gov	Foothill Yokut	Fresno,Madera,Mariposa,Merced,Tuolumne	6/20/2023
	Picayune Rancheria of the Chukchansi Indians	F	Tracey Hopkins, Chairperson	P.O. Box 2226 Oakhurst, CA, 93644	(559) 412-5590		council@chukchansi-nsn.gov	Foothill Yokut	Fresno,Madera,Mariposa,Merced,Tuolumne	12/12/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Nichole Escalon, Cultural Specialist I	P.O. Box 8 Lemoore, CA, 93245	(559) 924-1278		nescalone@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Samantha McCarty, Cultural Specialist II	P.O. Box 8 Lemoore, CA, 93245	(559) 633-3440		smccarty@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Shana Powers, THPO	P.O. Box 8 Lemoore, CA, 93245	(559) 423-3900		spowers@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis	10/3/2023
	Table Mountain Rancheria	F	Michelle Heredia-Cordova, Chairperson	P.O. Box 410 Friant, CA, 93626	(559) 822-2587	(559) 822-2693	mhcordova@tmr.org	Yokut	Fresno,Kern,Kings,Madera,Monterey,San Benito,San Luis	12/21/2023

Native American Heritage Commission
Native American Contact List
Fresno County
3/11/2024

Table Mountain Rancheria	F	Bob Pennell, Cultural Resource Director	P.O. Box 410 Friant, CA, 93626	(559) 325-0351	(559) 325-0394	rpennell@tmr.org	Yokut	Fresno,Kern,Kings, Madera,Monterey,San Benito,San Luis	
Traditional Choinumni Tribe	N	David Alvarez, Chairperson	2415 E. Houston Avenue Fresno, CA, 93720	(559) 217-0396	(559) 292-5057	davealvarez@sbcglobal.net	Foothill Yokut	Fresno,Kern,Madera ,Tulare	
Tule River Indian Tribe	F	Neil Peyron, Chairperson	P.O. Box 589 Porterville, CA, 93258	(559) 781-4271	(559) 781-4610	neil.peyron@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Invo,K	
Tule River Indian Tribe	F	Joey Garfield, Tribal Archaeologist	P. O. Box 589 Porterville, CA, 93258	(559) 783-8892	(559) 783-8932	joey.garfield@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Invo,K	7/22/2016
Tule River Indian Tribe	F	Kerri Vera, Environmental Department	P. O. Box 589 Porterville, CA, 93258	(559) 783-8892	(559) 783-8932	kerri.vera@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Invo,K	7/22/2016
Wuksachi Indian Tribe/Eshom Valley Band	N	Kenneth Woodrow, Chairperson	1179 Rock Haven Ct. Salinas, CA, 93906	(831) 443-9702		kwood8934@aol.com	Foothill Yokut Mono	Alameda,Calaveras, Contra Costa,Fresno,Invo,K	6/19/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Bella Vita Mixed-Use Project, Fresno County.

Record: PROJ-2024-001395
Report Type: List of Tribes
Counties: Fresno
NAHC Group: All

Native American Outreach Log

Bella Vita Mixed-Use Project, Fresno County , California

Organization	Name	Position	Address	Phone Number	Email Address	Letter	E-Mail	Summary of Contact
Native American Heritage Commission	Cameron Vela	Culutral Resources Analyst	1550 Harbor Boulevard Suite 100 West Sacramento, California 95691	(916) 373-3710	nahc@nahc.ca.gov		3/7/2024	In a letter dated March 11, 2024, the NAHC stated that the SLF results were negative and suggested to contact the local Native American representatives on the list provided.
Dumna Wo-Wah Tribal Government	Robert Ledger	Chairperson	2191 West Pico Ave. Fresno, CA 93705	(559) 540-6346	ledgerrobert@ymail.com	3/25/2024	4/8/2024	No response.
North Fork Rancheria of Mono Indians	Fred Beihn	Chairperson	P.O. Box 929 North Fork, CA 93643	(559) 877-2461	fbeihn@nfr-nsn.gov	3/25/2024	4/8/2024	No response.
North Fork Rancheria of Mono Indians	Mary Stalter	Environmental/Heritage Manager	P.O. Box 929 North Fork, CA 93643	(559) 877-2461	mstalter@nfr-nsn.gov	3/25/2024	4/8/2024	No response.
Northern Valley Yokut/Ohlone Tribe	Timothy Perez	Tribal Compliance Officer	P.O. Box 717 Linden, CA 95236	(209) 662-2788	huskanam@gmail.com	3/25/2024	4/8/2024	No response.
Picayune Rancheria of the Chukchansi Indians	Heather Airey	Tribal Historic Preservation Officer	P.O. Box 2226 Oakhurst, CA 93644	(559) 795-5986	hairey@chukchansi-nsn.gov	3/25/2024	4/8/2024	No response.
Picayune Rancheria of the Chukchansi Indians	Tracey Hopkins	Chairperson	P.O. Box 2226 Oakhurst, CA 93644	(559) 412-5590	council@chukchansi-nsn.gov	3/25/2024	4/8/2024	No response.
Santa Rosa Rancheria Tachi Yokut Tribe	Nichole Escalon	Cultural Specialist I	P.O. Box 8 Lemoore, CA 93245	(559) 924-1278	nescalone@tachi-yokut-nsn.gov	3/25/2024	4/8/2024	No response.
Santa Rosa Rancheria Tachi Yokut Tribe	Samantha McCarty	Cultural Specialist II	P.O. Box 8 Lemoore, CA 93245	(559) 633-3440	smccarty@tachi-yokut-nsn.gov	3/25/2024	4/8/2024	No response.
Santa Rosa Rancheria Tachi Yokut Tribe	Shana Powers	THPO	P.O. Box 8 Lemoore, CA 93245	(559) 423-3900	spowers@tachi-yokut-nsn.gov	3/25/2024	4/8/2024	No response.
Table Mountain Rancheria	Michelle Heredia-Cordova	Chairperson	P.O. Box 410 Friant, CA 93626	(559) 822-2587	mhcordova@tmr.org	3/25/2024	4/8/2024	No response.
Table Mountain Rancheria	Bob Pennell	Cultural Resource Director	P.O. Box 410 Friant, CA 93626	(559) 325-0351	rpennell@tmr.org	3/25/2024	4/8/2024	No response.
Traditional Choinumni Tribe	David Alvarez	Chairperson	2415 E. Houston Avenue Fresno, CA 93720	(559) 217-0396	davealvarez@sbcglobal.net	3/25/2024	4/8/2024	No response.
Tule River Indian Tribe	Neil Peyron	Chairperson	P.O. Box 589 Porterville, CA 93258	(559) 781-4271	neil.peyron@tulrivertribe-nsn.gov	3/25/2024	4/8/2024	No response.
Tule River Indian Tribe	Joey Garfield	Tribal Archaeologist	P.O. Box 589 Porterville, CA 93258	(559) 783-8932	joey.garfield@tulerivertribe-nsn.gov	3/25/2024	4/8/2024	No response.
Tule River Indian Tribe	Kerri Vera	Environmental Department	P.O. Box 589 Porterville, CA 93258	(559) 783-8892	kerri.vera@tulerivertribe-nsn.gov	3/25/2024	4/8/2024	No response.
Wuksache Indian Tribe/Eshom Valley Band	Kenneth Woodrow	Chairperson	1179 Rock Haven Ct. Salinas, CA 93906	(831) 443-9702	kwood8934@aol.com	3/25/2024	4/8/2024	No response.

APPENDIX D

DPR 523 Cultural Resource Record Forms

(Unrestricted)

***Recorded by:** Consuelo Sauls ***Date:** April 11, 2024 ☐ Continuation ■ Update

P1. Other Identifier: Radin-Kamp Ditch

P3a. Description: This linear feature was originally recorded by Hobbs (2000) as the Radin-Kamp Ditch. According to Hobbs the ditch was constructed probably circa 1905 to irrigate local fig orchards. Even though the ditch was part of the Fresno Irrigation District, it was privately owned and maintained by Henry Radin and Aaron Kamp. Portions of the ditch, specifically east of Haynes Avenue, have been piped underground, and other areas have been reconstructed due to public work projects. Along the course of the ditch, its control facilities are in various states of disrepair, and the ditch itself is overgrown with brush and in general disrepair, as well (Hobbs 2000).

A field review of the segment of the Radin-Kamp Ditch was cinducted on March 22, 2024, by archaeologist Consuelo Sauls. The field review indicated that the linear segment appears to have lost any remaining integrity of *design*, *feeling*, *association* and *setting* since the it was last recorded by Hobbs in 2000. The linear segment, in its current state, is overgrown, in disrepair and there is no orchard or any other trace of agriculture around it. Therefore, Taylored Archaeology concurs with Hobbs (2000) that the segment of the Radin-Kamp Ditch does not appear elibile for listing in the National Register of Historic Places and the California Register of Historical Resources due to the lack of historical significance as described above.

P8. Recorded by: Consuelo Sauls, Taylored Archaeology, 6083 N. Figarden Dr., Ste. 616, Fresno, CA 93722

P9. Date Recorded: March 22, 2024

P10. Survey Type: Pedestrian survey

P11. Report Citation: Sauls, Consuelo, Y.
2024 *Phase I Cultural Resources Assessment for the Bella Vita Mixed-Use Project, City of Fresno, Fresno County, California.* Taylored Archaeology, Fresno, California. Prepared for 4Creeks, Inc., Visalia, California.

B12. References:
Hobbs, Kelly
2000 *California Department of Parks and Recreation Form DPR 523 Records for P-10-006642*. Department of Transportation, Fresno, California.

Radin-Kamp Ditch on west side of Hayes Avenue, view east

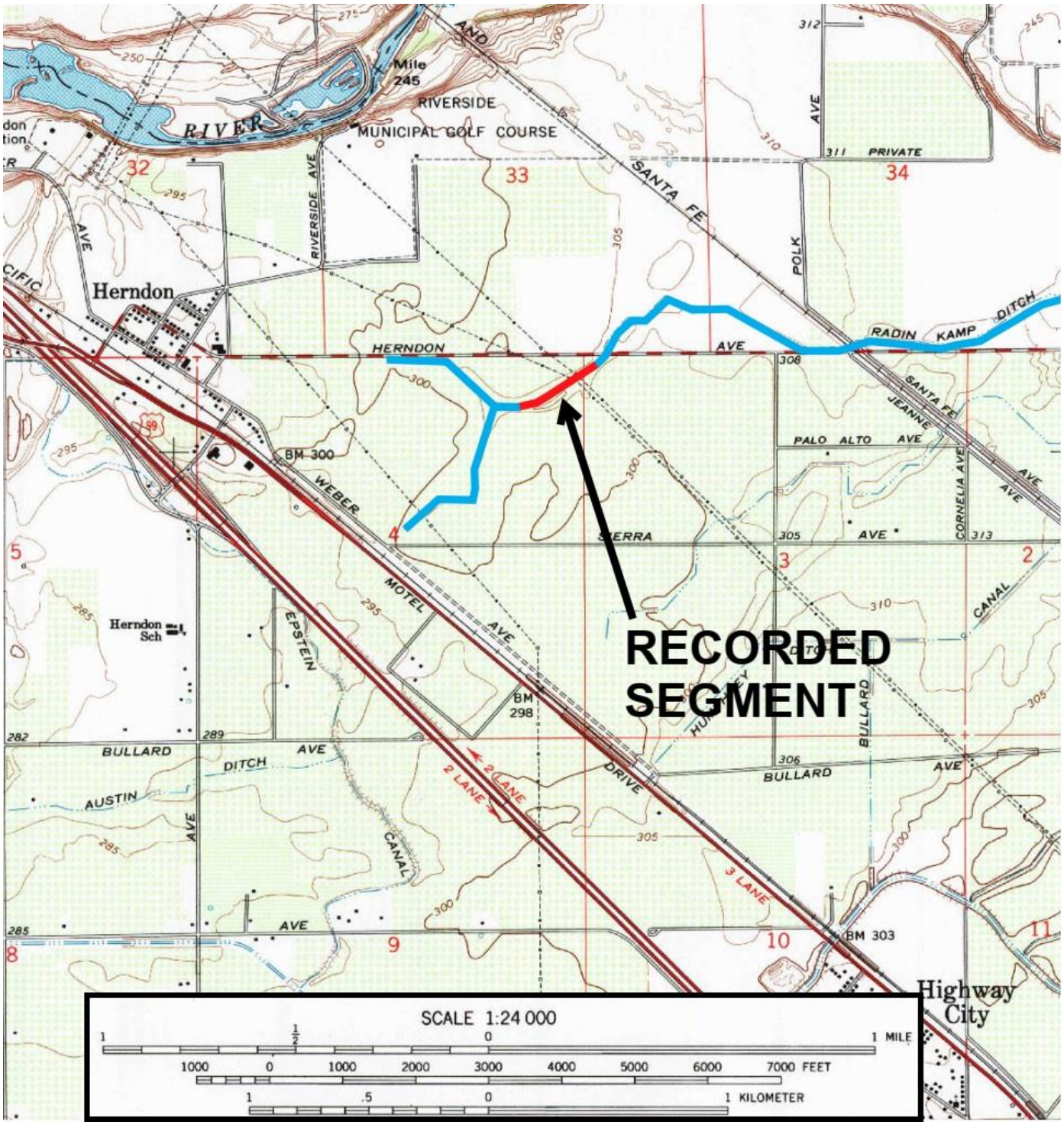
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

***Resource Name or #:** Radin-Kamp Ditch

Map Name: Herndon, CA, 7.5′ quadrangle **Scale: 1:24,000** **Date of Map:** 1964 (photorevised 1978)



*Required information

APPENDIX D

Acoustical Analysis

ACOUSTICAL ANALYSIS

BELLA VITA MIXED-USE DEVELOPMENT
FRESNO, CALIFORNIA

WJVA Project No. 24-18

PREPARED FOR

4-CREEKS
324 S. SANTA FE STREET, SUITE A
VISALIA, CALIFORNIA 93292

PREPARED BY

WJV ACOUSTICS, INC.
VISALIA, CALIFORNIA

wjv acoustics

OCTOBER 29, 2020

INTRODUCTION

The project is a proposed mixed-use development encompassing a total of 28.06 acres, divided into eight parcels. Specifically, 3.3 acres are allocated for commercial use, leaving the substantial remainder for the construction of the apartment complex.

The apartment complex will feature a diverse unit mix: 132 one-bedroom units, 252 two-bedroom units, and 132 three-bedroom units. To accommodate residents and visitors, the parking plan includes 70 enclosed garages, 446 covered carports, and 339 open parking spaces, totaling 853 spaces.

The residential aspect of the project includes three types of multi-family buildings, each with three stories. These are categorized eleven Type 1 Buildings, twenty-one Type 2 Buildings, and eleven Type 3 Buildings, differing in unit size. Added amenities will enhance the community's lifestyle, including a recreation building, swimming pool, basketball court, dog park, cat park, and expansive landscaped open spaces.

For the commercial component, the development will feature two commercial pads and a retail shell building, providing a total of 22,600 square feet of commercial space. This section will offer 94 parking stalls, including six accessible parking spaces. The commercial establishments are planned to include a drive-through restaurant, a small restaurant, and a retail store, with operating hours from 8:00 am to 10:00 pm, seven days a week.

This analysis, prepared by WJV Acoustics, Inc. (WJVA), is based upon a project site plan prepared by Kent P. Rodrigues Architect (dated 12/23/23), reference noise level measurements obtained by WJVA staff, traffic data provided by the Fresno Council of Governments (Fresno COG) and the findings of on-site noise level measurements. Revisions to the site plan may affect the findings and recommendations of this report. The site plan is provided as Figure 1.

Appendix A provides a description of the acoustical terminology used in this report. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dB). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighting, as it provides a high degree of correlation with human annoyance and health effects. Appendix B provides typical A-weighted sound levels for common noise sources.

NOISE EXPOSURE CRITERIA

General Plan

The City of Fresno General Plan Noise Element provides noise level criteria for land use compatibility for both transportation and non-transportation noise sources. The General Plan sets noise compatibility standards for transportation noise sources in terms of the Day-Night Average Level (L_{dn}). The L_{dn} represents the time-weighted energy average noise level for a 24-hour day, with a 10 dB penalty added to noise levels occurring during the nighttime hours (10:00 p.m.-7:00 a.m.). The L_{dn} represents cumulative exposure to noise over an extended period of time and are therefore calculated based upon *annual average* conditions. Table I provides the General Plan noise level standards for transportation noise sources.

TABLE I

CITY OF FRESNO GENERAL PLAN NOISE LEVEL STANDARDS TRANSPORTATION (NON-AIRCRAFT) NOISE SOURCES

Noise-Sensitive Land Use	Outdoor Activity Areas[1]	Interior Spaces	
	L_{dn}/CNEL, dB	L_{dn}/CNEL, dB	L_{eq} dB[2]
Residential	65	45	---
Transient Lodging	65	45	---
Hospitals, Nursing Homes	65	45	---
Theaters, Auditoriums, Music Halls	---	---	35
Minnewawaes, Meeting Halls	65	---	45
Office Buildings	---	---	45
Schools, Libraries, Museums	---	---	45

1 Where the location of the outdoor activity areas is unknown or is not applicable, the exterior noise level standard shall be applied to the property line of the receiving land use.

2 As determined for a typical worst-case hour during periods of use.

Source: City of Fresno General Plan

Implementation Policy NS-1-a of the General Plan provides guidance in regards to the development of new noise sensitive land uses (including residential developments).

> ***Desirable and Generally Acceptable Exterior Noise Environment.*** *Establish 65 dBA L_{dn} or CNEL as the standard for the desirable maximum average exterior noise levels for defined usable exterior areas of residential and noise-sensitive uses for noise, but designate 60 dBA L_{dn} or CNEL (measured at the property line) for noise generated by stationary sources impinging upon residential and noise- sensitive uses. Maintain 65 dBA L_{dn} or CNEL as the maximum average exterior noise levels for non-sensitive commercial land uses, and maintain 70 dBA L_{dn} or CNEL as maximum average exterior noise level for industrial land uses, both to be measured at the property line of parcels where noise is generated which may impinge on neighboring properties.*

The exterior noise standard for residential land uses applies to "outdoor activity areas." Outdoor activity areas generally include individual backyards of single-family residences and common use outdoor areas (pools, BBQ/Picnic areas, playgrounds/tot lots, basketball/sport courts, parks, etc.) as well as individual unit patios and balconies.

The General Plan also provides noise level standards for non-transportation (stationary) noise sources. The General Plan noise level standards for non-transportation noise sources are identical to those provided in the City's Municipal code, provided below in Table II.

Implementation Policy NS-1-i of the General Plan Noise Element provides guidance in regards to mitigation for new developments and projects that have potential to result in a noise-related impact at existing noise-sensitive land uses.

> ***Mitigation by New Development.*** *Require an acoustical analysis where new development of industrial, commercial or other noise generating land uses (including transportation facilities such as roadways, railroads, and airports) may result in noise levels that exceed the noise level exposure criteria established by [Table I] and [Table II] to determine impacts, and require developers to mitigate these impacts in conformance with Tables 9-2 and 9-3 as a condition of permit approval through appropriate means.*
>
> *Noise mitigation measures may include:*
>
> - *The screening of noise sources such as parking and loading facilities, outdoor activities, and mechanical equipment;*
> - *Providing increased setbacks for noise sources from adjacent dwellings;*
> - *Installation of walls and landscaping that serve as noise buffers;*
> - *Installation of soundproofing materials and double-glazed windows; and*
> - *Regulating operations, such as hours of operation, including deliveries and trash pickup.*
>
> *Alternative acoustical designs that achieve the prescribed noise level reduction may be approved by the City, provided a qualified Acoustical Consultant submits information demonstrating that the alternative designs will achieve and maintain the specific targets for outdoor activity areas and interior spaces. As a last resort, developers may propose to construct noise walls along roadways when compatible with aesthetic concerns and neighborhood character. This would be a developer responsibility, with no City funding.*

Implementation Policy NS-1-j of the General Plan Noise Element provides guidance in regards to the establishment of a significance threshold when determining an increase in noise levels over

existing ambient noise levels.

> ***Significance Threshold.*** *Establish, as a threshold of significance for the City's environmental review process, that a significant increase in ambient noise levels is assumed if the project would increase noise levels in the immediate vicinity by 3 dB L_{dn} or CNEL or more above the ambient noise limits established in this General Plan Update.*
>
> *Commentary: When an increase in noise would result in a "significant" impact (increase of three dBA or more) to residents or businesses, then noise mitigation would be required to reduce noise exposure. If the increase in noise is less than three dBA, then the noise impact is considered insignificant and no noise mitigation is needed. By setting a specific threshold of significance in the General Plan, this policy facilitates making a determination of environmental impact, as required by the California Environmental Quality Act. It helps the City determine whether (1) the potential impact of a development project on the noise environment warrants mitigation, or (2) a statement of overriding considerations will be required.*

Municipal Code

Section 15-2506 of the City of Fresno Municipal code establishes hourly acoustical performance standards for non-transportation noise sources. The standards, provided in Table II, are made more restrictive during the nighttime hours of 10:00 p.m. to 7:00 a.m. Additionally, the municipal code states that when ambient noise levels exceed or equal the levels described in Table II, mitigation shall only be required to limit noise to the existing ambient noise levels, plus five (5) dB. Section 15-2506 of the Municipal Code is consistent with Implementing Policy NS-1-I of the Noise Element of the City of Fresno General Plan (adopted 12/18/14).

TABLE II

NON-TRANSPORTATION NOISE LEVEL STANDARDS, dBA
CITY OF FRESNO MUNICIPAL CODE, SECTION 15-2506

Daytime (7 a.m.-10 p.m.)		Nighttime (10 p.m.-7 a.m.)	
L_{eq}	L_{max}	L_{eq}	L_{max}
50	70	45	60

Source: City of Fresno Municipal Code

Additional guidance is provided in Section 10-102(b) of the City's Municipal Code. Section 10 provides existing ambient noise levels to be applied to various districts, further divided into various hours of the day. Table III describes the assumed minimum ambient noise levels by district and time. Section 10-102(b) states *"For the purpose of this ordinance, ambient noise level is the level obtained when the noise level is averaged over a period of fifteen minutes, without inclusion of the offending noise, at the location and time of day at which a comparison with the*

offending noise is to be made. Where the ambient noise level is less than that designated in this section, however, the noise level specified herein shall be deemed to be the ambient noise level for that location".

TABLE III

ASSUMED MINIMUM AMBIENT NOISE LEVEL, dBA
CITY OF FRESNO MUNICIPAL CODE, SECTION 10-102(B)

DISTRICT	TIME	SOUND LEVEL, dB L_{eq}
RESIDENTIAL	10 PM TO 7 AM	50
RESIDENTIAL	7 PM TO 10 PM	55
RESIDENTIAL	7 AM TO 7 PM	60
COMMERCIAL	10 PM TO 7 AM	60
COMMERCIAL	7 AM TO 10 PM	65
INDUSTRIAL	ANYTIME	70

Source: City of Fresno Municipal Code

Section 10-106 (Prima Facie Violation) States *"Any noise or sound exceeding the ambient noise level at the properly line of any person offended thereby, or, if a condominium or apartment house, within any adjoining living unit, by more than five decibels shall be deemed to prima facie evidence of a violation of Section 8-305."*

For noise sources that are not transportation related, which usually includes commercial or industrial activities and other stationary noise sources (such as amplified music), it is common to assume that a 3-5 dB increase in noise levels represents a substantial increase in ambient noise levels. This is based on laboratory tests that indicate that a 3 dB increase is the minimum change perceptible to most people, and a 5 dB increase is perceived as a "definitely noticeable change."

Appendix A provides definitions of the acoustical terminology used in this report. Unless otherwise stated, all sound levels reported in this analysis are A-weighted sound pressure levels in decibels (dB). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighted sound levels, as they correlate well with public reaction to noise. Appendix B provides typical A-weighted sound levels for common noise sources.

PROJECT SITE NOISE EXPOSURE

The project site is located south of (and adjacent to) W. Herndon Avenue, and is bordered by N. Hayes Avenue to the southwest and Veterans Boulevard to the southeast. The project site is exposed to traffic noise associated with vehicles traveling on these three roadways. Additional sources of noise in the project vicinity include occasional aircraft overflights as well as distant train noise associated with the Burlington Northern Santa Fe (BNSF) Railroad line (approximately 0.5 miles to the northeast) and the Union Pacific (UP) Railroad line (approximately 0.5 miles to the southwest). The overall project site noise exposure is dominated by vehicle traffic noise, predominantly from W. Herndon Avenue and Veterans Boulevard.

Project Site Traffic Noise Exposure

Noise exposure from traffic on W. Herndon Avenue, N. Veterans Boulevard and N. Hayes Avenue was calculated for existing and future (2046) conditions using the FHWA Traffic Noise Model and traffic data obtained from Fresno COG and Caltrans and the findings of on-site noise level measurements.

WJVA utilized the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA Model is a standard analytical method used for roadway traffic noise calculations. The model is based upon reference energy emission levels for automobiles, medium trucks (2 axles) and heavy trucks (3 or more axles), with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA Model was developed to predict hourly L_{eq} values for free-flowing traffic conditions, and is generally considered to be accurate within ±1.5 dB. To predict L_{dn} values, it is necessary to determine the hourly distribution of traffic for a typical day and adjust the traffic volume input data to yield an equivalent hourly traffic volume.

Noise level measurements and concurrent traffic counts were conducted by WJVA staff within the project site on March 12, 2024. The purpose of the measurement was to evaluate the accuracy of the FHWA Model in describing traffic noise exposure within the project site. One traffic noise measurement site was located approximately 75 feet from the centerline of W. Herndon Avenue and one traffic noise measurement site was located approximately 90 feet from the centerline of N. Veterans Boulevard. Traffic volumes on N. Hayes Boulevard were too low to conduct and accurate traffic noise calibration measurement. The posted speed limit posted in the project vicinity varies from 50 mph (miles per hour) on both W. Herndon Avenue and Veterans Boulevard, and the speed limit on N. Hayes Avenue is 35 mph. The project vicinity and noise monitoring site locations are provided as Figure 2. A photograph showing the W. Herndon Avenue traffic noise measurement site is provided as Figure 3. A photograph showing the N. Veterans Boulevard traffic noise measurement site is provided as Figure 4.

Noise monitoring equipment consisted of Larson-Davis Laboratories Model LDL-820 sound level analyzer equipped with a B&K Type 4176 1/2” microphone. The equipment complies with the specifications of the American National Standards Institute (ANSI) for Type I (Precision) sound level meters. The meter was calibrated in the field prior to use with a B&K Type 4230 acoustic

calibrator to ensure the accuracy of the measurements. The microphone was located on a tripod at 5 feet above the ground.

Noise measurements were conducted in terms of the equivalent energy sound level (L_{eq}). Measured L_{eq} values were compared to L_{eq} values calculated (predicted) by the FHWA Model using as inputs the traffic volumes, truck mix and vehicle speed observed during the noise measurements. The vehicle speed was assumed to be 30 mph. The results of the comparison are shown in Table IV.

From Table IV it may be determined that the traffic noise levels predicted by the FHWA Model were 3.1 dB lower than those measured for the conditions observed at the time of the noise measurements for N. Herndon Avenue. This overprediction of the noise model is a result of vehicles generally traveling at speeds lower than the posted speed limit of 50 mph, as vehicles slow on approach to red lights near the intersection W. Herndon Avenue and N. Hayes Avenue, and an offset to the noise model is warranted.

Traffic noise levels predicted by the FHWA Model were 0.4 dB lower than those measured for the conditions observed at the time of the noise measurements for N. Veterans Boulevard. This is considered to be reasonable agreement with the model and therefore no adjustments to the model are necessary along N. Veterans Boulevard.

TABLE IV

COMPARISON OF MEASURED AND PREDICTED (FHWA MODEL) NOISE LEVELS BELLA VITA MIXED-USE DEVELOPMENT, FRESNO

	N. Herndon Ave	N. Veterans Blvd
Measurement Start Time	1:15 p.m.	1:40 p.m.
Observed # Autos/Hr.	1,272	720
Observed # Medium Trucks/Hr.	24	0
Observed # Heavy Trucks/Hr.	0	0
Observed Speed (MPH)	50	50
Distance, ft. (from center of roadway)	75	90
L_{eq}, dBA (Measured)	63.3	62.7
L_{eq}, dBA (Predicted)	66.4	62.3
Difference between Measured and Predicted L_{eq}, dBA	**3.1**	**0.4**

Note: FHWA "soft" site assumed for calculations.
Source: WJV Acoustics, Inc.

Annual Average Daily Traffic (AADT) data for W. Herndon Avenue, N. Veterans Boulevard and N. Hayes Avenue in the project vicinity was obtained from Fresno COG. Truck percentages and the day/night distribution of traffic were estimated by WJVA, based upon previous studies conducted in the project vicinity since project-specific data were not available from government sources.

Table VI summarizes annual average traffic data used to model noise exposure within the project site. It should be noted, the Fresno COG traffic models do not provide any existing volume data for Veterans Boulevard, as the portion of the roadway adjacent to the project site was not completed when the Fresno COG traffic model was last updated.

TABLE VI

TRAFFIC NOISE MODELING ASSUMPTIONS
BELLA VITA MIXED-USE DEVELOPMENT, FRESNO

	N. Hayes Ave		W. Herndon Ave		N. Veterans Blvd	
	Existing	2046	Existing	2046	Existing	2046
Annual Avenue Daily Traffic (AADT)	2,844	3,9230	23,992	21,522	--	10,326
Day/Evening/Night Split (%)	90/10					
Assumed Vehicle Speed (mph)	35		50		50	
% Medium Trucks (% AADT)	2					
% Heavy Trucks (% AADT)	1					

Sources: Fresno COG
WJV Acoustics, Inc.

The closest proposed multi-family residential buildings to N. Hayes Avenue, W. Herndon Avenue and N. Veterans Boulevard would be located at setbacks (from the roadway centerlines) of approximately 60 feet, approximately 70 feet and approximately 85 feet, respectively. Using data from Table VI, the FHWA Model, annual average traffic noise exposure was calculated for the closest proposed multi-family residential building setbacks to N. Hayes Avenue, W. Herndon Avenue and N. Veterans Boulevard. Table VII provides the noise exposure levels for these three roadways, at the closest proposed residential building setback to each roadway.

TABLE VII

MODELED TRAFFIC NOISE LEVELS, E. BEHYMER AVENUE, dB, CNEL
BELLA VITA MIXED-USE DEVELOPMENT, FRESNO

Roadway	Existing Conditions	2046 Conditions
N. Hayes Avenue	57	59
W. Herndon Avenue	69	68
N. Veterans Boulevard	--	64

Source: WJV Acoustics
Fresno COG

Reference to Table VII indicates that the traffic noise exposure at the closest proposed residential building setbacks to N. Hayes Avenue, W. Herndon Avenue and N. Veterans Boulevard would be 59 dB L_{dn}, 68 dB L_{dn}, and 64 dB L_{dn}, for future (2046) traffic conditions.

Exterior Noise Compliance

The City of Fresno exterior noise standard for residential land uses is 65 dB L_{dn}. The exterior noise standard applies to "outdoor activity areas." Outdoor activity areas generally include individual backyards of single-family residences and common use outdoor areas (pools, BBQ/Picnic areas, playgrounds/tot lots, basketball/sport courts, parks, etc.) as well as individual unit patios and balconies for multi-family residential land uses.

The project would include numerous outdoor activity areas, including multiple BBQ areas, tot lot, pool, gazebo, basketball/sport court, and a meditation garden. It is assumed that individual unit patios and balconies would also be included into project design. The exterior noise standard would typically apply to these areas. The majority of these features would be located somewhat centrally and would be acoustically shielding by residential buildings, with the exception of the proposed "Landscaped Park/Play Area" located along the northern portion of the project site, adjacent to W. Herndon Avenue.

According to the project site plan (Figure 1) the project would also include an 8-foot concrete block wall along the project site frontage with W. Herndon Avenue and a 6-foot 8-inch concrete block wall around the remainder of the residential roadway frontages, along N. Veterans Boulevard and N. Hayes Avenue. These walls would provide acoustical shielding from traffic noise.

The closest common use outdoor activity area to a roadway is the proposed "Landscaped Park/Play Area," shown as item 29 on the site plan. This feature would be located approximately 60 feet from the centerline of W. Herndon Avenue. At this setback distance, exterior noise exposure would approximately 70 dB L_{dn} for both existing and future traffic conditions. The next closest common use outdoor area to a roadway would be the basketball court and BBQ area, approximately 200 feet from the centerline of W. Herndon Avenue. At this distance, exterior noise exposure would be approximately 62 dB L_{dn}.

A sound wall insertion loss program based on the FHWA Model was used to calculate the insertion loss (noise reduction) provided by the proposed sound walls. The model calculates the insertion loss of a wall of given height based on the effective height of the noise source, height of the receiver, distance from the receiver to the wall, and distance from the noise source to the wall. The standard assumptions used in the sound wall calculations are effective source heights of 8, 2 and 0 feet above the roadway for heavy trucks, medium trucks, and automobiles, respectively. The standard height of a residential receiver is five (5) feet above the ground elevation.

Based upon the above-described assumptions and method of analysis, the noise level insertion loss values for the proposed sound walls were calculated. The calculations indicated that the proposed 8-foot sound wall along W. Herndon Avenue would reduce exterior noise exposure at the proposed park/play area adjacent to W. Herndon Avenue by approximately 9 dB, with the resulting noise exposure of 61 dB L_{dn}. Such levels do not exceed the City of Fresno exterior noise standard of 65 dB L_{dn}.

The above-described sound walls would be effective at first-floor receiver locations only. As such, if second- or third-floor balconies are included in the units adjacent to W. Herndon Avenue, exterior noise levels would exceed the 65 dB L_{dn} exterior noise level standard.

Interior Noise Compliance

The City of Fresno interior noise level standard is 45 dB L_{dn}. The worst-case noise exposure within the proposed residential development would be approximately 68 dB L_{dn} (2046 conditions). This means that the proposed residential construction must be capable of providing a minimum outdoor-to-indoor noise level reduction (NLR) of approximately 23 dB (68-45=23).

A specific analysis of interior noise levels was not performed. However, it may be assumed that residential construction methods complying with current building code requirements will reduce exterior noise levels by approximately 25 dB if windows and doors are closed. This will be sufficient for compliance with the City's 45 dB L_{dn} interior standard at all proposed residential units. Requiring that it be possible for windows and doors to remain closed for sound insulation means that air conditioning or mechanical ventilation will be required.

Commercial/Retail Noise Levels

The project would include a commercial component, to be located at the corner of W. Herndon Avenue and N. Hayes Avenue. The commercial component of the development will feature two commercial pads and a retail shell building, providing a total of 22,600 square feet of commercial space. The commercial establishments are planned to include a drive-through restaurant, a small restaurant, and a retail store, with operating hours from 8:00 am to 10:00 pm, seven days a week. Typical examples of stationary noise sources associated with such land uses include:

- HVAC/Mechanical equipment
- Truck deliveries
- Parking lot activities (closing of car doors and trunks, stereos, alarms etc.)
- Drive Through operations

It should be noted, the multi-family residential component of the project would include enclosed garage units along the entire length of the residential/commercial adjacency. According to the project applicant, the finished height of the garage unit structure would be approximately 11-12 feet above ground level. The garage structure will provide significant acoustical shielding of all noise sources originating from the commercial component of the project (with the exception of any roof-mounted HVAC units).

Mechanical Equipment

The closest proposed commercial building would be located approximately 100 feet from the closest proposed residential building. It is assumed that the project would include roof-mounted HVAC units on the proposed commercial buildings. WJVA has conducted reference noise level

measurements at numerous commercial and retail buildings with roof-mounted HVAC units, and associated noise levels typically range between approximately 39-44 dB at a distance of 100 feet from the building façade. Such levels do not exceed any City of Fresno noise level standard or exceed existing (without project) ambient noise levels.

Truck Movements

The commercial uses would likely include periodic truck deliveries. WJVA has conducted measurements of the noise levels produced by slowly moving trucks for a number of studies. Such truck movements would be expected to produce noise levels in the range of 65 to 71 dBA at a distance of 100 feet. The range in measured truck noise levels is due to differences in the size of trucks, their speed of movement and whether they have refrigeration units in operation during the pass-by. Truck movements would likely occur at distances of 150 or greater from the closest residential units to the commercial component.

The above-described garage structure would provide approximately 10-12 dB of noise attenuation at the adjacent residential land uses. Truck movements occurring within the commercial component of the project would not be expected to exceed 60 dB at the closest proposed residential land uses to the commercial component of the project. Such levels do not exceed any City of Fresno noise level standard or exceed existing (without project) ambient noise levels.

Parking Lot Activities

Noise due to traffic in parking lots is typically limited by low speeds and is not usually considered to be significant. Human activity in parking lots that can produce noise includes voices, stereo systems and the opening and closing of car doors and trunk lids. Such activities can occur at any time. The noise levels associated with these activities cannot be precisely defined due to variables such as the number of parking movements, time of day and other factors. It is typical for a passing car in a parking lot to produce a maximum noise level of 60 to 65 dBA at a distance of 50 feet, which is comparable to the level of a raised voice.

For this project, the closest proposed parking areas would be located at least 120 feet from the closest proposed residential land uses. Taking into account this distance as well as the noise attenuation provided by the garage structure, maximum (L_{max}) parking lot vehicle movements would be expected to be approximately 45 to 50 dB. Such levels would not exceed any of the City's applicable noise levels standards or exceed existing ambient noise levels at the closest residential land uses. Such levels do not exceed any City of Fresno noise level standard or exceed existing (without project) ambient noise levels.

Drive Through Retail

The proposed project would include a drive-through quick-service restaurant. While the exact tenant was not known at the time this analysis was prepared, it is assumed that amplified speech would be incorporated into drive-through operations.

In order to assess potential project noise levels associated with drive-thru operations, WJVA utilized reference noise levels measured at a Wendy's drive-through restaurant located on South

Mooney Boulevard in Visalia. Measurements were conducted during the early afternoon of July 11, 2011 between 12:45 p.m. and 1:45 p.m. using the previously-described noise monitoring equipment.

The microphone used by customers to order food and the loudspeaker used by employees to confirm orders are both integrated into a menu board that is located a few feet from the drive-through lane at the approximate height of a typical car window. Vehicles would enter the drive-through lane from the west and then turn to the north along the east side of the restaurant.

Reference noise measurements were obtained at a distance of approximately 40 feet from the menu board containing the microphone/loudspeaker system at an angle of about 45° toward the rear of the vehicle being served. This provided a worst-case exposure to sound from the loudspeaker system since the vehicle was not located directly between the loudspeaker and measurement location. Cars were lined up in the access lane during the noise measurement period indicating that the drive-through lane was operating at or near a peak level of activity.

Each ordering cycle was observed to take approximately 60 seconds including vehicle movements. A typical ordering cycle included 5-10 seconds of loudspeaker use with typical maximum noise levels in the range of 60-62 dBA at the 40 foot-reference location. Vehicles moving through the drive-through lane produced noise levels in the range of 55-60 dBA at the same distance. Vehicles parked at the ordering position (between the menu board and measurement site) were observed to provide significant acoustic shielding during the ordering sequence. The effects of such shielding are reflected by the noise measurement data. Noise levels were measured to approximately 60 dB L_{eq} at the measurement site, and included noise from all sources, including the loudspeaker, vehicle movements and HVAC equipment.

The closest proposed residential land use to the proposed retail drive thru operations are located approximately 90 feet from the drive-through lane. Potential project-related noise levels at the location of the closest residential land uses were calculated based upon the above-described reference noise measurement data and the normal rate of sound attenuation over distance for a “point” noise source (6 dB/doubling of distance), and the noise attenuation provided by the above-described garage structure. At the setback distance of the closest residential land uses to any proposed drive-through operations, noise levels associated with drive-through retail operations would be expected to produce noise levels of approximately 43 dB. Such levels do not exceed any City of Fresno noise level standard or exceed existing (without project) ambient noise levels.

CONCLUSIONS AND RECOMMENDATIONS

The proposed mixed-use (residential and commercial) development will comply with all City of Fresno exterior and interior noise level standards, provided the following mitigation measures are incorporated into final project design.

- Mechanical ventilation or air conditioning must be provided for all apartment units so that windows and doors can remain closed for sound insulation purposes.

The findings of this analysis take into consideration the proposed concrete block sound walls around the residential component of the project (8-foot sound wall along W. Herndon Avenue, 6-foot 8-inch sound wall along N. Hayes Avenue and N. Veterans Boulevard). Additionally, noise compliance at the residential/commercial component adjacency was assessed based upon the noise attenuation that would be provided by the proposed garage structure. If changes are made to these features of the project design, the findings of this analysis must be reassessed.

The proposed concrete block sound walls would be effective at first-floor receiver locations only. As such, if second- or third-floor balconies are included in the units adjacent to W. Herndon Avenue, exterior noise levels would exceed the 65 dB L_{dn} exterior noise level standard.

The conclusions and recommendations of this acoustical analysis are based upon the best information known to WJV Acoustics Inc. (WJVA) at the time the analysis was prepared concerning the proposed site plan, traffic volumes and roadway configurations. Any significant changes in these factors will require a reevaluation of the findings of this report. Additionally, any significant future changes in motor vehicle technology, noise regulations or other factors beyond WJVA's control may result in long-term noise results different from those described by this analysis.

Respectfully submitted,

Walter J. Van Groningen
President

WJV:wjv

FIGURE 1: SITE PLAN

FIGURE 2: PROJECT SITE VICINITY AND NOISE MEASUREMENT LOCATIONS

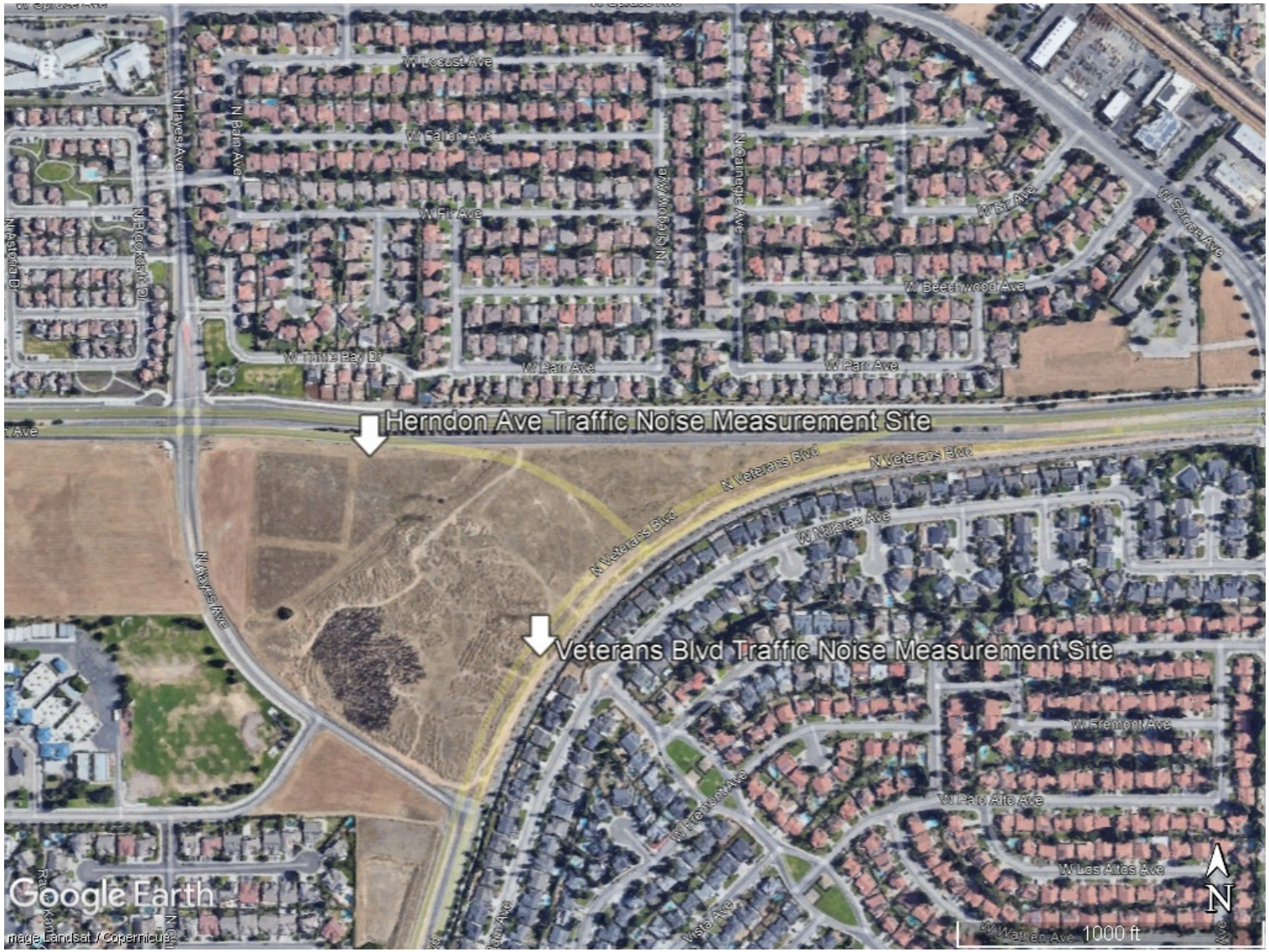


FIGURE 4: W. HERNDON AVENUE TRAFFIC NOISE MEASUREMENT SITE

FIGURE 5: N. VETERANS BOULEVARD TRAFFIC NOISE MEASUREMENT SITE

APPENDIX A

ACOUSTICAL TERMINOLOGY

AMBIENT NOISE LEVEL: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL: Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

DECIBEL, dB: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

DNL/L_{dn}: Day/Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

L_{eq}: Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

NOTE: The CNEL and DNL represent daily levels of noise exposure averaged on an annual basis, while L_{eq} represents the average noise exposure for a shorter time period, typically one hour.

L_{max}: The maximum noise level recorded during a noise event.

L_n: The sound level exceeded "n" percent of the time during a sample interval (L_{90}, L_{50}, L_{10}, etc.). For example, L_{10} equals the level exceeded 10 percent of the time.

A-2

ACOUSTICAL TERMINOLOGY

NOISE EXPOSURE CONTOURS: Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and DNL contours are frequently utilized to describe community exposure to noise.

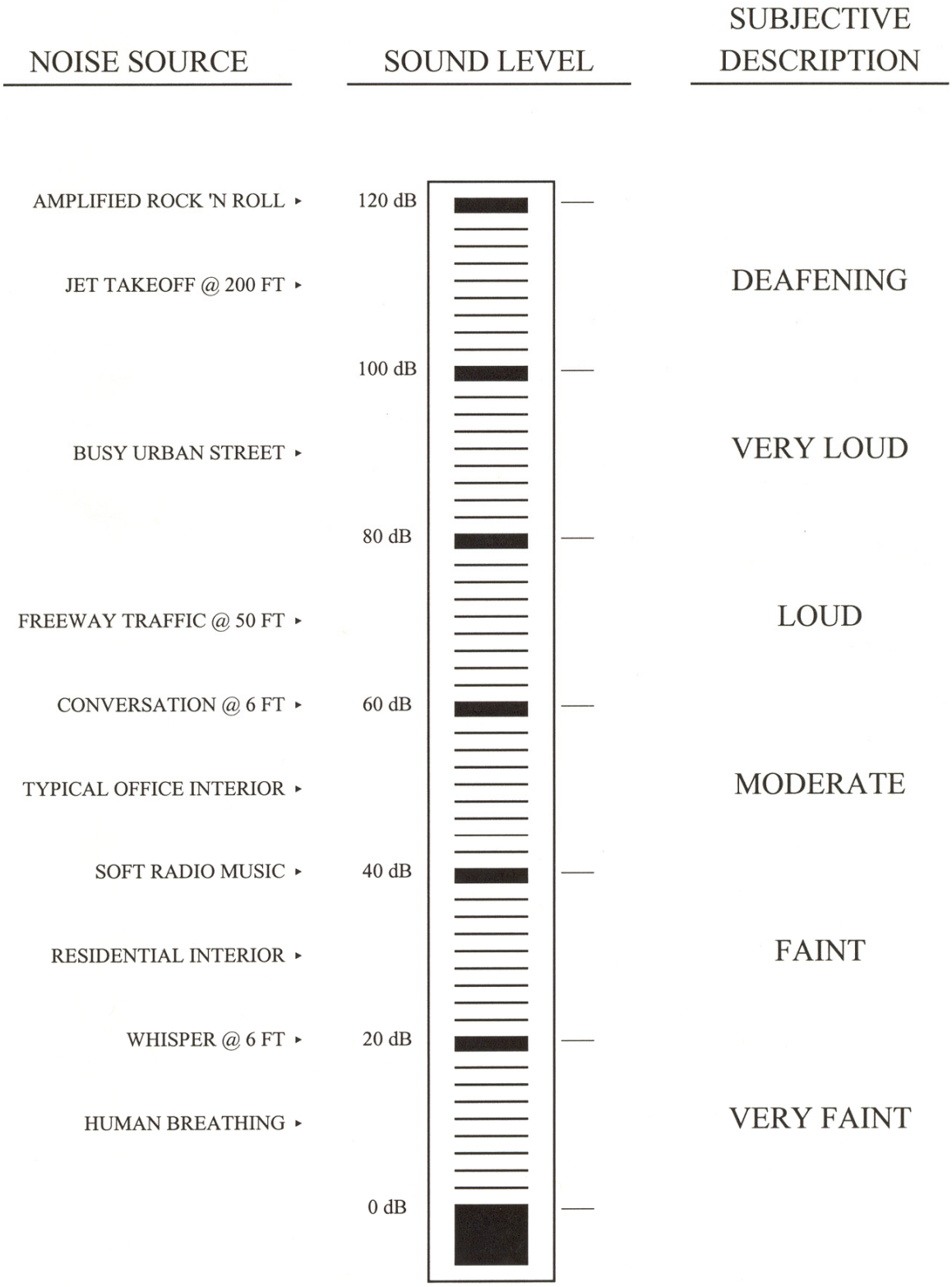
NOISE LEVEL REDUCTION (NLR): The noise reduction between indoor and outdoor environments or between two rooms that is the numerical difference, in decibels, of the average sound pressure levels in those areas or rooms. A measurement of "noise level reduction" combines the effect of the transmission loss performance of the structure plus the effect of acoustic absorption present in the receiving room.

SEL or SENEL: Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.

SOUND LEVEL: The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

SOUND TRANSMISSION CLASS (STC): The single-number rating of sound transmission loss for a construction element (window, door, etc.) over a frequency range where speech intelligibility largely occurs.

APPENDIX B
EXAMPLES OF SOUND LEVELS



APPENDIX E

Water Supply Assessment

SB 610 Water Supply Assessment

Bella Vita Development

May 2024

Prepared For:

City of Fresno
2600 Fresno Street
Fresno, CA 93721

Prepared By:

4Creeks, Inc.
324 S Santa Fe, Suite A
Visalia, CA 93292

TABLE OF CONTENTS

1.0 INTRODUCTION AND BACKGROUND....2
2.0 PROJECT DESCRIPTION....5
3.0 PROJECT WATER DEMANDS....9
4.0 INCLUSION IN ADOPTED URBAN WATER MANAGEMENT PLAN....13
5.0 DRY YEAR WATER SUPPLY ADEQUACY (WATER CODE SECTION 10910(C)(4))....13
6.0 COMPARISON OF PROJECT DEMAND TO WATER SUPPLY SOURCES....16
7.0 WATER SUPPLY RIGHTS AND ENTITLEMENTS; HISTORIC WATER USAGE....20
8.0 CONTINGENCY ANALYSIS APPLICABILITY....22
9.0 ASSESSMENT FINDINGS....23
REFERENCES....24
PAGES EXCERPTED FROM CITY OF FRESNO 2020 UWMP....APPENDIX A

1.0 Introduction and Background

This Water Supply Assessment (WSA) has been prepared pursuant to the requirements of Senate Bill 610 ("SB 610"), requiring public water agencies, parties, or purveyors that may supply water to certain proposed development projects to prepare a WSA for use in environmental documentation for such projects, pursuant to the California Environmental Quality Act (CEQA). The City of Fresno is conducting an environmental review under the CEQA requirements for the proposed Bella Vita Project in Fresno, California.

The WSA will evaluate if the total Project water supply determined to be available during normal, single dry, and multiple dry years will meet the Project water demand associated with the Project, in addition to existing and planned future uses in the City of Fresno.

This WSA contains information from Fresno's 2020 Urban Water Management Plan Update (UWMP) and the Integrated Regional Water Management Plan.

Approvals must be conditioned on the requirement that a sufficient water supply shall be available to serve the project, where proof of the availability of that supply must be based on a written verification prepared by the agency providing water service to the project. "Sufficient water supply" under SB 610 means that the total water supply available during normal, single-dry, and multiple-dry years within a 20-year projection will meet the projected demand associated with the proposed Project, in addition to existing and planned uses. According to SB 601, projects that require a WSA differ depending on if the public water system has over 5,000 connections. Fresno has over 5,000 connections. Therefore, projects that require a WSA are:

1. A proposed residential development of more than 500 dwelling units.
2. A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
3. A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
4. A proposed hotel or motel, or both, that has more than 500 rooms.
5. A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, which occupies more than 40 acres of land, or has more than 650,000 square feet of floor area.
6. A mixed-use project that includes one or more of the projects specified in this subdivision.
7. A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.

The proposed Bella Vita Project is a mixed-use project with over 500 dwelling units.

1.1 Water Agencies and Providers

The City of Fresno provides water supplies to most of the City, including the Project Site.

Fresno collaborates with the North Kings Groundwater Sustainability Agency (NKGSA) and other parties as part of the North Kings Groundwater Sustainability Plan (NKGSP). This plan was developed following Assembly Bill 3030. As part of those efforts, the NKGSA member agencies have agreed to manage groundwater extraction in a manner that does not cause undesirable results in the aquifer.

Surface Water is the primary water supply in Fresno. The City of Fresno has a contract with the United States Bureau of Reclamation (USBR) for water from the CVP's Friant Division, specifically from the Friant-Kern Canal. Originally executed in 1961, this agreement secures an annual water supply of 60,000 acre-feet of Class 1 water. Fresno also has a contract with the Fresno Irrigation District (FID) for water from the Kings River. The City uses this water for both potable uses and groundwater recharge.

The City has increased its recycled water production capabilities and constructed much of the southwest recycled water system. This system helps distribute recycled water to end users for non-potable purposes such as irrigation.

Fresno employs a conjunctive use strategy, which involves balancing groundwater and surface water use. Surface water is maximized for potable use and groundwater recharge during wet years, while groundwater usage increases during dry years. This approach ensures a reliable water supply under varying conditions.

1.2 Water System and Supply

Except for the Bakman Water Company (Bakman), Pinedale County Water District (Pinedale), Park Van Ness Mutual Water Company (Park Van Ness), California State University Fresno (CSUF), and private groundwater users located within County islands, the City currently serves water to the entire area encompassed by its City limits. It will eventually serve the Sphere of Influence (SOI) boundary.

The City provides service to 550,217 residents. The City provides water through five customer classes: single-family, multi-family, commercial, industrial, and landscape. The existing land uses within the city limits include 27,700 acres of single-family residential, 3,700 acres of multi-family residential, 4,500 acres of commercial, 4,500 acres of industrial, 13,100 acres of Open Space and Agriculture, and 5,600 acres of public facilities.

The City's water system consists of about 1,860 miles of distribution and transmission mains, 202 active municipal groundwater wells, three surface water treatment facilities (SWTFs) with

current rated capacities ranging from 4 to 54 mgd, five water storage facilities with pump stations, including one at each of the SWTFs plus two in the distribution system, and three booster pump facilities.

The City of Fresno's water system relies on a diverse portfolio of supplies to meet the demands of its growing population. The primary sources include groundwater from the Kings Subbasin, surface water from the Central Valley Project CVP Friant Division through a contract with the USBR, and Kings River water via a contract with the FID. Additionally, Fresno utilizes recycled water produced at the Fresno-Clovis Regional Water Reclamation Facility and the North Fresno Water Reclamation Facility. The City employs a conjunctive use strategy, which involves maximizing surface water use during wet years for direct consumption and groundwater recharge while increasing groundwater usage during dry years to ensure a reliable supply. This approach, combined with infrastructure investments such as surface water treatment facilities, helps maintain a sustainable water supply under varying conditions. See Table 1-1 below for projected water supplies.

Table 1-1: Projected Water Supplies

Water Supply	Additional Detail on Water Supply	2025	2030	2035	2040	2045
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Ground water	Kings Subbasin	138,090	143,630	149,100	154,490	159,820
Surface Water	USBR CVP	60,000	60,000	60,000	60,000	60,000
Surface Water	FID Contract	125,030	131,600	131,600	131,600	131,600
Recycled Water	NFWRF Tertiary Disinfected	5,800	5,800	5,800	5,800	5,800
Recycled Water	RWRF Tertiary Disinfected	110	110	110	110	110
	Total:	***329,030***	***341,140***	***346,610***	***352,000***	***357,330***

Fresno District operates the Public Water System (PWS) listed in Table 1-2. Public Water Systems are the systems that provide drinking water for human consumption, and these systems are regulated by the State Water Resources Control Board (Board), Division of Drinking Water.

Table 1-2: Public Water Systems

Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied, 2020 (AF)
CA1010007	City of Fresno	139,523	121,994

2.0 Project Description

2.1 Project Location and Setting

The location of the proposed Bella Vita Project (hereinafter referred to as the "Project Site") is located in the northwest portion of Fresno. The Project encompasses a total of 28.06 acres. The parcels designated for this Project within Fresno County are identified by the following Assessor Parcel Numbers (APNs): 504-092-15, 504-092-16, 504-092-09, 504-092-10S, and 506-010-14. The parcels on which the Project would be located are designated by the Fresno General Plan as Urban Neighborhood and Office. The zoning is RM-2, Residential Multi-Family, Urban Neighborhood, and O, Office. The Site is within the City of Fresno City Limits.

The proposed Project site is in a developing area in Fresno. Land uses of adjacent parcels surrounding the Project site are shown in Table 2-1:

Table 2-1: Surrounding Land Uses

Location	Existing Land Use	Planned Land Use
North	Low Density Residential /Medium-Low Density Residential	Neighborhood Park/Medium-Low Density Residential
South	Low Density Residential	Vacant/Medium Density Residential
West	Low Density Residential/ Open Space	Vacant/Ponding Basin/Medium Density Residential
East	Office/Elementary School	Vacant/Elementary School

2.2 Description of Proposed Project

The Project Applicant proposes to develop approximately 28.06 acres of land into a multi-family development with commercial uses.

Residential

The proposal features 516 multi-family housing units which is broken down as follows:

- 132 One Bedroom Units
- 252 Two Bedroom Units
- 132 Three Bedroom Units

Commercial

The development will feature two commercial pads and a retail shell building for the commercial component, providing a total of 22,600 square feet of commercial space. The commercial establishments will include a drive-through restaurant, a small restaurant, and a retail store, with operating hours from 8:00 am to 10:00 pm, seven days a week.

Landscaping

The Project will include 477,280 square feet of landscape area between the residential and commercial area.

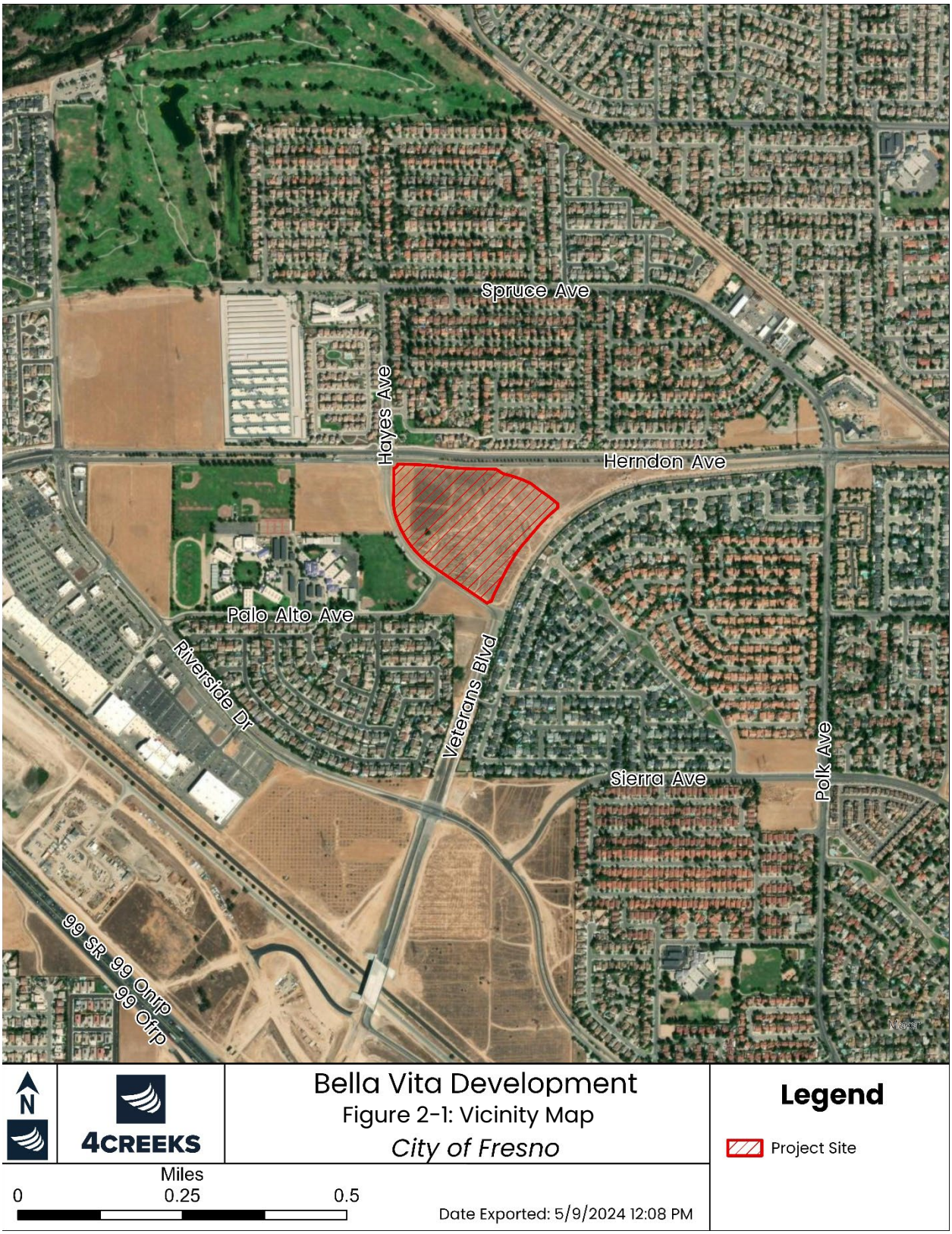
Infrastructure

The Project will require connection to various City-operated utility and infrastructure systems. These include City-provided services such as sewer/wastewater, water, and stormwater facilities. Non-City-provided infrastructure includes natural gas and electrical services. The Project will be responsible for the construction of connection points to the City's existing infrastructure.

Other Public Agencies Approval and Consultation

The Project will require various permits and/or entitlements from regulatory agencies. Consultation may be required, and the City of Fresno will integrate CEQA review with these related environmental review requirements. The following discretionary approvals are required from the City of Fresno for the proposed Project:

- San Joaquin Valley Air Pollution Control District (SJVAPCD). The proposed Project is within the jurisdiction of the SJVAPCD and will be required to comply with Rule VIII, 3135, 4101, and 9510.
- Central Valley Regional Water Quality Control Board, SWPPP. The proposed Project site is within the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB). The Central Valley RWQCB will require a Storm Water Pollution Prevention Plan (SWPPP) to prevent impacts related to stormwater because of Project construction.


Spruce Ave
Hayes Ave
Herndon Ave
Palo Alto Ave
Riverside Dr
Veterans Blvd
Sierra Ave
Polk Ave
99 SR 99 Onrp
99 Offrp
N
4CREEKS
Bella Vita Development
Figure 2-1: Vicinity Map
City of Fresno
Miles
0
0.25
0.5
Date Exported: 5/9/2024 12:08 PM
Legend
Project Site

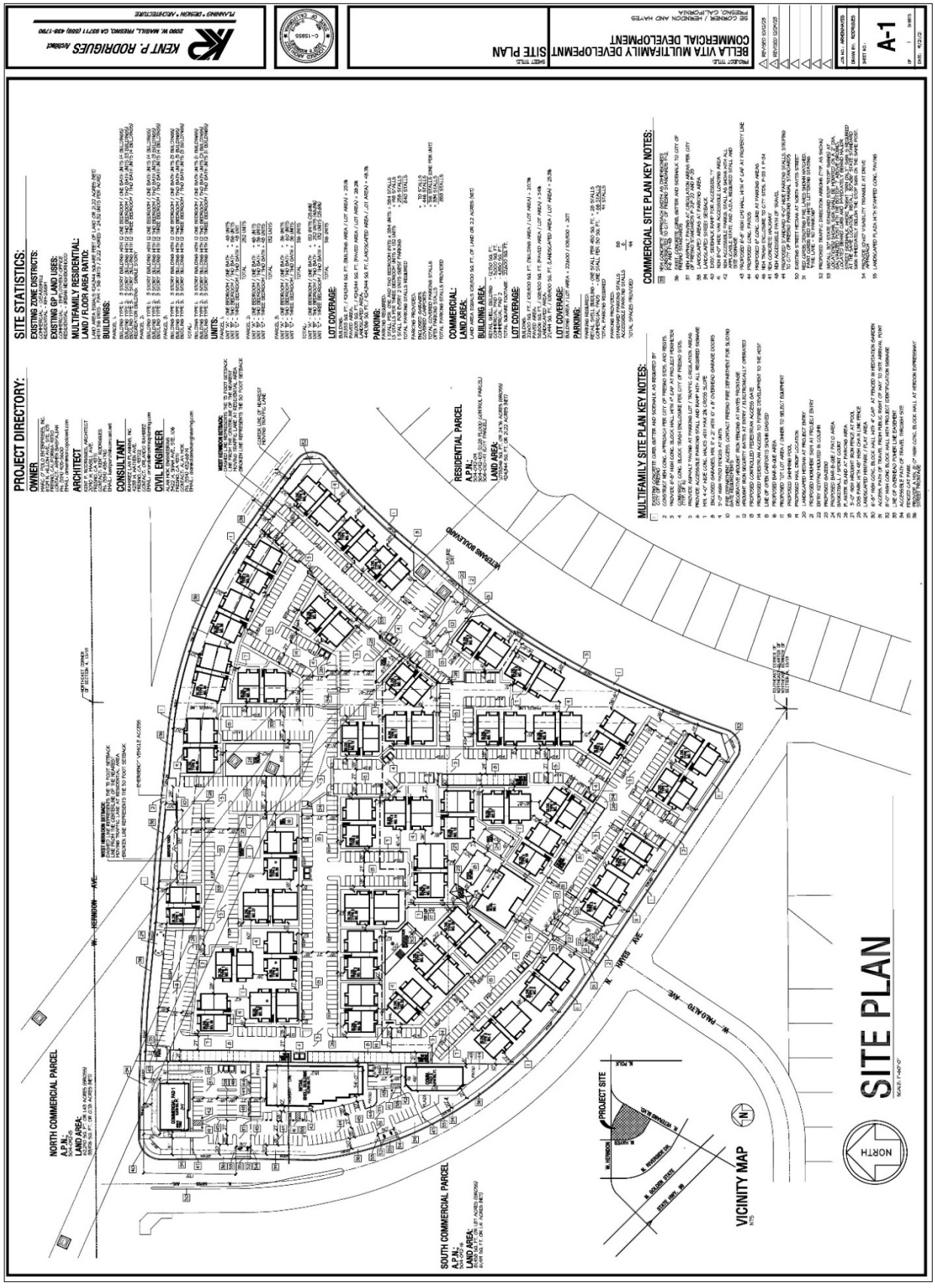


Figure 2-2: Project Site Plan

3.0 Project Water Demand

3.1 Assumptions

Project water demand is estimated using information from the City's adopted 2020 Urban Water Management Plan (UWMP), a study from the Pacific Institute, and the U.S. Energy Information Administration. Project water demand is calculated on the following assumptions:

- Residential: The Project proposes 132 One Bedroom Units, 252 Two Bedroom Units, and 132 Three Bedroom Units.
- Per Capita Water Use: The City of Fresno's residential uses (Single and Multi-Family) used 121,993 Acre-Feet (AF) of water in 2020, according to the UWMP. The service population was stated as 550,217. Therefore, the per capita water use was .22 AF or 72,247 gallons per year. This is 198 gallons per capita per day (GPCD) for 2020. The 2020 UWMP identified the average residential water use as decreasing over time due to passive conservation, which includes the replacement of older water fixtures and appliances with more efficient types. For new residential developments, the UWMP projects an initial 10% reduction in GPCD, and an annual passive conservation of 0.04% per year. Projected GPCD per person obtained from the 2020 UWMP will be used to calculate projected water demand from the Project.
- Household Size: According to the 2022 American Community Survey, Table DP04, the average household size of renter-occupied units is 2.79 persons per unit.
- Commercial: The Project included two commercial pads and a retail shell building, providing 22,600 square feet of commercial space. The first commercial pad is 5,000 sqft and is planned to be a drive-thru restaurant. The second commercial pad is 4,850 sqft and is planned to be a small restaurant. The retail shell building is 12,750 sqft and is planned to be a retail store. The planned operating hours are 8:00 am to 10:00 pm, seven days a week.
- Commercial Demand: The water demand from commercial uses will be found using gallons per employee per day (GED). According to the Pacific Institutes' study, full-service restaurants demand 265 GED, grocery stores demand 170 GED, and other retail stores demand 152 GED. The two commercial pads will use the 265 GED, and the retail store will use 152 GED. The 2020 UWMP identified the average water use as decreasing over time due to passive conservation. For new commercial developments, the UWMP projects an initial 5% reduction, and an annual passive conservation of 0.01% per year.
- Commercial Employees: Information from the U.S. Energy Information Administration was utilized to estimate the number of employees. Square footage per worker is used. Foodservice averages 567 sqft per employee, and Mercantile averages 1,200 sqft per employee.
- Landscaping: The Project includes approximately 477,280 square feet, or 10.96 acres, of landscape area between the residential and commercial area. To be conservative, it is assumed that the entire park space acreage will be irrigated lawn and will require approximately five acre-feet of water per acre per year. This figure is based on

information about water requirements for large, irrigated lawns such as golf courses in the region.

3.2 Project Water Demands

Based on the above assumptions, Project water demand is calculated as follows:

Residential: 516 dwelling units X 2.79 persons per dwelling unit = 1,428 persons X GPCD X 365 days per year = Total number of gallons per year.

It is anticipated that when the Project is complete in 2027, the GPCD for the Project is projected to be 178, resulting in the residential water use from the Project being 92,808,346 GPY or approximately 284.78 AFY.

Commercial: (Square Footage / Employees Per Square Feet) = Estimated Employees

Estimated Employees X GPE = Total Gallons Per Day

It is anticipated that when the Project is complete in 2027, commercial water use from the Project will be 2,269,795 GPY or approximately 6.96 AFY. A breakdown of water uses for commercial uses is shown in Table 3-1 below.

Table 3-1: Commercial Water Use

Type	Square Feet	Employees	Total GPD	Total GPY	AFY
Drive Thru	5,000	8.82	2,337	852,954.14	2.62
Restaurant	4,850	8.55	2,267	827,365.52	2.54
Retail	12,750	10.63	1,615	589,475.00	1.81
Totals:	**22,600**	**28.00**	**6,219**	**2,269,795**	**6.96**

Landscaping: 10.96 acres X 5.0 acre-feet/year = ~54.80 acre-feet/year

The total Project is anticipated to require approximately 346.54.54 acre-feet/year of water in the year following project completion.

3.3 Fresno Water Conservation Measures

As identified previously, the Project would use approximately 362.54 acre-feet/year of water once completed. Fresno also has an aggressive conservation program that will continue to reduce per-capita usage and, therefore, demands on critical water sources. Fresno is committed to helping its customers use water efficiently and has developed various water conservation programs to support this goal. Fresno routinely conducts comprehensive conservation program analysis and planning to ensure that it is providing the right mix of

programs in the most cost-effective manner possible. This is done on a five-year cycle in tandem with the UWMP. Fresno's current Water Shortage Contingency Plan provides the basis for the information on the implementation of and expected water savings from Demand Management Measures (DMMs).

Potable Water: The landscaped public spaces will be irrigated. However, since outdoor landscaping is considered non-critical, the water available for outdoor public spaces may be limited during severe drought conditions.

Recycled Water: The City of Fresno has significantly expanded its recycled water program to enhance water sustainability and reduce reliance on potable water for non-potable uses. The city operates two main water reclamation facilities: the Fresno-Clovis Regional Wastewater Reclamation Facility (RWRF) and the North Fresno Wastewater Reclamation Facility (NFWRF), both of which produce Title 22 recycled water. The recycled water is used for various purposes, including landscape, agricultural, and golf course irrigation. To support these uses, the city has constructed the southwest recycled water distribution system, which includes a 3.2 million gallon reservoir, a high-capacity pump station, and miles of distribution pipelines. This system aims to deliver approximately 5,800 acre-feet per year of recycled water, significantly reducing the demand on the potable water supply. Additionally, the city has plans to expand this infrastructure to further increase the use of recycled water for non-potable purposes.

Demand Management Measures: The City of Fresno has implemented various Demand Management Measures (DMMs) to promote water conservation and reduce overall water demand. These measures help maintain the balance between water supply and demand, particularly during drought conditions and periods of water scarcity. Key DMMs Implemented are:

- Water Waste Prevention Ordinances: The City enforces the Urban Water Conservation and Excessive Water Use ordinance, which includes prohibitions on wasteful practices such as washing hardscapes, using uncontrolled hoses, and inefficient irrigation practices.
- Metering: Fresno has implemented a comprehensive metering program to monitor and manage water use. This program helps identify leaks, faulty meters, and unauthorized consumption, contributing to significant reductions in water usage.
- Conservation Pricing: The City uses a tiered water pricing structure to incentivize conservation. Higher usage results in higher rates, encouraging customers to reduce water consumption.
- Public Education and Outreach: Fresno conducts extensive public education campaigns to promote water-saving practices. This includes setting up outreach booths at community events, hosting Kids Water Camp, and offering workshops on water-wise gardening and landscaping.
- Programs to Assess and Manage Distribution System Real Loss: The City actively identifies and repairs leaks in its water distribution system to reduce water loss.

This program helps in maintaining system efficiency and conserving water resources.
    - Rebates for Water-Efficient Devices: Fresno offers rebates for installing water-efficient devices, such as high-efficiency toilets, washing machines, and smart irrigation controllers. This encourages residents to adopt technologies that reduce water usage.
    - Watering Schedules: The City enforces watering schedules based on odd or even street addresses to ensure efficient outdoor water use. This measure helps in reducing peak demand and overall water consumption.
    - Implementation and Monitoring: The City of Fresno regularly monitors the effectiveness of these DMMs and adjusts its strategies as needed to ensure compliance with water use targets. This proactive approach has helped the City meet and exceed its water use reduction goals.
- MWELO: The California Water Commission approved the State's updated Model Water Efficient Landscape Ordinance (MWELO) on July 15, 2015. The updated MWELO supersedes the State's MWELO developed pursuant to AB 1881. The size of landscapes subject to MWELO has been lowered from 2500 sq. ft. to 500 sq. ft. The size threshold applies to residential, commercial, industrial, and institutional projects that require a permit, plan check or design review. Additionally, the maximum applied water allowance (MAWA) has been lowered from 70% of the reference evapotranspiration (ETo) to 55% for residential landscape projects and 45% of ETo for non-residential projects. This water allowance reduces the landscape area that can be planted with high water use plants such as cool season turf. For typical residential projects, the reduction in the MAWA reduces the percentage of landscape area that can be planted to high water use plants from 33% to 25%. In typical non-residential landscapes, the reduction in MAWA limits the planting of high-water use plants to special landscape areas. The revised MWELO allows irrigation efficiency to be entered into each landscape area. The site-wide irrigation efficiency of the previous ordinance (2010) was 0.71; to estimate total water use, the revised MWELO defines drip irrigation's irrigation efficiency (IE) as 0.81 and overhead irrigation and other technologies must meet a minimum IE of 0.75.

3.4 City-Wide Future Estimated Water Use

The City of Fresno has projected its future water use based on anticipated population growth and land development. By 2045, the City's total potable water demand is estimated to reach 167,947 AFY, considering passive conservation measures and increased water efficiency in new developments. This projection takes into account various factors such as residential, commercial, institutional, industrial, and landscape irrigation needs. The growth in water demand is moderated by the City's efforts to implement conservation strategies and improve water use efficiency, ensuring that the increase in population does not lead to a proportional rise in water consumption. The City also plans to recharge a minimum of 60,000 AFY of groundwater to sustain the groundwater basin and maintain supply reliability.

Table 3-2 Water Demand – Projected (AF)						
Land Use	**Additional Detail**	**2025**	**2030**	**2035**	**2040**	**2045**
Single-Family		76,255	80,429	82,934	85,437	87,936
Multi-Family		19,000	20,654	21,737	22,831	23,935
Commercial		19,052	21,135	22,587	24,041	25,496
Industrial		7,410	9,003	9,922	10,841	11,758
Institutional/ Governmental	Included in Commercial Use Type					
Landscape		4,490	5,035	5,422	5,809	6,196
Other	Travel Meters	200	200	200	200	200
Losses		10,097	10,900	11,408	11,917	12,426
Groundwater Recharge	Raw Water	62,700	65,400	68,100	70,800	73,500
	Total:	***199,204***	***212,756***	***222,310***	***231,876***	***241,447***

3.5 Acquisition of Water

The City of Fresno has agreements for water supply with FID and USBR. In emergencies, the City could purchase water from the City of Clovis.

4.0 Inclusion in Adopted Urban Water Management Plan

UWMP guidelines and the California Water Code require UWMPs to integrate local land use plans in assessing future water conditions and projections for future water use. The Guidelines state: *A UWMP that meets statutory reporting requirements will also reflect short-term and long-term land use planning assumptions and goals, account for specific plan and infill development projects over the course of the UWMP planning period, and it will allow the Supplier to handle the dynamic nature of water supplies and demands through sound water-shortage contingency planning.*

In the UWMP, projections for future population growth and future residential water use are based on the City's anticipated growth to follow the average rate of the past ten years at 1.5 percent. As such, the adequacy of the water supply for the Project will be analyzed based on the Fresno's water supply analysis in the Urban Water Management Plan.

5.0 Dry Year Water Supply Adequacy (Water Code Section 10910(C)(4))

The following dry year water supply adequacy is excerpted from the adopted 2020 UWMP for the City of Fresno.

The City's water supplies are drawn from groundwater, surface, and recycled water. There are currently no concerns regarding a diminishment of the groundwater supplies, such as the City's inability to provide water to its service area. Current and ongoing management of these supplies is achieved through voluntary and state-mandated consumption conservation efforts and SGMA.

The City manages its surface water and groundwater supply by maximizing surface water for potable use and intentional recharge during wet and normal years, while relying on groundwater during dry years. The City is updating its Metro Plan, which will recommend projects and programs to optimize its supply portfolio and improve supply resilience. Supply management tools are an expected outcome of the Metro Plan update; however, the City's ongoing supply management is intended to maximize local supplies and improve the groundwater basin storage. Current actions include enhanced groundwater management and intentional recharge, increased recycled water use, and continued conservation by implementing demand management measures.

Normal-water-year, single-dry-water-year, and five-consecutive-year-drought-period supply projections were made based on historic water allocations for surface water supplies, historic municipal water well pumping for groundwater, and projected utilization for recycled water, as described below.

Kings River water supply data was obtained from the Kings River Water Association and FID. USBR CVP Friant Division data was obtained from the USBR website, the City of Fresno, and FID. Groundwater and recycled water supply data was obtained from the City of Fresno.

Table 5-1 Retail: Basis of Water Year Data

Year Type	Base Year	**Available supplies if year type repeats**	
		Agency may complete these columns for volume only, percent only, or both	
		Volume Available (AF)	% of avg supply
Average Year		329,030	100%
Single-Dry Year	2015	189,852	58%
Multiple-Dry 1st Year	2012	273,725	83%
Multiple-Dry Years 2nd Year	2013	274,626	83%
Multiple Dry Years 3rd Year	2014	217,568	66%
Multiple Dry Years 4th Year	2015	189,852	58%
Multiple Dry Years 5th Year	2016	314,840	96%

Table 5-2 shows a normal year's projected supply and demand totals.

Table 5-2: Normal Year Supply and Demand Comparison (AF)					
	2025	**2030**	**2035**	**2040**	**2045**
Groundwater	138,090	143,630	149,100	154,490	159,820
Surface Water-USBR	60,000	60,000	60,000	60,000	60,000
Surface Water-FID	125,030	131,600	131,600	131,600	131,600
Recycled Water	5,910	5,910	5,910	5,910	5,910
Supply Totals	**329,030**	**341,140**	**346,610**	**352,000**	**357,330**
Potable Demand	136,504	147,356	154,210	161,076	167,947
Non-Potable (Groundwater Recharge	62,700	65,400	68,100	70,800	73,500
Demand Totals	**199,204**	**212,756**	**222,310**	**231,876**	**241,447**
Difference	***+129,826***	***+128,384***	***+124,300***	***+120,124***	***+115,883***

Table 5-3 shows the projected supply and demand totals for a single dry year. The year is based on 2015, during the 2012-2017 drought, because the City had the lowest surface water supply available in 2015.

Table 5-3: Single Year Supply and Demand Comparison (AF)					
	2025	**2030**	**2035**	**2040**	**2045**
Groundwater	138,090	143,630	149,100	154,490	159,820
Surface Water-USBR	0	0	0	0	0
Surface Water-FID	45,852	45,852	45,852	45,852	45,852
Recycled Water	5,910	5,910	5,910	5,910	5,910
Supply Totals	**189,852**	**195,392**	**200,862**	**206,252**	**211,582**
Potable Demand	136,504	147,356	154,210	161,076	167,947
Non-Potable (Groundwater Recharge	27,588	28,776	29,964	31,152	32,340
Demand Totals	**164,092**	**176,132**	**184,174**	**192,228**	**200,287**
Difference	***+25,760***	***+19,260***	***+16,688***	***+14,024***	***+11,295***

Table 5-4 shows the projected supply and demand totals for the multiple dry years. It is based on the 2012-2017 drought.

Table 5-4 Retail: Multiple Dry Years Supply and Demand Comparison (AF)						
Conditions		**2025**	**2030**	**2035**	**2040**	**2045**
First Year	Supply Totals	273,725	279,265	284,735	290,125	295,455
	Demand Totals	199,204	212,756	222,310	231,876	241,447
	Difference	**+74,521**	**+66,509**	**+62,425**	**+58,249**	**+54,008**
Second Year	Supply Totals	274,626	280,166	285,636	291,026	296,356
	Demand Totals	199,204	212,756	222,310	231,876	241,447
	Difference	**+75,422**	**+67,410**	**+63,326**	**+59,150**	**+54,909**
Third Year	Supply Totals	217,568	223,108	228,578	233,968	239,298
	Demand Totals	190,267	193,637	197,736	201,753	205,708
	Difference	**+27,301**	**+29,471**	**+30,842**	**+32,215**	**+33,589**
Fourth Year	Supply Totals	189,852	195,392	200,862	206,252	211,582
	Demand Totals	162,551	165,920	170,020	174,036	177,992
	Difference	**+27,301**	**+29,471**	**+30,842**	**+32,215**	**+33,589**
Fifth Year	Supply Totals	314,840	320,380	325,850	331,240	336,570
	Demand Totals	199,204	212,756	222,310	231,876	241,447
	Difference	**+115,636**	**+107,624**	**+103,540**	**+99,364**	**+95,123**

6.0 Comparison of Project Demand to Water Supply Sources

Table 6-2 analyzes projected water demands needed to serve the City of Fresno for the next 20 years, comparing projected baseline community growth against the reasonably expected population growth resulting from the Bella Vita Project. The table is labeled with lettering corresponding to each column of information.

Columns A through F represent the reasonably expected baseline condition for Fresno. Columns G through I represent the reasonably expected baseline condition for Fresno if the Project site was not developed at all. Columns J through L represent the population the Bella Vita Project added alone. Columns M through S represent Fresno's water demand with the Bella Vita Project.

Column A represents the calendar year projection used in the analysis. 2020 is the baseline year, and the Project is expected to be operational in 2027. Column B displays expected daily water use per person, which decreases over time due to measures taken by Fresno to increase water efficiency (0.04% reduction per year). Additionally, new development is expected to have an initial 10% decrease in water use. Therefore, the new population added is estimated to have a lower GPCD, as shown in Column C. Column D displays the forecast for Fresno's population, which was excerpted from the UWMP. Achieving General Plan buildout population estimates requires an average annual growth rate of 1.44% from 2020 to 2056. The City's water service area population is anticipated to continue to grow along with the City, with some slightly higher growth years anticipated in the next 10 years due to multiple large developments planned for completion in the near term. As a result, population growth occurs at an annual rate ranging from 1.1–2.1% between 2020 and 2056. Column E shows the new population added. The annual growth rate calculated from this forecast is shown in Column F.

Column G represents the expected residential water demand forecasted by the UWMP. The values in Column G are derived from the existing population (550,217) using the GPCD (Column B) added to the forecasted average per capita daily water consumption (Column C) for the population added. Column H represents the expected commercial water demand forecasted by the UWMP.

Column I depicts the baseline future service area population with no Project site development. Because the site was planned for residential and office development, it was important to calculate the service area population with no development of the site to identify an appropriate baseline to which project-related water use should be added. Existing residential General Plan Land Use designations on the site were Urban Neighborhood (16-30 DU/acre) and Office land uses. Using these values and the acreage of each planned land use on the site, it was determined that the site was planned for a maximum of 533 dwelling units or 1,487 residents (See Table 6-1 below). The values in Column I were calculated by subtracting 1,487 residents from the population expected to be added between 2025 and 2027 (Column E). These dates were selected because they coincide with the proposed buildout of the Bella Vita Project. The annual growth rate with no site development is shown in Column J.

Column K is the baseline commercial water demand with no development of the project site. The General Plan states that 2.4 acres were dedicated to Office land uses. The General Plan has a maximum FAR of 2. This assumption results in 206,475 sqft of office space. According to the data from the U.S. Energy Information Administration, offices average 600 sqft per employee. The study from the Pacific Institute estimates offices use 127 GED. This results in the General Plan projecting a maximum of 43,704 GPD from the office land use. This results in an expected demand of 48.95 AFY. To calculate Column K, the expected Commercial demand was subtracted from the Commercial demand in the UWMP.

Table 6-1: Comparison of Planned Land Uses to Proposed Project								
	Existing (City of Fresno General Plan)				Proposed (Bella Vita)			
	Acres	Land Use Density (DU/Acre or FAR)	DU or Acres	Project Area Population[1] or sqft	Acres	Land Use Density (DU/Acre or FAR)	DU or Acres	Project Area Population[1] or sqft
Urban Neighborhood	17.8	30	533	1,497	21.22	24.3	516	1,440
Office	2.4	2	4.7	206,475	2.4	0.22	0.52	22,600
Public ROW	7.9	N/A	N/A	N/A	4.4	N/A	N/A	N/A
Change in Population from Project								**+720**
Change in Office/Commercial Square Footage								**-183,875**
1. Assumes 2.79 persons per dwelling unit (2022 American Community Survey, Table DP04)								

The purpose of the remainder of the table (Columns L thru R) is to demonstrate the expected reasonable impact on water demand from the Bella Vita Project and to quantify any necessary new water supply needed to mitigate the reasonably foreseeable impacts.

Column L represents the expected population for Fresno with the Bella Vita Project included. The resulting adjusted growth rate is depicted in Column M. Column O provides the resulting residential water demand for the service area with the Carleton Acres project included. Column O provides the change in residential water demand attributable to the Project. Column O is calculated by finding the difference between the service area residential water demand assumed by the Fresno UWMP and the residential water demand of the service area with the Carleton Acres project. Columns P and Q show the change in commercial water demand. Column R is the total demand change.

The UWMP estimated the residential population within the service area to be 812,529 by 2045, resulting in an estimated demand of 163,874 AFY. The residential water demand in the service area with the Bella Vita Project was calculated to be 163,865 AFY by 2045. The UWMP estimated a commercial demand of 25,496 AFY in 2045. With the Project, the estimated commercial water demand is 25,454. Combined, the Project is expected to demand 50.97 AFY less than the demand estimated by the UWMP. Because the service area water demand forecasted by the UWMP is higher than the estimated water demand with the Bella Vita project, it can be assumed that available water supplies will be able to meet the projected demand resulting from the Bella Vita Project.

Table 6-2: Anticipated City Water Demands and Available Supply: Years 2025 – 2045

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Year	Existing Population Per Capita Water Use[1]	Future Population Per Capita Water Use[2]	Service Area Population Anticipated by Fresno UWMP	Population Added	Service Area Growth Rate	Service Area Residential Water Demand Assumed by Fresno UWMP[3]	Service Area Commercial Water Demand Assumed by Fresno UWMP	Service Area Population with no development of Project site[4,5]	Service Area Growth Rate with No Development of the Project Site[5]	Service Area Commercial Demand With no Development of the Site	Service Area Population with Bella Vita[6]	Service Area Population with Bella Vita	Service Area Residential Water Demand with Project[3]	Change in Service Area Residential Water Demand attributable to Project	Service Area Commercial Demand with Bella Vita	Change in Service Area Commercial Water Demand Attributable to Project	Change in Service Area Total Water Demand Attributable to Project
	Gal/Person/ Day	Gal/Person/ Day				AFY	AFY			AFY			AFY	AFY	AFY	AFY	AFY
2020	198	-	550,217		0.00%	119,022	16,971	550,217	-	16,971	550,217	-	119,022	0.00	16,971	0.00	0.00
2025	196.0	178.2	609,433	59,216	10.76%	129,365	19,052	608,937	10.67%	19,003	608,937	10.67%	129,269	-96.47	19,003	-48.95	-145.42
2026	195.6	178.1	622,482	13,049	2.14%	131,665	19,469	621,491	2.06%	19,420	621,491	2.06%	131,472	-192.86	19,420	-48.95	-241.81
2027	195.2	178.1	635,531	13,049	2.10%	133,962	19,885	634,044	2.02%	19,836	635,484	2.25%	133,953	-9.05	19,843	-41.99	-51.04
2028	194.9	178.0	648,579	13,049	2.05%	136,258	20,302	647,093	2.06%	20,253	648,533	2.05%	136,249	-9.04	20,260	-41.99	-51.03
2029	194.5	177.9	661,628	13,049	2.01%	138,553	20,718	660,142	2.02%	20,669	661,582	2.01%	138,544	-9.04	20,676	-41.99	-51.03
2030	194.1	177.8	674,677	13,049	1.97%	140,846	21,135	673,190	1.98%	21,086	674,630	1.97%	140,837	-9.04	21,093	-41.99	-51.02
2031	193.7	177.8	683,607	8,930	1.32%	142,337	21,425	682,120	1.33%	21,376	683,560	1.32%	142,328	-9.03	21,383	-41.99	-51.02
2032	193.3	177.7	692,537	8,930	1.31%	143,827	21,716	691,050	1.31%	21,667	692,490	1.31%	143,818	-9.03	21,674	-41.99	-51.02
2033	192.9	177.6	701,467	8,930	1.29%	145,317	22,006	699,980	1.29%	21,957	701,420	1.29%	145,308	-9.03	21,964	-41.99	-51.01
2034	192.5	177.6	710,397	8,930	1.27%	146,806	22,297	708,910	1.28%	22,248	710,350	1.27%	146,797	-9.02	22,255	-41.99	-51.01
2035	192.1	177.5	719,327	8,930	1.26%	148,293	22,587	717,840	1.26%	22,538	719,280	1.26%	148,284	-9.02	22,545	-41.99	-51.01
2036	191.8	177.4	728,517	9,190	1.28%	149,831	22,878	727,031	1.28%	22,829	728,471	1.28%	149,822	-9.02	22,836	-41.99	-51.00
2037	191.4	177.3	737,707	9,190	1.26%	151,367	23,169	736,221	1.26%	23,120	737,661	1.26%	151,358	-9.01	23,127	-41.99	-51.00
2038	191.0	177.3	746,898	9,190	1.25%	152,902	23,459	745,411	1.25%	23,410	746,851	1.25%	152,893	-9.01	23,417	-41.99	-51.00
2039	190.6	177.2	756,088	9,190	1.23%	154,437	23,750	754,601	1.23%	23,701	756,041	1.23%	154,428	-9.00	23,708	-41.99	-50.99
2040	190.2	177.1	765,278	9,190	1.22%	155,970	24,041	763,791	1.22%	23,992	765,231	1.22%	155,961	-9.00	23,999	-41.99	-50.99
2041	189.8	177.1	774,728	9,450	1.23%	157,553	24,332	773,242	1.24%	24,283	774,682	1.23%	157,544	-9.00	24,290	-41.99	-50.98
2042	189.5	177.0	784,178	9,450	1.22%	159,134	24,623	782,692	1.22%	24,574	784,132	1.22%	159,125	-8.99	24,581	-41.99	-50.98
2043	189.1	176.9	793,629	9,450	1.21%	160,715	24,914	792,142	1.21%	24,865	793,582	1.21%	160,706	-8.99	24,872	-41.99	-50.98
2044	188.7	176.9	803,079	9,450	1.19%	162,295	25,205	801,592	1.19%	25,156	803,032	1.19%	162,286	-8.99	25,163	-41.99	-50.97
2045	188.3	176.8	812,529	9,450	1.18%	163,874	25,496	811,042	1.18%	25,447	812,482	1.18%	163,865	-8.98	25,454	-41.99	-50.97

1. *Provided by Fresno Urban Water Management Plan, using the existing development annual passive conservation of 0.2% reduction.*
2. *Using the future development unit demand factor reduction of 10%, followed by annual passive conservation saving of 0.04% reduction,*
3. *Baseline population of 550,217 uses existing population per capita water use, and added population uses future population per capita water use.*
4. *Calculated based on 1,487 fewer residents added to population than was assumed by the Fresno UWMP. Reduction in population based on Site's GPLU designation.*
5. *Assumes normal growth rate would resume in 2028, when construction of the Bella Vita Project would be complete.*
6. *Calculated as: Previous Year Population + Anticipated Change in Population with No Development + population Added from Proposed Development*

7.0 Water Supply Rights and Entitlements; Historic Water Usage (Water Code Section 10910(A)(1) and 10910(D)(2))

The City relies on groundwater from the Kings Subbasin, part of the greater San Joaquin Valley Groundwater Basin. Historically, water production in Fresno consisted of 100% groundwater until the first surface water treatment facility was commissioned in 2004. There are currently around 202 active municipal supply wells. Fresno is a North Kings Groundwater Sustainability Agency (NKGSA) member and other parties as part of the North Kings Groundwater Sustainability Plan (NKGSP). As part of those efforts, the NKGSA member agencies have agreed to manage groundwater extraction in a manner that does not cause undesirable results in the aquifer.

Surface Water is the primary water supply in Fresno. The City of Fresno has a contract with the United States Bureau of Reclamation (USBR) for water from the CVP's Friant Division, specifically from the Friant-Kern Canal. Originally executed in 1961, this agreement secures an annual water supply of 60,000 acre-feet of Class 1 water. Fresno also has a contract with the Fresno Irrigation District (FID) for water from the Kings River. The City uses this water for both potable uses and groundwater recharge.

The City of Fresno balances its surface water supplies and groundwater to manage and control contamination plumes and prevent their spread. In normal and wet years, the City relies more on surface water supplies and recharges raw surface water to replenish the groundwater basin. During dry years, when surface water is less available, the City increases groundwater pumping to meet demands.

7.1 Kings Subbasin

The Kings Subbasin is an alluvial basin primarily located within Fresno County but also extends into Kings and Tulare counties in California. The subbasin is bounded by the San Joaquin and Kings Rivers to the north and south, the Sierra Nevada mountains to the northeast, and the Westside and Delta-Mendota Subbasins to the west-southwest.

The subbasin is identified by the DWR's Bulletin 118 as DWR Subbasin No. 5-22.08. It is recognized as a high priority critical overdraft basin, necessitating sustainable groundwater management actions.

Seven GSAs were formed to collectively assume responsibility for sustainable groundwater management of the Kaweah Subbasin. The seven GSAs within the Basin include the Central Kings GSA, North Kings GSA, North Fork GSA, South Kings GSA, James Irrigation District GSA, Kings River East GSA and McMullin GSA. Each GSA prepared an individual GSP, but certain technical efforts (e.g., developing a coordinated water budget) were cooperatively developed through a Coordination Agreement.

Fresno falls within the jurisdiction of the North Kings GSA, which covers an area of approximately 311,000 acres in the northern portion of the Kings Subbasin. The North Kings GSA was formed through the execution of a Joint Powers Agreement (JPA) between the Cites of Fresno, Clovis, and Kerman, the Bakman Water Company, Biola Water District, FID, Fresno Metropolitan Flood Control District, the Garfield Water District, and the International Water District. to establish the North Kings Subbasin JPA.

As defined under SGMA, sustainable yield means "the maximum quantity of water, calculated over a base period representative of long-term conditions in a basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing undesirable results." The Kings Subbasin determined a subbasin-wide sustainable yield of 1,140,000 AFY, which was further apportioned among the GSAs in the Kings Subbasin Coordination Agreement.

Projects and management actions described in the North Kings GSA will correct the declining groundwater and reach sustainability by 2040. The Project's focus on reducing the groundwater supply through the use of surface water. The management actions focus on reducing water demand, increased data collection, regulatory policies, incentive-based programs, and enforcement actions.

7.2 USBR CVP Friant Division

Fresno, through an agreement originally executed in 1961, secured a surface water supply from USBR CVP Friant Division for an annual water supply of 60,000 AF of Class 1 water. The agreement was last renewed in 2010 as a Section 9(d) contract that provides water from the San Joaquin River in perpetuity. Class 1 water has historically been very reliable until the 2006 San Joaquin River Restoration Settlement Agreement, which ended an 18-year legal dispute over the operation of Friant Dam brought by a coalition of conservation and fishing groups. The projected surface water available for the City from USBR is based on USBR simulations for the 2006 Settlement Agreement. Average simulated delivery is 53,680 AFY and the median simulated delivery is 60,000 AFY. However, very dry years have previously resulted in substantial reductions as demonstrated by the zero allocations that occurred in 2014 and 2015.

7.3 Fresno Irrigation District

FID is one of 28 agencies that receives an entitlement of water from the Kings River through the Kings River Water Association. The City executed its most recent agreement with FID in 2016. The 2016 agreement identifies the City's contracted percentage of FID's Kings River water based on the City's water service area located within FID service area as a percentage of the FID land area. FID land area varies slightly every year because it is dependent on the acreage receiving water deliveries for that year rather than the total acreage within FID, and is roughly 200,000 acres. As the City incorporates new users and the water service area expands, the percentage

of FID supply increases. However, the 2016 FID Agreement sets the City's maximum percentage of FID's Kings River water as 29.0%, which is expected to be reached between 2025 and 2030.

The City's potential supply from FID was projected using actual Kings River deliveries for 1964–2019. The average FID Kings River delivery over that time was 452,541 AF, which equates to an average potential City supply of 131,237 AF, assuming the maximum 29.0% City supply percentage. The projected City percentage of FID supplies was estimated based on City's water service area growth projections through buildout in 2056.

8.0 Contingency Analysis Applicability (Government Code Section 66473.7 (2)(b))

Fresno's 2020 Water Shortage Contingency Plan (WSCP) is a detailed plan for how the City intends to respond to foreseeable and unforeseeable water shortages. A water shortage occurs when the water supply is reduced to a level that cannot support typical demand at any given time. The WSCP is used to provide guidance to the City's governing body, staff, and the public by identifying response actions to allow for efficient management of any water shortage with predictability and accountability. Preparation provides the tools to maintain reliable supplies and reduce the impacts of supply interruptions due to extended drought and catastrophic supply interruptions. There are five levels of water shortage levels.

The Fresno Municipal Code (FMC) contains sections on water conservation that are to take place under normal water supply conditions. Regulations in place under normal water supply conditions encourage smart water use and help the City manage its water supply. Some of those regulations include year-round outdoor water schedules; turf type restrictions; turf irrigation methods; and prohibition of willful or negligent water wasting, flood irrigating, washing hardscapes with potable water, and frequent draining of pools. These restrictions are mandated year-round by the City and must be observed. In addition to the normal restrictions on water usage, the City developed response actions to implement during a water shortage on the City and consumer levels to reduce demands. In the event of a potential water shortage, the City will evaluate the cause of the shortage to help inform which response actions should be implemented. Depending on the nature of the water shortage, the City can elect to implement one or several response actions to mitigate the shortage and reduce gaps between supply and demand. As stated by DWR, the City has identified actions that fall within the demand reduction, supply augmentation, operational changes, and additional mandatory restrictions. Also, due to the City's diverse supply portfolio, Stage 1 imposes only voluntary consumer reductions, while Stages 2–5 all include mandatory reduction actions. If necessary, the City may adopt additional actions in extreme circumstances.

These water supply contingency measures, applicable to the entire Fresno water service area, are fully applicable to the Project and protective of the adequacy of the Project's water supply. The WSCP is provided in Appendix A to satisfy Government Code Section 66473.7 (2)(b).

9.0 Assessment Findings

It is concluded that Fresno's water system has sufficient capacity to supply the Bella Vita Project and other projected demands within the City's service area through the year 2045. The City of Fresno will provide the main source of water for this Project. Additionally, the Project will not increase the danger of undesirable effects of overdraft in the Kings Subbasin.

Therefore, the City of Fresno is recommended to approve this assessment for inclusion in the CEQA documentation for the proposed Bella Vita Project.

References

- City of Fresno, Urban Water Management Plan, 2021. 2020 Urban Water Management Plan. Available Online at Source.
- City of Fresno, 2014. Fresno General Plan. Available online at Source.
- North Kings Groundwater Sustainability Agency, 2022. Groundwater Sustainability Plan. Available Online at Source.
- U.S. Energy Information Administration, 2016. Commercial Buildings Energy Consumption Survey. Available online at Source.
- Pacific Institute, 2003. Waste Not, Want Not: The Potential for Urban Water Conservation in California, Appendix E. Available Online at Source.

Appendix A

Pages Excerpted from City of Fresno 2020 UWMP

Provided in satisfaction of Water Code Section 10910(A)(1), Water Code Section 10910(D)(2) and Government Code Section 66473.7 (2)(b)

City of FRESNO
Department of Public Utilities

2020 Water Shortage Contingency Plan

Final

JULY 2021 | CITY OF FRESNO

Photo Credit: Downtown Fresno Partnership

WSC

City of FRESNO
Department of Public Utilities

CITY OF FRESNO

Final
2020 Water Shortage Contingency Plan

JULY 2021

Prepared by Water Systems Consulting, Inc.

WSC

ACKNOWLEDGMENTS

The 2020 Water Shortage Contingency Plan was prepared by Water Systems Consulting, Inc. The primary authors are listed below.

Jeff Szytel, PE
Rob Morrow, PE
Lauren Cetin, EIT
Heather Freed, PE

Water Systems Consulting, Inc. would like to acknowledge the significant contributions of the City of Fresno, including the following staff.

Director of Public Utilities Michael Carbajal

Utilities Planning & Engineering Division

Assistant Director Brock Buche, PE, PLS
Supervising Professional Engineer Glenn Knapp, PE
Professional Engineer Peter Maraccini, PE

Water Division

Assistant Director Bud Tickel
Water System Manager Chris Carroll
Water System Manager Russell Guilliams
Business Manager Henry McLaughlin
Water Conservation Supervisor Conrad Braganza

Wastewater Division

Wastewater Manager Rosa Staggs
Operations Supervisor Cory Asher
Reclamation Coordinator Setrag Cherchian

TABLE OF CONTENTS

1.1 Introduction 1
1.2 Water Supply Reliability Analysis 2
1.3 Annual Water Supply and Demand Assessment 3
1.3.1 Key Data Inputs 3
1.3.2 Evaluation Criteria 5
1.3.3 Annual Assessment Procedures 5
1.4 Standard Water Shortage Levels 6
1.5 Shortage Response Actions 9
1.5.1 Year-Round Measures 9
1.5.2 Demand Reduction 10
1.5.3 Supply Augmentation 13
1.5.4 Operational Changes 13
1.5.5 Emergency Response Plan 14
1.5.6 Seismic Risk Assessment and Mitigation Plan 15
1.5.7 Shortage Response Action Effectiveness 15
1.6 Communication Protocols 15
1.7 Compliance and Enforcement 16
1.8 Legal Authorities 17
1.9 Financial Consequences of WSCP 18
1.9.1 Drought Rate Structures and Surcharges 18
1.9.2 Use of Financial Reserves 19
1.9.3 Other Measures 19
1.10 Monitoring and Reporting 19
1.11 WSCP Refinement Procedures 20
1.12 Special Water Feature Distinction 20
1.13 Plan Adoption, Submittal and Availability 21
References 22
Attachment 1 Preliminary Annual Assessment Template I
Attachment 2 City of Fresno Municipal Code Chapter 6-520 II
Attachment 3 Water Shortage Resolution III
Attachment 4 Fresno County Multi-Jurisdictional Hazard Mitigation Plan, Annex E: City of Fresno IV

Attachment 5 Notice of Public Hearing V
Attachment 6 Resolution Approving the WSCP VI

LIST OF FIGURES

Figure 1. Annual Assessment Approximate Timeline 6
Figure 2. Water Shortage Stages Crosswalk 7

LIST OF TABLES

Table 1. Key Data Inputs for the Annual Assessment 3
Table 2. Water Shortage Contingency Plan Levels (DWR 8-1) 8
Table 3. Demand Reduction Actions by City (DWR 8-2) 11
Table 4. Supply Augmentation & Other Actions (DWR 8-3R) 13
Table 5. Communication Protocol During Water Shortage Conditions 16
Table 6. Penalties for Water Wastage 17

ACRONYMS & ABBREVIATIONS

AMI	advanced metering infrastructure
City	City of Fresno
CWC	California Water Code
DPU	Department of Public Utilities
DRA	Drought Risk Assessment
DWR	Department of Water Resources
FID	Fresno Irrigation District
FMC	Fresno Municipal Code
SWTF	Surface Water Treatment Facility
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
WSCP	Water Shortage Contingency Plan
WSIP	Water Storage Investment Program

1.1 Introduction

The Water Shortage Contingency Plan (WSCP) is a detailed plan on how the City of Fresno (City) intends to respond to foreseeable and unforeseeable water shortages. A water shortage occurs when the water supply is reduced to a level that cannot support typical demand at any given time. The WSCP is used to provide guidance to the City's governing body and staff and the public by identifying response actions to allow for responsible management of any water shortage with predictability and accountability. Preparation provides the tools to maintain reliable supplies and reduce the impacts of supply interruptions due to extended drought and catastrophic supply interruptions.

The WSCP describes the following:

1. **Water Supply Reliability Analysis:** summarizes the City's water supply analysis and reliability and identifies any key issues that may trigger a shortage condition
2. **Annual Water Supply and Demand Assessment Procedures:** describes the key data inputs, evaluation criteria, and methodology for assessing the system's reliability for the coming year and the steps to formally declare any water shortage levels and response actions
3. **Six Standard Shortage Stages:** establishes water shortage levels to clearly identify and prepare for shortages
4. **Shortage Response Actions:** describes the response actions that may be implemented or considered for each stage to reduce gaps between supply and demand as well as minimize social and economic impacts to the community
5. **Communication Protocols:** describes communication protocols under each stage to ensure customers, the public, and government agencies are informed of shortage conditions and requirements
6. **Compliance and Enforcement:** defines compliance and enforcement actions available to administer demand reductions
7. **Legal Authority:** lists the legal documents that grant the City the authority to declare a water shortage and implement and enforce response actions
8. **Financial Consequences of WSCP Implementation:** describes the anticipated financial impact of implementing water shortage stages and identifies mitigation strategies to offset financial burdens
9. **Monitoring and Reporting:** summarizes the monitoring and reporting techniques to evaluate the effectiveness of shortage response actions and overall WSCP implementation, with results used to determine if additional shortage response actions should be activated or if efforts are successful and response actions should be reduced
10. **WSCP Refinement Procedures:** describes the factors that may trigger updates to the WSCP and outlines how to complete an update
11. **Special Water Features Distinctions:** identifies exemptions for ponds, lakes, fountains, pools, and spas, etc.
12. **Plan Adoption, Submittal, and Availability:** describes the process for the WSCP adoption, submittal, and availability after each revision

This WSCP was prepared in conjunction with the City's 2020 Urban Water Management Plan (UWMP) and is a standalone document that can be modified as needed. This document is compliant with the California Water Code (CWC) Section 10632 and incorporated guidance from the State of California Department of Water Resources (DWR) UWMP Guidebook.

Water purveyor planning for possible water supply shortages has become an increasingly important subject considering the drought conditions over the last several years. The City adopted its first WSCP in 1994 in response to the 1991 Assembly Bill 11X, which mandated all water purveyors with more than 3,000 connections develop a WSCP. The WSCP was revised as part of the 2005 UWMP and adopted by the City in 2008. The WSCP was further refined in 2016 during preparation of the 2015 UWMP and is being updated in 2021 as a standalone document, developed in parallel with the 2020 UWMP. The 2020 WSCP is still based on the original 1994 plan. The revisions are intended to meet new CWC requirements and streamline the plan's usefulness and enable the City to manage the necessary conservation measures to be enacted if a water shortage condition exists. The 2020 WSCP will be reviewed and adopted in conjunction with the 2020 UWMP.

The plan is intended to provide guidance, rather than absolute direction, for City action in response to water shortages and provide the City with options to responsibly manage water shortages.

1.2 Water Supply Reliability Analysis

This section is consistent with CWC Section 10632(a)(1) and describes the key findings of the water supply reliability analysis conducted pursuant to CWC Section 10635, which is presented in **Chapter 7** of the City's 2020 UWMP. As part of the 2020 UWMP, water suppliers must perform long-term (2025-2045) water service reliability assessment to evaluate reliability under normal, single dry year, and five-year consecutive dry year periods and a short-term (2021-2025) Drought Risk Assessment (DRA) to evaluate reliability under a five-year consecutive dry year period. Water supply reliability reflects the City's ability to meet the water needs of its customers with water supplies under varying conditions. The analysis considers plausible hydrological and regulatory variability, infrastructure capacity, climate conditions, and other factors that affect the City's water supply and demand.

The City's current water supply portfolio includes groundwater from the Kings Subbasin, surface water from the Central Valley Project Friant Division through a contract with the United States Bureau of Reclamation (USBR), and surface water from the Kings River through a contract with Fresno Irrigation District (FID), as well as recycled water produced at the Fresno-Clovis Regional Water Reclamation Facility and North Fresno Water Reclamation Facility. The City manages the surface water supplies and groundwater conjunctively such that surface water supplies are used more heavily for direct use and recharge during wet periods and groundwater is used more heavily during dry periods. Over the long term, the City aims to maximize recharge to store water for future use and help groundwater levels recover. Key issues that may create a shortage conditions include reduced surface water availability due to dry hydrologic conditions, reduction in groundwater due to contamination issues, or emergency conditions that reduce the City's water supply.

The water supply reliability analysis concluded that the City's supply portfolio is highly reliable and allows the City flexibility to use a majority of surface water when available in normal years and switch to a majority of groundwater in dry years, when surface water supplies are reduced.

The City is projected to meet potable demands with its existing supplies in all year types through conjunctive use of its groundwater and the City is projected to recharge water in most years to help store water for dry years.

1.3 Annual Water Supply and Demand Assessment

As established by CWC Section 10632.1, urban water suppliers must conduct an Annual Water Supply and Demand Assessment (Annual Assessment) and submit an Annual Water Shortage Assessment Report to DWR, with the first deadline July 1, 2022[1]. The Annual Assessment is an evaluation of the short-term outlook for supplies and demands for the current year and one projected single dry year conditions to determine whether the potential for a supply shortage exists and whether there is a need to trigger a WSCP shortage stage, appropriate response actions, compliance and enforcement actions, and communication protocols.

1.3.1 Key Data Inputs

Key data inputs and their sources for the Annual Assessments are summarized in **Table 1,** and described below**.**

Table 1. Key Data Inputs for the Annual Assessment

KEY DATA INPUT	DESCRIPTION	SOURCE
Customer demands	Estimates current year unconstrained demand plus a modest growth factor	Customer billing data, 2020 UWMP projections, input from City staff
Recharge demands	Estimates current year recharge demand	Surface water allocations, historical recharge, groundwater levels
State mandates	Reflects State orders and mandatory compliance with water use efficiency standards	Executive orders from the governor, orders and policies from the State Water Resources Control Board, input from City staff, or other sources
Surface water allocation	Reflects the City's available surface water supplies for treatment, recharge, and potential exchanges and transfers	Initial allocations from USBR and FID, typically available in April
Groundwater conditions	Reflects status of groundwater conditions	Production data, static water levels, and input from City staff
Infrastructure capacity	Reflects production and distribution capacity due to a variety of factors, including human-caused or natural catastrophic events	Production data, well production capacity, wells impacted by contamination, surface water treatment facilities' capacity, distribution system constraints, input from City staff

[1] For USBR contractors, the assessment is due by July 1 or within 14 days of receiving final USBR water allocation, whichever is later.

1.3.1.1 Customer Demands

Upcoming year customer demands will be estimated based on the previous year's demand, with increases to address: (1) near-term projected growth of customers; (2) unconstrained water use if the previous year included any water use restrictions; and (3) potential water losses not accounted for in the previous year's demand.

1.3.1.2 Recharge Demands

Upcoming year recharge demands will be estimated by (1) availability of surface water not used at the surface water treatment facilities (SWTFs) and (2) projected availability of recharge basins.

1.3.1.3 State Mandates

The City has historically been required by the State to reduce demand regardless of supply reliability at the given time. As described previously, compliance with State mandates for water use efficiency can be declared during drought or in preparation for future droughts, such as in response to the governor's drought declarations in the 2012–2016 drought with subsequent Executive Order B-37-16 and related legislation for Making Conservation a California Way of Life. The City may consider State mandates and mandatory compliance with water use efficiency standards in determining water shortage levels.

1.3.1.4 Surface Water

The City has contracts for surface water with USBR and FID. The available surface water is dependent on hydrology, and in dry years less surface water is available to the City. Final allocations from both USBR and FID are known in April of each year, following the rainy season. In April, the City works with FID to develop a delivery schedule of surface water supplies and submits it USBR. The surface water allocation and delivery schedule will determine the City's operation of its SWTFs for the year, recharge operations, and if it will engage in any exchanges or transfers of supplies. In dry years, when less surface water is available, the City will also plan for increased groundwater use to meet its demands.

1.3.1.5 Groundwater Conditions

Groundwater level and production trends will be compiled and considered by the City staff, or with a hydrogeologist, based on the following actions:

- Plot static groundwater levels on hydrographs to determine trends.
- Plot historic and projected production data to determine trends.
- Compare historic and projected groundwater levels against production data for average and dry years.

1.3.1.6 Infrastructure Capacity

Infrastructure capabilities and overall production will be analyzed to determine if a possible power outage or deficiency may occur or continue in the coming year due to a variety of factors, potentially including human-caused or natural catastrophic events. This analysis may include well replacement, evaluation of wells for possible contamination, SWTFs capacities, and other considerations.

1.3.2 Evaluation Criteria

Staff will use the key data inputs to develop and compare supply and demand projections to determine if water shortage actions may be necessary. A preliminary Annual Assessment template is included in **Attachment 1**. Note that supply projections will incorporate infrastructure constraints and an operational buffer factor of 10% will be added to the demand estimate to account for supply and demand projection uncertainties. The estimated amount of supply available versus the estimated demand will be compared with the water shortage condition triggers presented in **Table 2**. Various trigger conditions, which summarize specific evaluation criteria for each shortage level and can be used to determine a water shortage level, are described in the following sections. Triggers are based on current conditions, and the City will evaluate these triggers and modify them as needed.

A shortage emergency may be declared when it is demonstrated that conditions threaten the ability to provide water for public health, safety, and welfare of the community. Furthermore, compliance with State mandates for water use efficiency can be declared during drought or in preparation for future droughts, such as in response to the governor's drought declarations in the 2012–2016 drought with subsequent Executive Order B-37-16 and related legislation for "Making Conservation a California Way of Life".

Short-term and long-term supply shortages may be caused by constrained production capacity or natural or human-caused catastrophic emergencies, such as: power outages, winter storms, wildfires, earthquakes, structural failures, contamination, and bomb threats. These types of emergencies may limit the City's immediate ability to provide adequate water service to meet the requirements for human consumption, sanitation, and fire protection. Impacts of such emergencies vary in duration. Thus, consumption reduction measures and prohibitions may differ for short-term and long-term conditions or shortages.

1.3.3 Annual Assessment Procedures

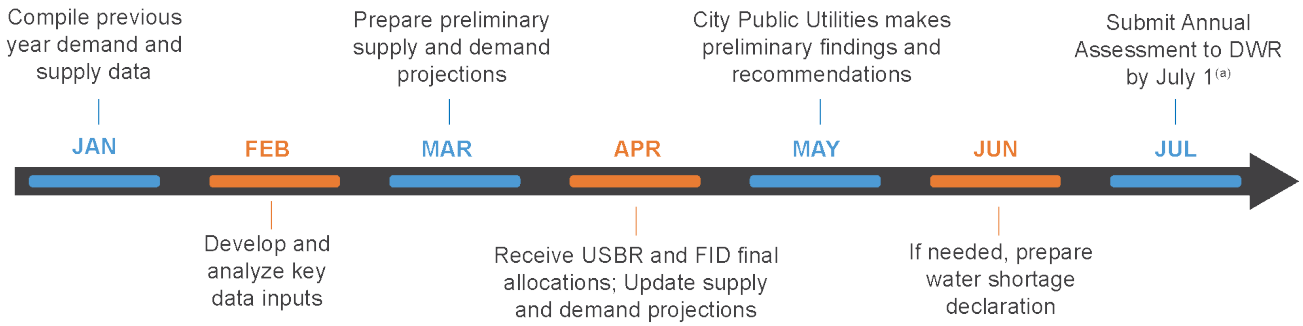
City staff will perform the Annual Assessment following initial allocations from USBR and initial projections for Kings River entitlements by FID, which is typically at the end of rainy season in April. The Annual Assessments are due to DWR by July 1 of each year[2] with the first Annual Assessment Report due to DWR by July 1, 2022. A preliminary annual assessment timeline is shown in **Figure 1.** The City may update the assessment after submission if key data inputs substantially change or other new information becomes available.

[2] For USBR contractors, the assessment is due by July 1 or within 14 days of receiving final USBR water allocation, whichever is later.

Steps to conduct the Annual Assessment are as follows:

1. Staff gathers the key inputs, compiles historical data, and analyzes potential supply and demand gaps.
2. Demand trends, water supply conditions, and production capacity are analyzed.
3. A hydrogeologist may be consulted to provide additional groundwater condition information.
4. City Public Utilities staff will review findings and, if necessary, determine a recommended level of conservation required at the implementation or termination of each stage that will then be brought to the City Manager or Mayor for approval.
5. The City Manager, or designee, will declare and implement the level of conservation required at the implementation or termination of each level, and the declaration shall remain in effect until the City Manager, or designee, so otherwise declares. If a conservation level declaration is made, the declaration shall be published at least once in a newspaper of general circulation.
6. The City will develop and/or implement appropriate communication protocols and applicable response actions.

Figure 1. Annual Assessment Approximate Timeline



[a] For USBR contractors, the assessment is due by July 1 or within 14 days of receiving final USBR water allocation, whichever is later.

1.4 Standard Water Shortage Levels

This section is consistent with CWC Section 10632(a)(2) and describes the City's water shortage levels. New to the 2020 UWMP, water suppliers must now consider six standard water shortage levels. Shortage levels indicate the gap between supply and demand compared to normal-year conditions. DWR standardized six shortage levels to provide a consistent regional and statewide approach to measure water supply shortage conditions. The six shortage levels correspond to 10%, 20%, 30%, 40%, 50%, and greater than 50% shortage in supplies compared to demands under normal conditions. However, a water supplier may use its own shortage levels if a crosswalk is included, relating its existing shortage levels to the six standard levels.

The City has elected to keep the previously established four water shortage stages from the 2016 WSCP and add a fifth stage to classify supply shortage greater than 50%. A crosswalk between the City's stages and DWR's standard levels is shown in **Figure 2**.

Figure 2. Water Shortage Stages Crosswalk

City of Fresno Shortage Stage	Percent Shortage Range	Standard WSCP Level	Percent Shortage Level
1	10%	1	10%
2	10 - 25%	2	20%
3	25 - 35%	3	30%
4	35 - 50%	4	40%
5	>50%	5	50%
		6	>50%

Although the water shortage stages are classified by the same percentages as the 2015 UWMP, the City has reevaluated the supply conditions and criteria to enter that stage to better reflect its supply portfolio in comparison to demand. **Table 2** lists the water shortage stages and the conditions that would trigger each stage. Any stage listed within the WSCP may be enacted by the City Manager, or designee, as deemed appropriate based on the water shortage condition.

Table 2. Water Shortage Contingency Plan Levels (DWR 8-1)

SHORTAGE LEVEL	PERCENT SHORTAGE[a]	WATER SHORTAGE CONDITION
0		No water shortage condition. Corresponds with year-round water use measures listed in Section 1.5.1 and demand reduction measures listed for "All" stages in Table 3.
1	0-10%	Stage 1 may be triggered by any of the following conditions: • The available water supplies for the next year are projected to be less than **100%** of projected demand considering infrastructure constraints and an operational buffer. The available water supplies, infrastructure constraints, projected demand, and operational buffer will be estimated at least once per calendar year – and more often as appropriate - as part of the Annual Water Supply and Demand Assessment. Section 1.3 of the City's Water Shortage Contingency Plan describes the key data inputs, evaluation criteria, and procedures for the annual assessment; or • After having been in a Stage 2 classification from drought conditions, the upcoming water year USBR and FID allocations results in normal-dry water year type[b] or higher; or • After having been in a higher classification as a result of emergency, original trigger for a previous higher-stage classification has been rectified to a point that is consistent with the above conditions for this stage.
2	10-25%	Stage 2 may be triggered by any of the following conditions: • The available water supplies for the next year are projected to be less than **90%** of projected demand considering infrastructure constraints and an operational buffer. The available water supplies, infrastructure constraints, projected demand, and operational buffer will be estimated at least once per calendar year – and more often as appropriate - as part of the Annual Water Supply and Demand Assessment. Section 1.3 of the City's Water Shortage Contingency Plan describes the key data inputs, evaluation criteria, and procedures for the annual assessment; or • After having been in a Stage 3 classification from drought conditions, the upcoming water year USBR and FID allocations results in normal-dry water year type[b] or higher; or • After having been in a higher classification as a result of emergency, original trigger for a previous higher-stage classification has been rectified to a point that is consistent with the above conditions for this stage.
3	25-35%	Stage 3 may be triggered by any of the following conditions: • The available water supplies for the next year are projected to be less than **75%** of projected demand considering infrastructure constraints and an operational buffer. The available water supplies, infrastructure constraints, projected demand, and operational buffer will be estimated at least once per calendar year – and more often as appropriate - as part of the Annual Water Supply and Demand Assessment. Section 1.3 of the City's Water Shortage Contingency Plan describes the key data inputs, evaluation criteria, and procedures for the annual assessment; or • After having been in a Stage 4 classification from drought conditions, the upcoming water year USBR and FID allocations results in normal-dry water year type[b] or higher; or • After having been in a higher classification as a result of emergency, original trigger for a previous higher-stage classification has been rectified to a point that is consistent with the above conditions for this stage.
4	35-50%	Stage 4 may be triggered by any of the following conditions: • The available water supplies for the next year are projected to be less than **65%** of projected demand considering infrastructure constraints and an operational buffer. The available water supplies, infrastructure constraints, projected demand, and operational buffer will be estimated at least once per calendar year – and more often as appropriate - as part of the Annual Water Supply and Demand Assessment. Section 1.3 of the City's Water Shortage Contingency Plan describes the key data inputs, evaluation criteria, and procedures for the annual assessment; or • After having been in a Stage 5 classification from drought conditions, the upcoming water year USBR and FID allocations results in normal-dry water year type[b] or higher; or • After having been in a higher classification as a result of emergency, original trigger for a previous higher-stage classification has been rectified to a point that is consistent with the above conditions for this stage.
5	>50%	Stage 5 may be triggered by any of the following conditions: • The available water supplies for the next year are projected to be less than **50%** of projected demand considering infrastructure constraints and an operational buffer. The available water supplies, infrastructure constraints, projected demand, and operational buffer will be estimated at least once per calendar year – and more often as appropriate - as part of the Annual Water Supply and Demand Assessment. Section 1.3 of the City's Water Shortage Contingency Plan describes the key data inputs, evaluation criteria, and procedures for the annual assessment.

[a] Shortage levels indicate the gap between supply and demand compared to normal-year conditions. The Annual Assessment incorporates a 10% buffer on top of projected demands for conservative planning.

[b] Water year types were defined 2006 San Joaquin River Restoration Settlement Agreement for USBR allocations and characterized in Section 6.2 of the City's 2020 UWMP.

1.5 Shortage Response Actions

The Fresno Municipal Code (FMC) contains sections on water conservation that are to take place under normal water supply conditions. Regulations in place under normal water supply conditions encourage smart water use and help the City manage its water supply. Some of those regulations include year-round outdoor water schedules; turf type restrictions; turf irrigation methods; and prohibition of willful or negligent water wasting, flood irrigating, washing hardscape with potable water, and frequent draining of pools. Additional details of these regulations can be found in FMC Section 6-520(a) (**Attachment 2**). These restrictions are mandated year-round by the City and must be observed. In addition to the normal restrictions on water usage, the City developed shortage response actions to implement during a water shortage on the City level and consumer level in order to reduce demands that are described in **Section 1.5.2** and detailed in **Table 3**.

In the event of a potential water shortage, the City will evaluate the cause of the shortage to help inform which response actions should be implemented. Depending on the nature of the water shortage, the City can elect to implement one or several response actions to mitigate the shortage and reduce gaps between supply and demand. The City has identified actions that fall within the demand reduction, supply augmentation, operational changes, and additional mandatory restrictions, as stated by DWR. It should be noted that all prohibitions listed for Stage 1 will apply to Stage 2 and, likewise, all restrictions that apply to Stage 2 will apply to Stage 3 and so on, until Stage 5 is reached. Also, due to the City's diverse supply portfolio, Stage 1 imposes only voluntary consumer reductions, while Stages 2–5 all include mandatory reduction actions. If necessary, the City may adopt additional actions not listed here in extreme circumstances.

1.5.1 Year-Round Measures

FMC Section 6-520(a) lists actions that are prohibited at all times, whether or not there is a shortage condition and include:

- Use of potable water to irrigate or water outdoor landscaping in a manner that causes runoff.
- Keep, maintain, operate, or use any water connection, hose, faucet, hydrant, pipe, outlet, or plumbing fixture which is not tight and free from leakage.
- Willfully or negligently waste water as defined in FMC Section 6-501.
- Sprinkle or irrigate any yard, ground, premise, or vegetation except as set forth in the City's Outdoor Water Use Schedule.
- Sprinkle or irrigate any yard, ground, premise, or vegetation, unless watering device used is controlled by a shutoff device or a person is in immediate attendance of the hose or watering device.
- Prohibit use of potable water to wash sidewalks, walkways, driveways, parking lots, open ground, or other hard-surfaced areas, except where necessary for public health or safety.
- Use potable water in a fountain or other decorative water feature, except where the water is part of a recirculating system.
- Irrigation of ornamental turf on public street medians with potable water, except where the turf serves a community or neighborhood function, there is incidental irrigation by an irrigation system designed to irrigate trees, or the turf is irrigated with recycled water.

- Irrigating outdoor landscapes with potable water during and within 48 hours after measurable rain.
- Serve drinking water other than upon request in eating or drinking establishments, including but not limited to, restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served or purchased.
- Irrigate landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development.
- Automatically changing towels and linens in hotels and motels daily. Operators of hotels and motels shall provide guests the option of choosing not to have towels and linens laundered daily.
- Drain swimming pools more than once every three years, except as necessary to complete structural repairs or to comply with public health standards, as determined by the County Health Officer.
- Prohibit filling new or refurbished swimming pools without obtaining a pool fill permit from the City.
- Refill (top off) established swimming pools except during times when outdoor water use is allowed at the property address pursuant to the Outdoor Water Use Schedule

The City may update these year-round restrictions in the future as needed. For the latest permanent restrictions refer to FMC Section 6-520(a) (**Attachment 2**) and the latest WSCP Resolution (**Attachment 3**).

1.5.2 Demand Reduction

The City has identified a variety of demand reduction actions to offset supply shortages. Demand reduction measures are strategies intended to decrease water demand to close the gap between supply and demand. Demand reduction actions available to the City that may be considered during water shortage conditions are summarized in **Table 3**. Although it is difficult to estimate the volume of savings for each action, the City expects to meet required reductions through a combination of response actions in conjunction with outreach and communication efforts to the extent necessary to mitigate any impacts from a water shortage.

Table 3. Demand Reduction Actions by City (DWR 8-2)

SHORTAGE LEVEL	DEMAND REDUCTION ACTIONS	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?[a]	ADDITIONAL EXPLANATION OR REFERENCE	PENALTY, CHARGE, OR OTHER ENFORCEMENT[b]
All	Expand Public Information Campaign	Not Applicable	Community outreach includes classroom presentations, outreach educational information, and water tours. Increase communication as drought stages increase.	Not Applicable
All	Improve Customer Billing	Not Applicable	Water bills show customer usage vs. average usage for the customer category. Increase customer notifications of high water use based on advanced metering infrastructure data as drought stages increase.	Not Applicable
All	Offer Water Use Surveys	Not Applicable	Use water leak surveys with all community members.	Not Applicable
All	Provide Rebates for Landscape Irrigation Efficiency	Not Applicable	The City offers rebates for micro-irrigation conversions, soil moisture sensors, smart irrigation controller, and rain sensors to improve efficiencies.	Not Applicable
All	Provide Rebates for Turf Replacement	Not Applicable	The City provides rebates for community members who wish to replace their turf with a drought-resistant garden.	Not Applicable
All	Provide Rebates on Plumbing Fixtures and Devices	Not Applicable	The City offers rebates on a variety of high-efficiency plumbing fixtures, such as washers, toilets, and urinals.	Not Applicable
All	Decrease Line Flushing	Not Applicable	The City uses NO-DES for regular pipe flushing to eliminate discharging water.	Not Applicable
All	Reduce System Water Loss	Not Applicable	The City has a comprehensive system water loss reduction program in place. Increase efforts to correct water system losses as drought stages increase.	Not Applicable
1	Decrease Line Flushing	0 to 100% of shortage gap	For dead-end flushing where the NO-DES truck cannot be used, reduce normal flushing time.	Not Applicable
1	Increase Water Waste Patrols	0 to 100% of shortage gap	Increase monitoring of AMI reporting and communication with customers; Conduct patrols based on public input.	Not Applicable
1	Landscape — Limit landscape irrigation to specific times	0 to 100% of shortage gap	Voluntary limits: Summer: three days/week Winter: one day/week	No
2	Landscape — Limit landscape irrigation to specific times	0 to 100% of shortage gap	Summer: three days/week Winter: one day/week	Yes
3	Landscape — Limit landscape irrigation to specific times	0 to 100% of shortage gap	Summer: two days/week Winter: one day/week	Yes
4	Landscape — Limit landscape irrigation to specific times	0 to 100% of shortage gap	Summer: one day/week Winter: one day/week	Yes
4	Other — Prohibit use of potable water for construction and dust control	0 to 100% of shortage gap	Prohibit use of potable water for construction, compaction, dust control, street or parking lot sweeping, and building washdowns where non-potable or recycled water is sufficient.	Yes

SHORTAGE LEVEL	DEMAND REDUCTION ACTIONS	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?[a]	ADDITIONAL EXPLANATION OR REFERENCE	PENALTY, CHARGE, OR OTHER ENFORCEMENT[b]
4	Other — Prohibit vehicle washing except at facilities using recycled or recirculating water	0 to 100% of shortage gap	Prohibit washing cars, boats, trailers, aircraft, or other vehicles, except at commercial or fleet vehicle-washing facilities using water recycling equipment.	Yes
4	Pools and Spas - Require covers for pools and spas	0 to 100% of shortage gap	Require covers for swimming pools when not in use.	No
4	Other	0 to 100% of shortage gap	Prohibit use of potable water for sewer system maintenance or fire protection training without prior approval by the City manager.	Not Applicable
4	Other	0 to 100% of shortage gap	Prohibit use of outdoor misters.	No
5	Landscape — Prohibit all landscape irrigation	0 to 100% of shortage gap	Prohibit outdoor irrigation year-round.	Yes
5	Moratorium or Net Zero Demand Increase on New Connections	0 to 100% of shortage gap	The City will temporarily limit or ban new water service connections within the service area.	Not Applicable

[a] Reduction in the shortage gap is estimated and can vary significantly.
[b] Refer to Section 1.7 for Penalties for Water Wastage.

1.5.3 Supply Augmentation

Given the consistent supply of groundwater through pumping, the City has no immediate plan to augment supply. However, the City could purchase additional USBR or FID surface water, if available. Also, the Cities of Fresno and Clovis have an agreement for interconnection of their potable water systems to provide service during emergencies and other times of hardship in either community. Although these options are discretionary and quantifying their ability to reduce the shortage gap can vary significantly, they are readily available if needed, as indicated in **Table 4**.

Table 4. Supply Augmentation & Other Actions (DWR 8-3R)

SHORTAGE LEVEL	SUPPLY AUGMENTATION METHODS AND OTHER ACTIONS BY WATER SUPPLIER	HOW MUCH IS THIS GOING TO REDUCE THE SHORTAGE GAP?	ADDITIONAL EXPLANATION OR REFERENCE
1 to 5	Transfers	As Needed	Purchase or exchange available USBR or FID surface water
1 to 5	Other Purchases	As Needed	Interconnection with City of Clovis for use in emergencies

1.5.4 Operational Changes

Operational changes to address a short-term water shortage may be implemented based on the severity of the reduction goal. The City can maximize its supply by implementing operational strategies and demand reduction measures. As part of the Annual Assessment process, the City will consider their operational procedures at the time of a shortage to identify changes that can be implemented to address water shortage on a short-term basis, including but not limited to:

- Utilization of a SWTF to treat pumped groundwater to offset lack of surface water supply
- Expansion of public information campaign to educate and inform customers of the water shortage emergency and required water savings
- Decrease line flushing to only on a compliant basis strictly using the currently operational NO DES truck
- Use water patrols and increase frequency of meter reading by recruiting staff from other departments if necessary
- Offer water use surveys
- Implementing or modifying drought rate structure or surcharge or water emergency tiered pricing, pursuant to the requirements of Proposition 218 and in accordance with California Law
- Prohibit any new permits for hydrant-construction or temporary construction meters.
- Monitoring construction meters and fire hydrant meters for efficient water use in the event that a meter identified wastes water.

- Moratorium on issuing any new building permit unless the: (a) Project is found by the City Manager, or designee, to be necessary for public health, safety. (b) Project will use recycled water for construction. (c) Project will not result in a net increase in non-recycled water use. (d) Project has adequate Conservation Offsets
- Suspending the consideration of annexation to its service area unless the annexation increases the water supply available more than the anticipated demands of the property to be annexed
- Reducing overhead in the short-term and mid-term by deferring non-critical Capital Improvement Plan projects and major maintenance expenditures, and in the long-term by adjusting operational and staffing levels and retail water rate structures to incorporate the reality of lower retail water sales than previously anticipated.
- Decrease in the level or, if need be, even a total interruption in the expenditures for the agency's facility replacement program. Non-critical replacement projects will have little or no impact on the agency or its customers and would only extend the master planned replacement schedule.

1.5.5 Emergency Response Plan

In addition to responding to drought conditions, the City's WSCP can be used to respond to emergency or catastrophic conditions that impact the availability of the City's water supplies, and/or the ability to deliver water within the City's service area. Potential events are listed below:

- Loss of surface water supply
- Loss of groundwater supply
- Area-wide electrical power failure
- Natural disaster — earthquake or flood

In the event of a supply interruption, there are several measures that could be taken that would mitigate the overall negative impacts of a water shortage. The following discussion indicates possible events and actions to maintain water service to the service area.

The City has an agreement with the City of Clovis that discusses an intertie system between the two cities that could provide service during emergencies and other times of hardship in either community. The agreement covers interconnections, including apportionment of capital costs, at two locations: Leonard Avenue at the Gould Canal alignment and Behymer Avenue at Willow Avenue. The Leonard interconnection was constructed and remains in place for emergency uses through manual operation. The agreement also provided for temporary deliveries from Fresno to northern Clovis through the Behymer connection through 2015. However, the Behymer interconnection has yet to be constructed.

The City also cooperates with the County of Fresno's Office of Emergency Services, and the WSCP is included in the County's Disaster Plan. The goal during any emergency scenario is to maintain water supply such that the health and safety of the community is protected.

In the event of contamination of either the surface or ground water supplies, the non-impacted water supply could be used more heavily or the intertie with the City of Clovis could be activated. Additionally, overall demand reduction and the use of other wells or treated surface water would help meet demands.

If a regional power outage were to occur, the City could use backup power generators to operate wells. This measure, in conjunction with demand reduction, could supply sufficient water for health and safety purposes. The City has more than 35 wells with backup power sources. The

City has budgeted for the installation of a backup generator for the Northeast Wastewater Reclamation Facility. The Southeast SWTF and T-3 SWTF are also equipped with backup power generators.

If a natural disaster occurs, in addition to the actions discussed above, the City will isolate any areas of the system that were compromised for emergency repairs and, potentially, use of the intertie with the City of Clovis. Implementing the WSCP could also occur to reduce demands.

For more information on actions during an emergency, refer to the City of Fresno's Risk and Resilience Assessment Report finalized in September 2020 (AARC Consultants, LLC, 2020) and the City of Fresno Emergency Response Plan finalized in March 2020 (AARC Consultants, LLC, 2020).

1.5.6 Seismic Risk Assessment and Mitigation Plan

Refer to Fresno County Multi-Jurisdictional Hazard Mitigation Plan implemented in May 2018, Annex E: City of Fresno attached in **Attachment 4**, for appropriate Seismic Risk Assessment and Mitigation Plan procedures.

1.5.7 Shortage Response Action Effectiveness

The City of Fresno has assessed its overall water reduction by evaluating the water usage trends that were discussed in SBX7-7 in conjunction with the American Water Works Association water loss calculator. See Chapters 5 and 4 of the 2020 UWMP, respectively, for additional information.

The overall decrease of water use per capita and compliance with the 2020 per capita water use target indicate that the reduction measures have been effective in the community. All of the City's customers are metered and the City will use these devices to monitor actual reductions in water use during enacted shortage levels compared to normal year conditions. This data allows the City to determine the effectiveness of the implemented shortage response actions. If reduction goals are not being met, the City Manager, or designee, can make the necessary decisions for corrective action to be taken.

1.6 Communication Protocols

The City's Department of Public Utilities (DPU) currently has a contract with JP Marketing to manage communication and outreach to the customers. The firm's services include strategic planning, creative concepts, public relations, marketing, promotion, research, advertising, media design, copywriting, event creation, and online services. The City also has a public information officer and communications team whose purpose is to communicate water shortage procedures or general utility information effectively and efficiently to the customers.

During normal supply conditions, the Water Division implements informational campaigns to customers that emphasize user-level changes in water use and overall mindfulness of water waste while promoting voluntary conservation. Over the past few years, DPU has increased use of social media to communicate with customers quickly and organically. The City uses Facebook, Twitter, and Instagram to promote water saving tips, notify of shortage conditions, and spotlight DPU employees to foster a sense of community centered around the water supply. The City strives to be proactive in communicating work strategy and conservation efforts with customers.

This WSCP includes a staged plan to communicate the declaration of a shortage stage, inform restrictions, and provide updates during a water shortage emergency. A summary of actions the City could potentially take during a specific shortage stage is outlined in **Table 5**.

Table 5. Communication Protocol During Water Shortage Conditions

SHORTAGE STAGE	ACTION
1	Information posted on the City's website
1	Social media posts (Facebook, Twitter, Instagram, and Nextdoor)
2	Information included in utility bill inserts on a regular basis
2	Promotion of rebates and water conservation services
2	Letters, postcards, and flyers mailed to customers impacted by water use regulations
2	Targeted outreach and technical assistance to highest water users in each use class
2	Engage City councilmembers with resources to share with constituents
3	Increased paid advertising — print, online, radio, TV, streaming, social media, etc.
3	Messaging printed directly on utility bills
3	Press releases to local media (online and print newspapers, TV, radio, etc.)
3	Assembly and promotion of the speaker's bureau for water shortage presentations for neighborhood groups, gardening clubs, homeowners' associations, churches, senior centers, neighborhood associations, business associations, community groups, property management companies, etc.
4	Increased coordination with the local landscaping industry, including water shortage information in their newsletters, publications, and facilities; local wholesale and retail nurseries; and irrigation supply stores
4	Signage posted at nurseries and irrigation supply stores
4	Outreach materials and drought notices mailed to the hospitality industry, including restaurants and lodging

Note: If a water shortage progresses through multiple stages all measures in the previous stage(s) are implemented in addition to current stage actions.

1.7 Compliance and Enforcement

The City has penalties for violation of the water use restrictions in **Table 3**. The City tracks customer usage through advanced metering infrastructure (AMI) in order to enforce water wastage during shortage conditions as detailed in **Section 1.10**. The fines are noted in **Table 6**. Penalties for water waste are based on FMC, Section 6-520(e).

Table 6. Penalties for Water Wastage

INCIDENT MONTH[(a)]	PENALTY AND FINE
1	$0 – Issued a Notice of Water Waste
2	$25
3	$50
4-12	$100
6	If a customer has more than six incident months of water wastage within a one-year period, the City may implement any or all of the following measures: • Require the customer to get a landscape evaluation, lawn water audit, and water budget, as appropriate, in order to learn efficient water use. This work shall be completed at the customer's expense by landscape irrigation auditors certified by the Irrigation Association. • Installation by the City of flow restrictors or termination of water service. • Require a customer to repair any defects in their watering system within 14 days of notice by the City.

Note:
[a] Number of incident months are based on a calendar year.

1.8 Legal Authorities

CWC Section 375 provides the City with the statutory authority to adopt and enforce water conservation restrictions, and CWC Sections 350 et seq. authorize the City to declare a water shortage emergency and impose water conservation measures when it is determined that the City may not be able to satisfy ordinary demands without depleting supplies to an insufficient level.

If necessary, the City will declare a water shortage emergency in accordance with CWC Chapter 3 (commencing with Section 350) of Division 1. Once having declared a water shortage, the City is provided with broad powers to implement and enforce regulations and restrictions for managing a water shortage. For example, CWC section 375(a) provides the following:

> *"Notwithstanding any other provision of the law, any public entity which supplies water at retail or wholesale for the benefit of persons within the service area or area of jurisdiction of the public entity may, by ordinance or resolution adopted by a majority of the members of the governing body after holding a public hearing upon notice and making appropriate findings of necessity for the adoption of a water conservation program, adopt and enforce a water conservation program to reduce the quantity of water used by those persons for the purpose of conserving the water supplies of the public entity."*

Water Code Section 375(a). CWC Section 375(b) grants the City with the authority to set prices to encourage water conservation.

Under California law, including CWC Chapter 3.3 and Chapter 3.5 of Division 1, Parts 2.55 and 2.6 of Division 6, Division 13, and Article X, Section 2 of the California Constitution, the City is authorized to implement the water shortage actions outlined in this WSCP. Prior to enacting a shortage level, the resolution providing the Council with authority to enact each level of the WSCP will be adopted. Resolutions to enact the WSCP can be adopted at any meeting of the City Council. The resolution providing the City Manager, or designee, with authority to enact each stage of the WSCP is included in **Attachment 6**.

The City shall also coordinate with any city or county within which it provides water supply services, as listed below, for the possible proclamation of a local emergency under California Government Code, California Emergency Services Act (Article 2, Section 8558).

1.9 Financial Consequences of WSCP

This section is in accordance with CWC Section 10632(a)(8) and describes the financial consequences of implementing the WSCP and potential mitigation strategies. The City anticipates reduced revenue while implementing the WSCP because of decreased water use by its customers and additional costs associated with implementing water use restrictions and associated reduction actions. The incurred cost may vary depending on the shortage stage and duration of the water shortage emergency. The cost of compliance may be tracked when a shortage is declared. The City may track the staff time and resources used to implement the WSCP, including reduced revenue, implementation and enforcement of shortage response actions, and communication and outreach efforts. Impacts of implementing the WSCP include:

- Impact of quantity of water sales on revenue
- Increased staff, salaries, and overtime required for implementing and enforcing restrictions
- Increased costs of new supplies, transfers, or other exchanges

In 2015, the mandatory conservation goal for the City was 28%, however the corresponding revenue reductions were less than 28% due to the City having a two-component water rate structure that includes the fixed “water meter service charge” for all service connections and a volumetric-based “water quantity charge.” Therefore, the reduction in revenues was affected by a lesser percentage than the overall total reduction in water use. In general, revenue impacts specified in the WSCP would be offset with a combination of the following:

- An increase in water commodity and service charges
- A reduction in annual operating expenses due to decreased demands
- Reserves currently earmarked for long range capital
- General tax fund revenues currently earmarked for future capital improvements

Methods to mitigate revenue/expenditure impacts are discussed in detail below.

1.9.1 Drought Rate Structures and Surcharges

At present, the City does not have in place a drought rate structure. The City plans to hire a rate consultant to review existing water rates and, if appropriate, develop new future water rates. As an additional task to this effort, the consultant will review, develop, and recommend a drought rate structure for the City’s consideration. With such a rate structure in place, should a water shortage take place, the City will be able to institute an alternate water rate structure that may

apply and change depending on the stage of drought that the community is experiencing. At this time, there are no details as to how the rate structure will be developed, but conceptually each of the five stages specified in the WSCP would have a water rate increase associated with it.

The use of this type of structure during a drought will minimize expenditure impacts that are incurred during a drought. The effects of the decrease in revenue due to the drought, with a corresponding increase in expenditure, will allow for the City to function without going into debt.

1.9.2 Use of Financial Reserves

The City of Fresno Water System maintains two reserve funding sources that can be used to meet a portion of the utility's revenue requirements during emergency or drought conditions. They are as follows:

- **Water Operating Reserves** – This is cash set aside in the Water Enterprise Fund that provides a "rainy day savings account" for unexpected cash flow shortages and large, unexpected expenses or losses. Normally, these reserves are not intended to be used to make up income shortfalls. However, in an emergency situation, they can be transferred to the Water Rate Stabilization Fund (see below) for transfer back to the Water Enterprise Fund to meet revenue requirements, including debt coverage ratios.
- **Water Rate Stabilization Fund** – Indentures from previous bond issuances required the establishment of the Water Rate Stabilization Fund. These funds can be drawn on to meet a portion of the utility's revenue requirements through unexpected low-revenue periods and may be applied to debt coverage ratio calculations to help avoid technical default of bond covenants and loan agreements.

In addition, the City maintains funding in the Emergency Reserve Fund for the purpose of meeting unforeseen emergencies (see Section 1212 of the City's Charter for more information). This funding may be used by an affirmative vote of at least five members of the City Council upon presentation of a statement declaring the reason for use of the funding. This funding would be used only if the Water System reserves were insufficient to meet revenue requirements.

1.9.3 Other Measures

If the funding mentioned above is not sufficient to compensate for loss of revenue during a water shortage, the City may temporarily suspend components of its operations and maintenance activities.

1.10 Monitoring and Reporting

As described in **Section 1.3**, the City will track its supplies and project demands annually as part of the Annual Water Supply and Demand Assessment, and, if conditions described in **Table 2** are projected, the City will enact its WSCP. Monitoring demands is essential to ensure the WSCP response actions are adequately meeting reductions and decreasing the supply/demand gap. This will help to analyze the effectiveness of the WSCP or identify the need to activate additional response actions.

The City currently has AMI technology to monitor customer water usage and uses its AMI system to automatically enforce demand reduction measures and restrictions. The AMI system is currently set up to monitor and enforce outdoor watering restrictions. The program monitors customer meter flows against an "excessive use" flowrate, which will vary based on the WSCP stage. The system flags customer meters exceeding the excessive use flowrate during a

day/time outside of permitted outdoor watering hours as excessive use and an incident of water waste. If a customer has one or more incidents of water waste during a month, the customer shall be issued a Notice of Water Waste and, if applicable, be charged fines and penalties. The City may expand this monitoring program in the future to monitor other uses beyond outdoor watering restrictions.

The City can also use the detailed water usage data to monitor customers' response and demand reduction due to restrictions for each stage in the WSCP. The many restrictions and prohibitions assigned to each stage in **Table 3** are inherently flexible so the City can implement certain the restrictions, monitor customer usage, and implement additional restrictions if the demand reductions are not sufficient to close the supply and demand gap. The City also intends to provide reporting to the State based on forthcoming regulations for monthly reporting of water production and other water uses, along with associated enforcement metrics.

1.11 WSCP Refinement Procedures

The City intends to use this WSCP as an adaptive management plan to respond to foreseeable and unforeseeable water shortages. The WSCP is used to provide guidance to the City's governing body and staff and the public by identifying response actions to allow for efficient management of any water shortage with predictability and accountability. To maintain a useful and efficient standard of practice in water shortage conditions, the requirements, criteria, and response actions need to be continually evaluated and improved on to make sure the WSCP provides the tools to maintain reliable supplies and reduce the impacts of supply shortages.

This 2020 WSCP accounts for the latest analysis of the City's robust supply portfolio in relation to demand and adjusted percentage reduction stages to reflect a more appropriate supply shortage that should trigger stages. This is a process that should be reevaluated annually and updated as necessary. Potential changes to the WSCP that would warrant an update include any changes to shortage level triggers, changes to the shortage level structure, and changes to the response actions. Any prospective changes to the WSCP would need to be presented at a public hearing; staff would obtain any comments and adopt the updated WSCP. The steps to formally amend the WSCP are discussed in **Section 1.13**.

Potential refinements will be documented and integrated into the next WSCP update. If new response actions are identified by staff or the public, these could be advertised as voluntary actions until they are formally adopted as mandatory.

1.12 Special Water Feature Distinction

CWC Section 10623 (b) requires that suppliers analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code. As listed in **Table 3 and Section 1.5.1**, there are separate requirements for decorative water features — including decorative fountains, lakes, or ponds — and for pools and spas. The City has separate response actions, enforcement actions, and monitoring programs for both decorative water features and pools and spas. Non-pool or non-spa water features may use or be able to use recycled water, whereas pools and spas must use potable water for health and safety considerations. Limitations to pools and spas may require different considerations compared to non-pool or non-spa water features.

1.13 Plan Adoption, Submittal and Availability

This WSCP update was prepared in tandem with the 2020 UWMP. The City held a public hearing and adopted the 2020 WSCP on July 15, 2021. A copy of the published Notice of Public Hearing is included in **Attachment 5** and a copy of the adopting resolution is included in **Attachment 6**. Before the public hearing, notices were published notifying the public of the date and time of the hearing.

Once the 2020 WSCP has been adopted, a copy will be submitted to DWR, the State Library, and the County of Fresno. Also, a hard copy will be made available for public reference at the City of Fresno Department of Public Utilities office at City Hall (located at 2600 Fresno Street) and the Water Division office (located at 1910 E. University Avenue). Additionally, an electronic copy will be uploaded to the City of Fresno website[1] and made available for public reference.

Based on DWR's review of the WSCP, the City will make any amendments in its adopted WSCP, as required and directed by DWR. If the City revises its WSCP after the UWMP is approved by DWR, then an electronic copy of the revised WSCP will be submitted to DWR within 30 days of its adoption.

[1] www.fresno.gov/Government/DepartmentDirectory/PublicUtilities/Watermanagement/importantdocuments.htm

References

AARC Consultants, LLC. (2020). *City of Fresno Department of Public Utilites Risk and Resilience Assessment for the America's Water Infrastructure Act 2018.* Fresno, California.

AARC Consultants, LLC. (2020). *City of Fresno Water Divsion All Hazards Emergency Response Plan.*

APPENDIX F

Air Quality/GHG Emissions Assessment

Section 1 – Introduction

1.1 Project Description

This document provides an air quality and greenhouse gas assessment for the Bella Vita Project in Fresno, CA. The project involves construction and operation of an apartment complex and commercial development. The project encompasses a total of 28.06 acres. The parcels designated for this project within Fresno County are identified by the following Assessor Parcel Numbers (APNs): 504-092-15, 504-092-16, 504-092-09, 504-092-10S, and 506-010-14. A Vicinity Map and Site Plan are provided in Figures 1, 2, respectively.

The Project would construct a 516-unit multi-family development and 22,600 square feet of commercial space. The apartment complex will feature a diverse unit mix: 132 one-bedroom units, 252 two-bedroom units, and 132 three-bedroom units. The residential aspect of the project includes three types of multi-family buildings, each with three stories. These are categorized eleven Type 1 Buildings, twenty-one Type 2 Buildings, and eleven Type 3 Buildings, differing in unit size. Added amenities will include a recreation building, swimming pool, basketball court, dog park, cat park, and expansive landscaped open spaces. The parking plan includes 70 enclosed garages, 446 covered carports, and 339 open parking spaces, totaling 853 spaces.

For the commercial component, the development will feature two commercial pads and a retail shell building, providing a total of 22,600 square feet of commercial space. This section will offer 94 parking stalls, including six accessible parking spaces. The commercial establishments are planned to include a drive-through restaurant, a small restaurant, and a retail store, with operating hours from 8:00 am to 10:00 pm, seven days a week.

It is anticipated that the residential Portion would require 2,538,099 kWh/year of electricity and 12,980,868 kBTU/yr of natural gas. Water use is estimated to be approximately 28,339,112 gallons per year. The residential part of the project is expected to produce 7,468,142 Vehicle Miles Traveled (VMT) per year.

The commercial aspect of the Project would require 409,273 kWh/year of electricity and 797,514 of natural gas to operate. Water use is estimated to be approximately 3,198,761 gallons per year. The commercial part of the project would produce 5,743,744 VMT per year.

1.2 Project Setting

The location of the proposed Bella Vita Project (hereinafter referred to as the “Project Site”) is located in the northwest portion of Fresno. The project encompasses a total of 28.06 acres. The parcels designated for this project within Fresno County are identified by the following Assessor Parcel Numbers (APNs): 504-092-15, 504-092-16, 504-092-09, 504-092-10S, and 506-010-14. The parcels the

Project would be located on are designated by the Fresno General Plan as Urban Neighborhood and Office. The zoning is RM-2, Residential Multi-Family, Urban Neighborhood, and O, Office. The Site is within the City of Fresno City Limits.

The Project Site is currently vacant. The land to the north is designated by Fresno as Low Density Residential and Medium-Low Density Residential under the General Plan and as RS-4/RS-5 under the Zoning Code. The land to the south is designated as Low Density Residential/Open Space and zoned RS-5/RS-4/PI. The land to the east is designated as Low Density Residential and RM-2/RS-4. The land to the west is designated as Office/Elementary School and zoned O/PI.

1.3 Summary of CEQA Requirements

CEQA is required by Section 21000 et seq. of the California Public Resources Code and Title 14 of the California Code of Regulations, Section 15000 *et seq.* Section 15002(a) describes the basic purposes of CEQA as follows.

(1) Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
(2) Identify the ways that environmental damage can be avoided or significantly reduced.
(3) Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
(4) Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The City of Fresno will act as Lead Agency for this project pursuant to the California Environmental Quality Act (CEQA) and the CEQA Guidelines.

Figure 3-1. Vicinity Map

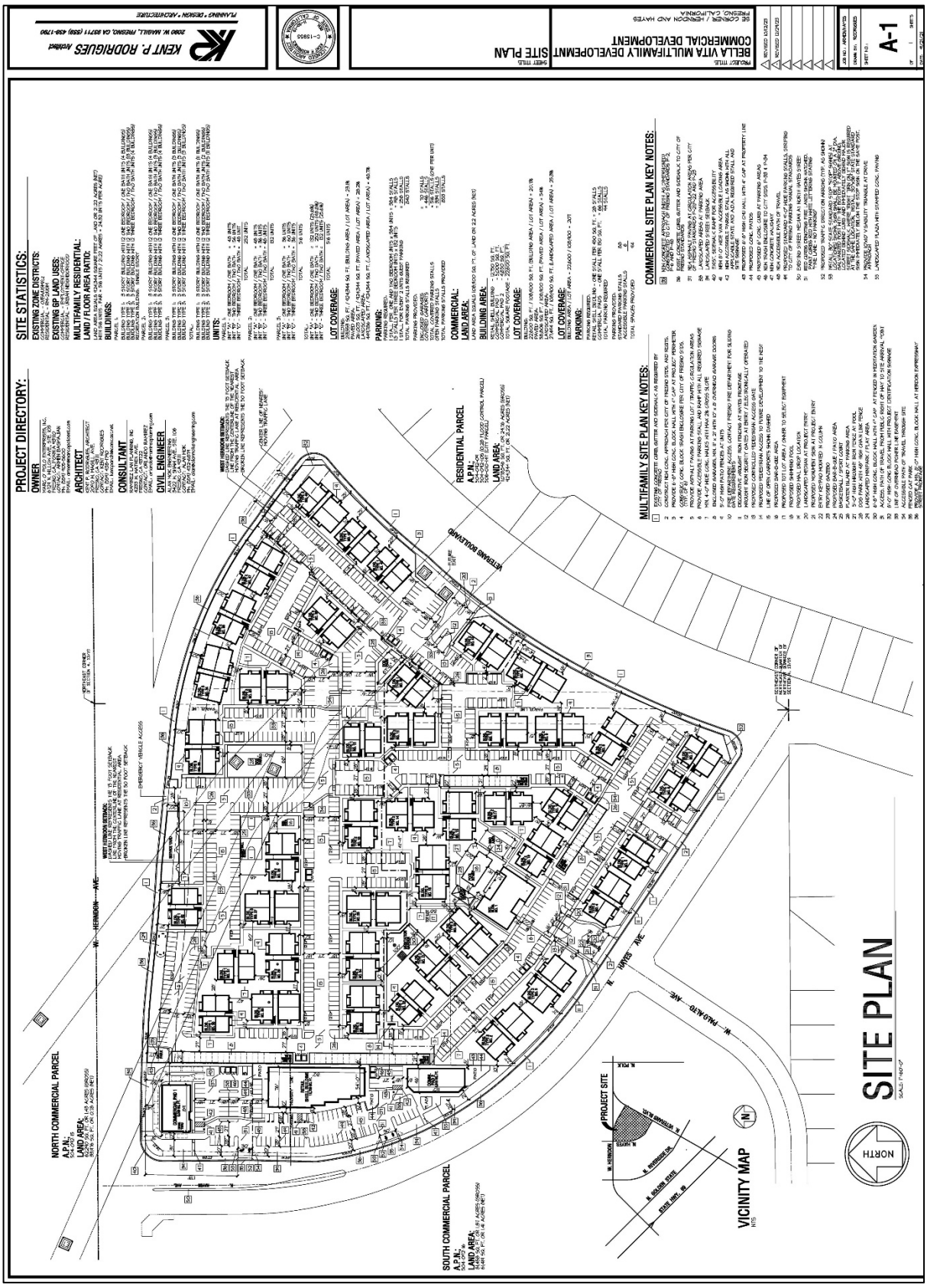


Figure 3-2. Overall Project Site Plan

Section 2 – Background Information

2.1 Air Quality

A Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI) has been developed by the Air District to act as an advisory document for addressing air quality in environmental documents. The San Joaquin Valley Air Pollution Control District is comprised of the San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare Counties and the Valley portion of Kern County and has jurisdiction over most air quality matters in the San Joaquin Valley Air Basin (SJVAB).

The SJVAB has one of the most severe air pollution problems in the State of California and the nation. Air pollution is hazardous to health, reduces visibility, degrades or soils materials, and can damage native vegetation. State and national ambient air quality standards were created to protect the health and welfare, and to minimize other impacts. The ambient air quality standards are outlined in the Regulatory Setting section.

Ozone: Ozone is not emitted directly into the environment, but is generated from complex chemical reactions between reactive organic gases (ROG), or non-methane hydrocarbons, and oxides of nitrogen (NOX) that occur in the presence of sunlight. ROG and NOX generators in Kings County include motor vehicles, recreational boats, other transportation sources, and industrial processes.

PM10: PM10, or particulate matter, is a complex mixture of primary or directly emitted particles, and secondary particles or aerosol droplets formed in the atmosphere by precursor chemicals.

Carbon Monoxide: Carbon Monoxide (CO) is a colorless, odorless and poisonous gas produced by incomplete burning of carbon in fuels. When CO enters the bloodstream, it reduces the delivery of oxygen to the body's organs and tissues. Health threats are most serious for those who suffer from cardiovascular disease, particularly those with angina or peripheral vascular disease. Exposure to elevated CO levels can cause impairment of visual perception, manual dexterity, learning ability and performance of complex tasks. The primary source of carbon monoxide is automobile use.

Nitrogen Dioxide: Nitrogen Dioxide (NO2) is a brownish, highly reactive gas that is present in all urban atmospheres. NO2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Nitrogen oxides are an important precursor both to ozone (O3) and acid rain. It can affect both terrestrial and aquatic ecosystems.

The major mechanism for the formation of NO2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO). NO2 plays a major role, together with VOCs, in the atmospheric reactions that produce O3. NO2 forms when fuel is burned at high temperatures. The two major emission sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

Sulfur Dioxide: Sulfur Dioxide (SO2) affects breathing and may aggravate existing respiratory and cardiovascular disease in high doses. Sensitive populations include asthmatics, individuals with bronchitis or emphysema, children and the elderly. SO2 is also a primary contributor to acid deposition, or acid rain, which causes acidification of lakes and streams and can damage trees, crops, historic buildings and statues. In addition, sulfur compounds in the air contribute to visibility impairment in large parts of the country. This is especially noticeable in national parks. Ambient SO2 results largely from stationary sources such as coal and oil combustion, steel mills, refineries, pulp and paper mills and from nonferrous smelters.

Valley Fever: Valley Fever is an illness caused by a fungus (*Coccidioides immitis* and *C. posadasii*) that grows in soils under certain conditions. Favorable conditions for the Valley Fever fungus include low rainfall, high summer temperatures, and moderate winter temperatures. In California, the counties with the highest incident of Valley Fever are Fresno, Kern and Kings Counties. When soils are disturbed by wind or activities like construction and farming, Valley Fever fungal spores can become airborne. The spores present a potential health hazard when inhaled. Individuals in occupations such as construction, agriculture, and archaeology have a higher risk of exposure due to working in areas of disturbed soils which may have the Valley Fever fungus.

2.2 Greenhouse Gases

Climate Change is a change in the average weather of the earth that may be measured by alterations in wind patterns, storms, precipitation, and temperatures. 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 a 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 GHG needed to stabilize global temperatures and climate change impacts. The IPCC predicted that global mean temperatures change from 1990 to 2100, given six scenarios, could range from 1.1 degree Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios (IPCC 2007). In California, climate change may result in consequences such as the following from (CCCC 2006 and Moser et al. 2009).

1. A reduction in the quality and supply of water to the State from the Sierra snowpack.
2. Increased risk of large wildfires.
3. Reduction in the quality and quantity of certain agriculture products.
4. Exacerbation of air quality problems.
5. A rise in sea levels resulting in the displacement of coastal businesses and residence.
6. Damage to marine ecosystems and that natural environment.
7. An increase in infections, disease, asthma, and other health-related problems.

8. A decrease in the health and productivity of California's forest. (CCCC 2006 and Moser et al. 2009)

Greenhouse Gases (GHG) are gases that trap heat in the atmosphere and the presence of GHGs in the atmosphere affects the earth's temperature. The effect is equivalent to the way a greenhouse retains heat. Natural processes and human activities emit greenhouse gases. Common GHGs include water vapor, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydro chlorofluorocarbons, hydro fluorocarbons, per fluorocarbons, sulfur, and hexafluoride. 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. Some greenhouse gases can remain in the atmosphere for over hundreds of years.

Some GHGs have a greater impact on climate change than others. In order to accurately compare GHG emissions, a Global Warming Potential (GWP) has been calculated for each greenhouse gas based on how long it remains in the atmosphere, on average, and how strongly it absorbs energy. Gases with a higher GWP absorb more energy, per pound, than gases with a lower GWP, and thus contribute more to global warming. For example, one pound of methane is equivalent to twenty-one pounds of carbon dioxide.

Regarding the quantity of these gases in the atmosphere, we first must establish the amount of particular gas in the air, known as Concentration, or abundance, which are measured in parts per million, parts per billion and even parts per trillion. To put this measurement in more relatable terms, one part per million is equivalent to one drop of water diluted into about 13 gallons of water, roughly a full tank of gas in a compact car. Therefore, it can be assumed larger emission of greenhouse gases lead to a higher concentration in the atmosphere.

GHGs as defined by AB 32 include the following gases: carbon dioxide, methane, nitrous oxide, hydruocarbons, perfluorocarbons, and sulfur hexafluoride. GHGs as defined by AB 32 and sources are summarized in Table 1.

Greenhouse Gas	Description and Physical Properties	Lifetime	GWP	Sources
Methane (CH4)	Is a flammable gas and is the main component of natural gas	12 years	21	Emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
Carbon dioxide (CO2)	An odorless, colorless, natural greenhouse gas.	30-95 years	1	Enters the atmosphere through burning fossil fuels (coal, natural gas and oil), solid waste, trees and wood products, and also as a result of certain chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
Chloro-fluorocarbons	Gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are non-toxic nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface).	55-140 years	3,800 to 8,100	Were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone.
Hydro-fluorocarbons	A man-made greenhouse gas. It was developed to replace ozone-depleting gases found in a variety of appliances. Composed of a group of greenhouse gases containing carbon, chlorine an at least one hydrogen atom.	14 years	140 to 11,700	Powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases.
Nitrous oxide (N2O)	Commonly known as laughing gas, is a chemical compound with the formula N2O. It is an oxide of nitrogen. At room temperature, it is a colorless, non-flammable gas, with a slightly sweet odor and taste. It is used in surgery and dentistry for its anesthetic and analgesic effects.	120 years	310	Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
Pre-fluorocarbons	Has a stable molecular structure and only breaks down by ultraviolet rays about 60 kilometers above Earth's surface.	50,000 years	6,500 to 9,200	Two main sources of pre-fluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	An inorganic, odorless, colorless, and nontoxic nonflammable gas.	3,200 years	23,900	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing and as a tracer gas.

Table 1. Greenhouse Gasses; Source: EPA, Intergovernmental Panel on Climate Change

Each of the designated gases described above can reside in the atmosphere for different amounts of time, ranging from a few years to thousands of years. All of these gases remain in the atmosphere long enough to become well mixed, meaning that the amount that is measured in the atmosphere is roughly the same all over the world regardless of the source of the emission.

Section 3 – Regional Attainment Status and Regulatory Setting

3.1 Regional Attainment Status

Air pollution is directly related to regional topography. Topographic features can either stimulate the movement of air or restrict air movement. The State of California is divided into regional air basins based on topographic air drainage features. The proposed Project Site is within the San Joaquin Valley Air Basin, which is bordered by the Sierra Nevada Mountains to the east, Coastal Ranges to the west, and the Tehachapi Mountains to the south.

The mountain ranges surrounding the San Joaquin Valley Air Basin (SJVAB) serve to restrict air movement and prevent the dispersal of pollution. As a result, the SJVAB is highly susceptible to pollution accumulation over time. As shown in the Table 2, the SJVAB is in nonattainment for several pollutant standards.

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone – One hour	No Federal Standard[f]	Nonattainment/Severe
Ozone – Eight hour	Nonattainment/Extreme[e]	Nonattainment
PM 10	Attainment[c]	Nonattainment
PM 2.5	Nonattainment[d]	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment/Unclassified
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead (Particulate)	No Designation/Classification	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

[a] See 40 CFR Part 81
[b] See CCR Title 17 Sections 60200-60210
[c] On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM10 National Ambient Air Quality Standard (NAAQS) and approved the PM10 Maintenance Plan.
[d] The Valley is designated nonattainment for the 1997 PM2.5 NAAQS. EPA designated the Valley as nonattainment for the 2006 PM2.5 NAAQS on November 13, 2009 (effective December 14, 2009).
[e] Though the Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).
[f] Effective June 15, 2005, the U.S. Environmental Protection Agency (EPA) revoked the federal 1-hour ozone standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour ozone nonattainment areas continue to apply to the SJVAB.

Table 2. San Joaquin Valley Attainment Status; Source: SJVAPCD

The state and federal standards for the criteria pollutants are presented in Section 8.4 of The San Joaquin Valley Unified Air Pollution Control District's 2015 "Guidance for Assessing and Mitigating Air Quality Impacts". These standards are designed to protect public health and welfare. The "primary"

standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soils, water, visibility, materials, vegetation and other aspects of general welfare. The U.S. EPA revoked the national 1-hour ozone standard on June 15, 2005, and the annual PM_{10} standard on September 21, 2006, when a new $PM_{2.5}$ 24-hour standard was established.

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (03)	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet 8 Hour Photometry
	8 Hour	0.070 ppm (137 µg/m³)		0.075 ppm (147 µg/m³)		
Respirable Particulate Matter (PM_{10})	24 Hour	50 µg/m	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Annual Analysis
	Annual Arithmetic Mean	20 µg/m3		--		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour		Gravimetric or Beta Attenuation	35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Annual Analysis
	Annual Arithmetic Mean	12 µg/m³		15 µg/m³		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m³)	--	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	--	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		--	--	
Nitrogen Dioxide (NO_2) [8]	1 Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m³)	--	Gas Phase Annual Chemiluminescence
	Arithmetic Mean	0.030 ppm (57 µg/m³)		53 ppb (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide	1 Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	--	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	--		--	0.5 ppm (1300 µg/m³)	
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)9	--	
	Annual Arithmetic Mean	--		0.030 ppm (for certain areas)9	--	
Lead[10,11]	30 Day Average	1.5 µg/m³	Atomic Absorption	--	--	High Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 µg/m3 (for certain areas)11	Same as Primary Standard	
	Rolling 3-Month Average	--		0.15 µg/m³		
Visibility Reducing Particles[12]	8 Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	No National Standard		
Sulfates	24 Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. To attain the 1-hour 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 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.
9. On June 2, 2010, a new 1-hour SO2 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 SO2 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. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
10. 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.
11. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 μg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
12. 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.

Table 3. Ambient Air Quality Standards; Source: SJVAPCD

3.2 Regulatory Setting

The California Environmental Quality Act (CEQA) requires lead agencies to determine if each project of a certain threshold has an impact on the air quality of the area. The Air Quality standards and Greenhouse Gas guidance measures are used to establish levels of air quality impact of a project. The following regulatory background represents global, federal, state, and local standards and guidance that have been reviewed in this study.

Federal Clean Air Act: The 1977 Federal Clean Air Act (CAA) authorized the establishment of the National Ambient Air Quality Standards (NAAQS) and set deadlines for their attainment. The Clean Air Act identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and an attainment demonstration, and incorporates more stringent sanctions for failure to meet interim milestones. The U.S. EPA is the federal agency charged with administering the Act and other air quality-related legislation. EPA's principal functions include setting NAAQS; establishing minimum national emission limits for major sources of pollution; and promulgating regulations. Under CAA, the NCCAB is identified as an attainment area for all pollutants.

California Clean Air Act: California Air Resources Board coordinates and oversees both state and federal air pollution control programs in California. As part of this responsibility, California Air Resources Board monitors existing air quality, establishes California Ambient Air Quality Standards, and limits allowable emissions from vehicular sources. Regulatory authority within established air basins is provided by air pollution control and management districts, which control stationary-source and most categories of area-source emissions and develop regional air quality plans. The Project is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District.

San Joaquin Valley Air Pollution Control District (SJVAPCD): The SJVAPCD is responsible for enforcing air quality standards in the Project area. The following SJVAPCD rules and regulations may apply to the proposed project:

- **Rule 3135:** Dust Control Plan Fee. All projects which include construction, demolition, excavation, extraction, and/or other earth moving activities as defined by Regulation VIII (Described below) are required to submit a Dust Control Plan and required fees to mitigate impacts related to dust.
- **Rule 4101:** Visible Emissions. District Rule 4101 prohibits visible emissions of air contaminants that are dark in color and/or have the potential to obstruct visibility.
- **Rule 9510:** Indirect Source Review (ISR). This rule reduces the impact PM10 and NOX emissions from growth on the SJVB. This rule places application and emission reduction requirements on applicable development projects in order to reduce emissions through onsite mitigation, offsite SJVAPCD administered projects, or a combination of the two. This project will submit an Air Impact Assessment (AIA) application in accordance with Rule 9510's requirements.
- **Regulation VIII:** Fugitive PM10 Prohibitions. Regulation VIII is composed of eight rules which together aim to limit PM10 emissions by reducing fugitive dust. These rules contain required management practices to limit PM10 emissions during construction, demolition, excavation, extraction, and/or other earth moving activities.

Greenhouse Gases: Climate changes is a global, national, state and local issue involving greenhouse gas emissions from all around the world; therefore, countries around the world, including the United States, have established regulations to assist in the emissions of GHGs. Tables 4-7 give a brief explanation of international, national, state, and local regulations.

Regulation	Adopted	Protocol
Intergovernmental Panel on Climate Change	1998	The United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess the scientific, technical and socio-economical information relevant to understanding the scientific basis of risk of human-induced climate change and its potential impacts.
United Nations Framework Convention on Climate Change	March 21, 1994	Governments gather and share information on GHG emissions, national polices and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts.
Kyoto Protocol	Adopted: December 1, 1997 Entered into Force: February 16, 2005	Sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at an average of 5% against 1990 levels over the five-year period of 2008-2012
Paris Climate Agreement	Adopted: December 12, 2015 Entered into Force: November 4 2016	The Paris Climate Agreement an agreement within the United UNFCCC to limit global temperature rise to 2 degrees Celsius above pre industrial levels. Under the agreement, each country determines, plans, and regularly reports its own contribution to mitigate global warming. The agreement is voluntary and is not legally binding.

Table 4. International Greenhouse Gas Regulations

Regulation	Adopted	Protocol
Greenhouse Gas Endangerment	December 7, 2009	The EPA Administrator signed two distinct findings regarding GHG emissions under section 2029(a) of the Clean Air Act. 1. Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases — carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6) 2. 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.
Corporate Average Fuel Economy (CAFÉ)	Adopted: 1975 Revised: July 29, 2011	An agreement between thirteen large automakers (accounting for 90% of all vehicles sold in the United States), the United Auto Workers, and the State of California to increase fuel economy to 54.5 miles per gallon for cars and light-duty trucks by model year 2025.
Greenhouse Gas Reporting Program	September 22, 2009	Requires reporting of GHG emissions from large sources and suppliers in the United States. Any facility that emits 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA.
New Source Review	May 13, 2013	Tailors the requirements of the Clean Air Act permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits.
Standards of Performance for GHG Emissions for New Stationary Sources: Electrical Utility Generating Units	March 27, 2012	The EPA proposed new performance standards for emissions of carbon dioxide for new affected fossil fuel-fired electrical utility generated units. New sources greater than 25 megawatt would be required to meet an output-based standard of 1,000 pound of carbon dioxide per megawatt-hour, based on the performance of widely used natural gas combined cycle technology
Western Climate Initiative Partner	*Yet to be formally adopted*	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. Its cap-and-trade program is estimated to be fully implemented by 2012

Table 5. Federal Greenhouse Gas Regulations

Regulation	Adopted	Protocol
Title 24	Adopted: 1978 2008 Standards Effective: January 1, 2010	California's Energy Efficiency Standards for Residential and Non-Residential Buildings. Their standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods
California Green Building Standards	January 12, 2010	A comprehensive and uniform regulatory code for all residential, commercial and K-14 school buildings.
Pavley Regulations, AB 1493	July 22, 2002	Reduce GHG emissions in new passenger vehicles from 2009 through 2016. These amendments are part of California's commitment toward a nation-wide program to reduce new passenger vehicle GHGs from 2012 through 2016. ARB's September amendments will cement California's enforcement of the Pavley rule starting in 2009 while providing vehicle manufacturers with new compliance flexibility.
Low Carbon Fuel Standard-Executive Order S-01-07	January 18, 2007	Calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. It instructed the California Environmental Protection Agency to develop and propose a draft compliance schedule to meet the 2020 target.
SB 1368	2006	The law limits long-term investments in base load generation by the state's utilities to power plants that meet an emissions performance standard (EPS)..
SB 97	February 16, 2010	The Natural Resources Agency adopted Amendments to the CEQA Guidelines for greenhouse gas emissions.
AB 32	2006	Set the 2020 greenhouse gas emissions reduction goal into law. It directed the California Air Resources Board to begin developing discrete early actions to reduce greenhouse gases while also preparing a scoping plan to identify how best to reach the 2020 limit. The reduction measures to meet the 2020 target are to be adopted by the start of 2011.
SB 375	August 30, 2008	Enhances California's ability to reach its AB 32 goals by promoting good planning with the goal of more sustainable communities. Sustainable Communities requires ARB to develop regional greenhouse gas emission reduction targets for passenger vehicles. ARB is to establish targets for 2020 and 2035 for each region covered by one of the State's 18 metropolitan planning organizations
Executive Order S-13-08	2009	A comprehensive "Climate Adaptation Strategy" that would identify the state's vulnerabilities and plan accordingly. State agencies will take this report into account, due in December 2010, when planning new infrastructure such as roads, bridges, and water treatment facilities. The executive order noted that the country's longest continuously operating sea level gauge, San Francisco Bay's Fort Point, recorded a seven-inch rise in sea level over the 20th century.
SB 1078, SB 107 and Executive Order S-14-08	September 12, 2002	Requires California to generate 20% of its electricity from renewable energy by 2017. SB 107 then changes the 2017 deadline ot 2010. Executive Order S-14-08 required that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020.
CEQA Guidelines Update	Adopted: April 13, 2009 Updated: May 2011	These Thresholds are designed to establish the level at which the District believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on the Air District's website and included in the Air District's updated CEQA Guidelines
Executive Order B-30-15	April 20, 2015	Establishes a California GHG reduction target of 40 percent below 1990 levels by 2030.
AB 398	July 17, 2017	Extended the California Cap and Trade program through 2030.

Table 6. State Greenhouse Gas Regulations

Regulation	Adopted	Protocol
San Joaquin Valley Air Pollution Control District		The San Joaquin Valley Air Pollution Control District is made up of eight counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and Kern. The Valley Air District is governed by a Governing Board consisting of representatives from the Board of Supervisors of all eight counties, one Health and Science member, one Physician, and five Valley city representatives.
SJVAPCD CEQA Greenhouse Gas Guidance	December 2009	The SJVAPCD approach is intended to streamline the process of determining if project specific GHG emissions would have a significant effect. Best Performance Standards would be established according to performance-based determinations.
San Joaquin Valley Carbon Exchange	November 2008	Intended to quantify, verify, and track voluntary GHG emissions reductions generated within the San Joaquin Valley
Rule 2301	January 19, 2012	Emission Reduction Credit Banking. Provided an administrative mechanism for sources to bank GHG emissions, mechanism for sources to transfer GHG reductions to other users and defines eligibility standards, quantitative and procedures.

Table 7. Regional Greenhouse Gas Regulations

Section 4 – Air Quality Thresholds and Evaluation Methodology

Air pollution emissions can be estimated by using emission factors and examining the level of activity occurring. Emission factors are the emission rate of a pollutant given the activity over time; for example, grams of Nox per horsepower hour. The California Air Resource Board (ARB) has published emission factors for on-road equipment and vehicles in the OFFROAD emission 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.

4.1 Impact Significance Thresholds

Significance thresholds are based on the CEQA Appendix G Environmental Checklist Form and thresholds established by the SJVAPCD. The CEQA Appendix G Environmental Checklist Form states that the Project would have a potentially significant impact on air quality or greenhouse gases if the Project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- 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;
- Expose sensitive receptors to substantial pollutant concentrations; and/or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The SJVAPCD has recommended the following thresholds of significance for criteria pollutant emissions from projects (Table 8). The SJVAPCD does not provide numeric thresholds for GHG emissions. Instead, the SJVAPCD "Guidance for Valley Land Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" states that projects which achieve a 29% GHG emission reduction compared to Business as Usual (BAU) would be determined to have a less than significant individual and cumulative impact on GHG emissions.

Pollutant/Precursor	Construction Emissions	Operational Emissions	
		Permitted Equipment and Activities	Non-Permitted Equipment and Activities
	Emissions (tpy)	Emissions (tpy)	Emissions (tpy)
CO	100	100	100
Nox	10	10	10
ROG	10	10	10
SOx	27	27	27
PM10	15	15	15
PM2.5	15	15	15

Table 8. SJVAPCD Thresholds of Significance for Criteria Pollutants; Source: SJVAPCD

4.2 Evaluation Methodology for Project

Emissions for construction and operation of the project were calculated using the California Emissions Estimator (CalEEMod) Version 2022.1.1.22. CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutants and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operations, including vehicle use, as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The model incorporates Pavley standards and Low Carbon Fuel standards into the mobile source emission factors. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user. The CalEEMod model was run based off the following land use assumptions for this Project:

- Apartments Mid Rise: 516 Dwelling Units
- Strip Mall: 17,600 Square Feet
- Fast Food Restaurant with Drive Thru: 5,000 SF

CalEEMod default values were used to estimate construction duration, construction trips, equipment use, trip lengths and solid waste generation.

4.3 Evaluation Methodology for Project

Construction

Greenhouse gas emissions from construction of the Project were estimated using CalEEMod. The CalEEMod model included the following land use assumptions:

- Apartments Mid Rise: 516 Dwelling Units
- Strip Mall: 17,600 Square Feet
- Fast Food Restaurant with Drive Thru: 5,000 SF

CalEEMod default values were used to identify construction duration, trips, trip lengths, and equipment that would be used.

Operations

Analysis of greenhouse gas emissions for operation of the Project were estimated using CalEEMod. The CalEEMod model included the following land use assumptions:

- Apartments Mid Rise: 516 Dwelling Units
- Strip Mall: 17,600 Square Feet
- Fast Food Restaurant with Drive Thru: 5,000 SF

CalEEMod default values were used for the vehicle fleet mix, trip lengths, consumer products, architectural coatings, landscape equipment, energy use, water and wastewater use, solid waste, and refrigerants.

Section 5 – Criteria Pollutant Emissions

5.1 Short-Term Emissions

Construction of the proposed Project would generate pollutant emissions from the following construction activities: site preparation, grading, building construction, application of architectural coatings, and paving. The short-term emissions from these activities were calculated using CalEEMod. The full CalEEMod Report can be found in Appendix A. As shown in Table 9 below, project construction related emissions do not exceed the thresholds for criteria pollutants established by the SJVAPCD.

	CO (tpy)	ROG (tpy)	SOx (tpy)*	Nox (tpy)	PM10 (tpy)	PM2.5 (tpy)
Annual Maximum Emissions Generated from Project Construction	**3.81**	**0.73**	**0.01**	**2.33**	**0.83**	**0.34**
SJVAPCD Thresholds of Significance	**100**	**10**	**27**	**10**	**15**	**15**
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

Table 9. Projected Project Emissions Compared to SJVAPCD Thresholds of Significance for Criteria Pollutants related to Construction; Source: SJVAPCD, CalEEMod Analysis (Appendix A)

5.2 Long-Term Emissions

The operation of the Project would result in long-term criteria pollutant emissions associated with mobile, energy, and area sources. Operational emissions from these factors were calculated using CalEEMod. The full CalEEMod Report can be found in Appendix A. As shown in Table 10 below, the Project's operational emissions do not exceed the thresholds established by the SJVAPCD.

	CO (tpy)	ROG (tpy)	SOx (tpy)*	Nox (tpy)	PM10 (tpy)	PM2.5 (tpy)
Annual Maximum Operational Emissions	**29**	**5.18**	**0.07**	**3.98**	**5.39**	**1.93**
SJVAPCD Thresholds of Significance	**100**	**10**	**27**	**10**	**15**	**15**
*Threshold established by SJVAPCD for SOx, however emissions are reported as SO2 by CalEEMod.						

Table 10. Projected Project Emissions Compared to SJVAPCD Thresholds of Significance for Criteria Pollutants related to Operations; Source: SJVAPCD, CalEEMod Analysis (Appendix A)

Section 6 – Impacts to Sensitive Receptors

6.1 Potential Impacts to Sensitive Receptors

Sensitive receptors are people that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling unit(s). The homes to the north across Herndon Avenue, the homes to the southeast across Veterans Blvd, and River Bluff Elementary school to the west are the nearest sensitive receptors. The homes to the north are approximately 190 feet from the Project property line, the homes to the southeast are approximately 170 feet from the Project property line, and River Bluff Elementary school is approximately 400 feet from the Project property line.

The Project does not include any project components identified by the California Air Resources Board that could potentially impact any sensitive receptors (such as heavily traveled roads, distribution centers, fueling stations, and dry-cleaning operations). Based on the operational emissions estimates and distance to sensitive receptors, the proposed Project is not anticipated to negatively impact any sensitive receptors.

6.2 Potential Odor Impacts

Although some typical construction-related odors, such as various diesel-powered vehicles and equipment, would be generated during project construction, these odors are not anticipated to affect a substantial number of people or be particularly adverse. These odors would be temporary and are not likely to be noticeable for extended periods of time beyond the Project Site. The potential for diesel odor impacts is therefore considered less than significant.

The proposed uses that would be developed within the Project Site are not expected to produce any offensive odors that would result in frequent odor complaints because substantial odor-generating sources are not proposed, such as land uses including agricultural activities, feedlots, wastewater treatment facilities, landfills, or heavy manufacturing uses. The proposed project would not create objectionable odors affecting a substantial number of people during project construction or operation, and this impact would be less than significant.

Section 7 – Greenhouse Gas Emissions

7.1 Project Greenhouse Gas Emissions

Operation of the Project would result in Greenhouse Gas emissions related to mobile, energy, and area sources. Greenhouse Gas Emissions from the operation were estimated using CalEEMod. CalEEMod default values were used for the vehicle fleet mix, trip lengths, consumer products, architectural coatings, landscape equipment, energy use, water and wastewater use, solid waste, and refrigerants.

The proposed project would have the following operational emissions:

GHG Emissions Source	CO2 (MT/Year)	CH4 (MT/Year)	NO2 (MT/Year)	CO2e (MT/Year)
Mobile (Fuel Use)	4,908	0.24	0.27	5,002
Area	313	0.49	<0.005	326
Energy	1,004	0.11	0.01	1,009
Water	17.9	0.77	0.02	42.6
Waste	40.8	4.08	0	143
Refrigeration	0	0	0	1.57
Total	**6,284**	**5.70**	**0.30**	**6,523**

Table 11. Summary of unmitigated GHG Emissions from project operations.

7.3 Significance Evaluation of Project-Related Greenhouse Gas Emissions

Construction:

Greenhouse gases would be generated during construction from activities including site preparation, grading, building construction, application of architectural coatings, and paving. The CalEEMod Emissions report predicts that this project will create a maximum of 840 MT of CO2e emissions per year during construction. Because the SJVAPCD does not have numeric thresholds for assessing the significance of construction related GHG emissions, predicted emissions from project construction were compared to SCAQMD thresholds for construction related GHG emissions. The SCAQMD currently has a threshold of 10,000 metric tons of CO2e per year for construction emissions amortized over a 30-year project lifetime. Because project construction would generate far less GHG emissions than this threshold, impacts related to GHG emissions during project construction would be less than significant.

Operation:

The SJVAPCD has not formally provided guidance on how to analyze GHG emissions impacts for projects within their San Joaquin Valley Air Basin (SJVAB). Until such time as SJVAPCD provides

formal guidance, the following alternative metrics used by air districts in California to assess GHG emissions impacts have been identified:

Bright-Line Numeric Threshold: The bright-line significance threshold is a numeric, mass emissions threshold. In general, the bright-line threshold identifies the point at which additional analysis of project-related GHG emissions impacts is necessary. Projects below the established bright-line significance criteria have a de minimis contribution to the local, regional, and/or statewide GHG emissions inventory and have less than significant impacts. Projects above this threshold may result in a substantial increase in GHG emissions.

The bright-line threshold is based on the methodology identified in the 2008 CAPCOA white paper (CAPCOA 2008). It is a market capture approach, reflecting the amount of emissions that 90 percent of development projects surveyed in four cities within California would generate. CAPCOA identified that a bright-line threshold set at 900 metric tons of CO2e per year would capture 90 percent of projects. In general, 900 metric tons of CO2e per year corresponds to (1) a residential development of 50 dwelling units; (2) 35,000 square feet of office space; (3) 11,000 square feet of retail space; and (4) 6,300 square feet of supermarket space.

The 900 metric tons of CO2e per year is used as it is the most conservative bright-line threshold. Exceeding the bright-line significance criterion does not necessarily indicate that the project generates a significant unavoidable impact. Consistent with how the bright-line threshold is applied in other air districts, this analysis utilizes the bright-line thresholds as a screening criterion to identify whether a full analysis of GHG emissions is warranted. If the project exceeds the screening threshold, the second level of analysis will compare the project to the efficiency metric discussed below.

Efficiency-Based Threshold for Residential Projects: The efficiency metric identified by some air districts in California in the absence of a county-wide GHG reduction plan is derived from CARB's Scoping Plan. Residential projects that are over the bright line threshold would not be considered significant if their overall GHG efficiency is less than 6.7 MT CO2e/yr/capita. However, it is noted that this threshold is based, in part, on the GHG reducing target established for the year 2020 under AB 32, but the Project would be implemented after the year 2020. Statewide goals for GHG reductions in the years beyond 2020 were codified into state law with the passage of SB 32, which as described previously mandates that California achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. This equates to 40 percent below the statewide GHG reduction target for the year 2020. Therefore, a 40% reduction would be: 6.7 MT CO2e/yr/capita x 60% = 4.02 MT CO2e/yr/capita.

For this project: The average household size in the City of Fresno is 3.20 persons (US Census Bureau). The project consists of 128 units, leading to an estimated population of: 516 × 3.20 = 1651 people.

Using the efficiency-based threshold: The allowable emissions for this residential project would be 1651 × 4.02 = 6,638 metric tons of CO2e per year.

The total operational GHG emissions amount to 6,523 metric tons of CO2e per year. Since the project's emissions are below the efficiency-based threshold for residential projects (6,638 metric tons of CO2e per year), the project's operational GHG emissions are *considered less than significant.*

Section 6 – Conclusions

Construction and operation of the proposed project would result in criteria pollutant emissions; however, these emissions would not exceed the thresholds of significance established by the SJVAPCD and Impacts to air quality and GHGs from the proposed project would be *less than significant.*

Section 7 – References

California Environmental Quality Act (CEQA). 2024. (Public Resources Code 21000 - 21189) and CEQA Guidelines (California Code of Regulations Title 14, Division 6, Chapter 3, Sections 15000 – 15387).

California Environmental Quality Act (CEQA). 2024. CEQA, Appendix G – Environmental Checklist Form, Final Text.

California Air Pollution Control Officers Association (CAPCOA). 2022. California Emissions Estimator Model tm (CalEEMod), version 2022.1.1.22

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI).

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA.

APPENDIX G

Traffic Study Checklist

CITY OF FRESNO
PUBLIC WORKS DEPARTMENT
TRAFFIC STUDY CHECKLIST

APPLICANT: Armen Basmajian

ASSIGNED PLANNER: Rob Holt

ACCELA/FAASTER REFERENCE NUMBER: P23-03993, P23-03990, P23-03982

Traffic Study Submittal:

- [x] Was prepared based on a scope of work approved by the City Traffic Engineer
- [x] Used the most recent version of Synchro for intersection analysis
- [x] Used the most recent version of the ITE Trip Generation
- [x] Was prepared and reviewed under the supervision and direction of a qualified engineer or authorized owner/principal of firm
- [x] Was prepared using count data collected within one year of the submittal date
- [x] Includes an electronic copy, assembled as a complete document
- [x] Includes One (1) hard copy
- [x] Conforms to the most recent version of the City's Traffic Study Guidelines
- [x] Includes operational analysis files (Synchro)

Traffic Study includes:

- [x] Entitlement/Accela (FAASTER) No./ Tract or Parcel Map No.
- [x] Assigned Planner's name
- [x] Stamp and/or signature of qualified engineer or authorized owner/principal of firm stating the study was prepared and reviewed under their supervision and direction
- [x] Project description
- [x] Methodology description
- [x] Project Trip Generation
- [ ] Trip Generation Comparison (if a General Plan Amendment)
- [x] Delay analysis
- [x] Queuing analysis for all movements at all study intersections
- [x] Discussion of existing and planned bicycle, pedestrian and transit facilities
- [x] Collision analysis
- [x] On-site circulation analysis
- [x] Mitigations and Recommendations

CITY OF FRESNO
PUBLIC WORKS DEPARTMENT
TRAFFIC STUDY CHECKLIST

APPLICANT: Armen Basmajian

ASSIGNED PLANNER: Rob Holt

ACCELA/FAASTER REFERENCE NUMBER: P23-03993, P23-03990, P23-03982

Included Figures:

- [x] Vicinity Map
- [x] Site Plan
- [x] Trip distribution at intersections/along roadways
- [x] Trip distribution at proposed access points
- [x] Volumes for all scenarios analyzed
- [x] Lane configurations for all scenarios analyzed
- [x] Locations of approved projects

Included Appendices:

- [x] Approved Scope of Work
- [x] Model request
- [x] Model data
- [x] Count data
- [x] Level of Service analysis worksheets
- [x] Collision data
- [x] Warrants

CERTIFICATION OF APPLICANT: Read each of the statements below. After you have read the statements and understand them, please sign and date in the space provided at the end of this section:

1) I certify that I have read the Traffic Study Checklist thoroughly, followed any and all instruction, and have supplied the necessary information to allow staff to review my study or application and that the supplied information is true and correct information herein to the best of my knowledge and belief.

2) I understand that falsification or misrepresentation on my part of any of the information that I have supplied above constitutes sufficient grounds for return of my submittal, or should any of my responses be determined false, misleading and/or incomplete will subject my application/plans to review delays and may result in the requirement for the applicant to pay additional review fees.

Applicant's signature: [signature] Date: 7.12.24

APPENDIX H

VMT Assessment

Vehicle Miles Traveled Analysis

Bella Vista

Located on the Southeast Corner of
Herndon Avenue and Hayes Avenue

In the City of Fresno, California

Prepared for:
Marc O' Polo Enterprises
6729 North Willow Avenue, Suite 105
Fresno, CA 93710

July 2, 2024

Project No. 004-221

Traffic Engineering, Transportation Planning, & Parking Solutions
516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
Phone: (559) 570-8991
www.JLBtraffic.com

Traffic Engineering, Transportation Planning, & Parking Solutions

Vehicle Miles Traveled Analysis

For Bella Vista located on the Southeast Corner of Herndon Avenue and Hayes Avenue

In the City of Fresno, CA

July 2, 2024

This Vehicle Miles Traveled 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, P.E., T.E.

President

Traffic Engineering, Transportation Planning, & Parking Solutions
516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
Phone: (559) 570-8991
www.JLBtraffic.com

Table of Contents

Project Description **1**

VMT Analysis **1**

Regulatory Setting 1

VMT Screening 2

VMT Thresholds 2

VMT Results 3

VMT Mitigations 4

Conclusion 4

Study Participants **5**

References **6**

List of Tables

Table I: VMT Results Prior to Mitigation **3**

Table II: VMT Mitigations **4**

List of Appendices

Appendix A: Fresno COG Activity Based Model VMT Output

Appendix B: VMT Mitigations

Project Description

This report describes a Vehicle Miles Traveled (VMT) Analysis prepared by JLB Traffic Engineering, Inc. (JLB) for Bella Vista (Project) located on the southeast corner of Herndon Avenue at Hayes Avenue in the City of Fresno. The Project proposes to develop up to 17,666 square feet of general retail, 5,000 square feet of fast-food restaurant with drive-through window and 516 multifamily residential units. Based on information provided to JLB, the proposed Project's land uses are consistent with the *Fresno General Plan*.

VMT Analysis

Regulatory Setting

Senate Bill (SB) 743 requires that relevant California Environmental Quality Act (CEQA) analysis of transportation impacts be conducted using a metric known as VMT instead of level of service (LOS). VMT measures how much actual auto travel (additional miles driven) a proposed project would create on California roads. If the project adds excessive car travel onto our roads, the project may cause a significant transportation impact.

The State CEQA Guidelines were amended to implement SB 743, by adding Section 15064.3. Among its provisions, Section 15064.3 confirms that, except with respect to transportation projects, a project's effect on automobile delay shall not constitute a significant environmental impact. Therefore, LOS measures of impacts on traffic facilities are no longer a relevant CEQA criteria for transportation impacts.

CEQA Guidelines Section 15064.3(b)(4) states that "[a] lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revision to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section."

On June 25, 2020, the City of Fresno adopted the *CEQA Guidelines for Vehicle Miles Traveled Thresholds* (VMT Guidelines) for VMT pursuant to Senate Bill 743 to be effective July 1, 2020. The City of Fresno VMT Guidelines document was prepared and adopted consistent with the requirements of CEQA Guidelines Sections 15064.3 and 15064.7. The December 2018 Technical Advisory on Evaluating Transportation Impacts in CEQA (TA) published by the Governor's Office of Planning and Research (OPR), was utilized as a reference and guidance document in the preparation of the Fresno VMT Guidelines.

The City of Fresno VMT Guidelines adopted a screening standard and criteria that can be used to screen out qualified development projects that meet the adopted criteria from needing to prepare a detailed VMT Analysis. These criteria may be size, location, proximity to transit, of trip making potential. In general development projects that are consistent with the City of Fresno's General Plan and Zoning and that that meet one or more of the following criteria can be screened out from a quantitative VMT analysis.

1. Project Located in a Transit Priority Area/High Quality Transit Corridor (within 0.5 miles of a transit stop).
2. Project is Local-serving Retail of less than 50,000 square feet.
3. Project is a Low Trip Generator (Less than 500 average daily trips)
4. Project has a High Level of Affordable Housing Units
5. Project is an institutional/Government and Public Service Uses
6. Project is located in a Low VMT Zone

This screening tool is consistent with the OPR December 2018 Guidance referenced above. The screening tool includes an analysis of those portions of the City that satisfy the standard of reducing VMT by 13% from existing per capita and per employee VMT averages within the relevant region. The relevant region adopted by the City of Fresno VMT Guidelines is Fresno County. The City of Fresno VMT Guidelines Section 3.1 regarding Development Projects states that "If a project constitutes a General Plan Amendment (GPA) or a Zone Change (ZC), none of the screening criteria may apply".

For projects that are not screened out, a quantitative analysis of VMT impacts must be prepared and compared against the adopted VMT thresholds of significance. The Fresno VMT Guidelines document includes thresholds of significance for development projects, transportation projects, and land use plans. These thresholds of significance were developed using the County of Fresno as the applicable region, and the required reduction of VMT (as adopted in the Fresno VMT Guidelines) corresponds to Fresno County's contribution to the statewide GHG emission reduction target. In order to reach the statewide GHG reduction target of 15%, Fresno County must reduce its GHG emissions by 13%. The method of reducing GHG by 13% is to reduce VMT by 13% as well.

VMT Screening

There are two land use categories identified in this Project. The multifamily housing is designated as a residential land use category and the commercial land uses are designated as retail land use category. Within the *CEQA Guidelines for Vehicle Miles Traveled Thresholds* for the City of Fresno there are six (6) screening criteria. These criteria are stated in the Regulatory Settings sections of this Report. The residential component of the Project does not meet any of the screening criteria. Given the size of the retail buildings, their anticipated uses and location of the retail component of the Project, it is not anticipated that the retail component will draw customers outside of the region. The retail component of the Project is anticipated to draw customers from the surrounding residential areas and from existing traffic along Herndon Avenue, Hayes Avenue and Veterans Boulevard. Therefore, the retail component of the Project is considered a local-serving retail of less than 50,000 square feet and screens out from a quantitative VMT analysis.

VMT Thresholds

VMT is simply the product of a number of trips and those trips' lengths. The first step in a VMT analysis is to establish the baseline average VMT, which requires the definition of a region. The VMT Guidelines for the City of Fresno provide that the Fresno County average VMT per Capita (appropriate for residential land uses) and Employee (appropriate for office/commercial non-retail land uses) are 16.1 and 25.6,

respectively. The City's threshold targets a 13% reduction in VMT for residential and office/commercial non-retail land uses and a net zero (0) increase in regional VMT for commercial retail land uses.

The City's adopted thresholds for development projects correspond to the regional averages modeled by Fresno COG's ABM. For residential and office development projects, the adopted threshold of significance is a 13% reduction, which means that projects that generate VMT in excess of a 13% reduction from the existing regional VMT per capita or per employee would have a significant environmental impact. Projects that reduce VMT by 13% or more are less than significant. The adopted threshold for all other land use types that don't require a GPA or ZC is no net increase in VMT per employee. The adopted threshold for retail projects is any net increase in Regional VMT compared to the existing Regional VMT. Quantitative assessments of the VMT generated by a development project are determined using the COG ABM, which is a tour-based model.

For mixed use projects, the City of Fresno VMT Guidelines state that the VMT can be estimated based on each component of the project, independently, after taking credit for internal trip capture. It also confirms that mixed use projects must use the Fresno COG's Activity Based Model. The VMT per capita (for the residential component) and the total VMT (for the retail component) is then compared against the relevant threshold.

The target VMT for residential and commercial non-retail land uses are (16.10 X (1-.13) = 14.01) 14.01 VMT per capita and (25.60 X (1-.13) = 22.27) 22.27 VMT per employee, respectively. The target VMT for all other type of land uses that are consistent with the General Plan is 25.60 VMT per employee. The threshold for retail land uses is a net zero (0) increase in Regional VMT for retail land uses (City of Fresno, 2020).

VMT Results

The Project's trip generation with land use, number of units and square footages were provided to an approved Fresno COG modeler, Kittelson & Associates, in order to conduct a Project-specific VMT analysis using the Fresno COG ABM for Project components. Table I summarizes the VMT results for the Project derived from Fresno COG ABM and the relevant threshold. Based on Fresno COG ABM VMT results, the Project's residential component has an average VMT of 19.36 VMT per capita which over the City's VMT threshold of 14.01 VMT per capita. Appendix A presents the Project VMT output from the Fresno COG ABM.

Table I: VMT Results Prior to Mitigation

Project Components	*Fresno COG ABM Results[1]*	*City of Fresno VMT Threshold[2]*
Residential	19.36	14.01

Note: 1 = VMT Results per Fresno COG ABM.
2 = VMT Threshold per *CEQA Guidelines for Vehicle Miles Traveled Thresholds* for the City of Fresno.

VMT Mitigations

The VMT mitigation measures considered for this Project include those appropriate for the respective land use as noted in the City of Fresno VMT Guidelines. Exhibit B presents a summary of the VMT reduction associated with each mitigation measure utilized in this Report. The selected VMT reduction rates appropriate for the Project were based on the *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* published by California Air Pollution Control Officers Association (CAPCOA). The mitigation measures found feasible are Increase Residential Density (T-1) and Provide Electric Vehicle Charging Infrastructure (T-14). Increase Residential Density (T-1) was calculated using 516 dwelling units over 17.63 acres. Provide Electric Vehicle Charging Infrastructure (T-14) was calculated using the 43 electric vehicle chargers as shown on the project site plan. As can be seen in Table II, the mitigation measures result in a reduction of 7.42 VMT per Capita. After the application of the mitigation measures, the Project has a VMT per Capita of 11.94. As a result, there is a less than significant impact to VMT associated with this Project pursuant to the City of Fresno VMT guidelines.

Table II: VMT Mitigations

Project Components	*Fresno COG Results[1]*	*Reduction from VMT Mitigations[2]*	*VMT After Mitigations*	*City of Fresno VMT Threshold[2]*	*Significant VMT Impact?*
Residential	19.36	-7.42	11.94	14.01	No

Note: 1 = VMT Results per Fresno COG ABM.
2 = VMT Thresholds and Mitigations per City of Fresno VMT Guidelines.

Conclusion

Conclusions regarding the VMT Analysis of the proposed Project are provided below:

- Based on information provided to JLB, the proposed Project's land uses are consistent with the *Fresno General Plan*.
- The Retail component of the Project screens out from a quantitative VMT analysis due to being a local serving retail Project less than 50,000 square feet.
- Per the Fresno COG ABM output, the Project's residential component is projected to yield a VMT per capita of 19.36.
- The City of Fresno VMT threshold for residential land uses is 14.01 VMT per capita. After the implementation of feasible mitigation measures, which include 516 residential units on 17.63 acres and 43 EV charging stations, the Project's VMT per Capita would be reduced by 7.42.
- Therefore, the Project's residential component is projected to yield 11.94 VMT per Capita.
- As a result, there is a less than significant impact to VMT associated with this Project pursuant to the City of Fresno VMT guidelines.

Study Participants

JLB Traffic Engineering, Inc. Personnel

Jose Luis Benavides, PE, TE	Project Manager
Matthew Arndt, EIT	Engineer I/II
Christian Sanchez, EIT	Engineer I/II
Adrian Benavides	Engineer I/II
Arjun Dhillon	Engineering Aide
Diana Cortes	Engineering Aide

Persons Consulted:

Armen Basmajian	Marc O' Polo Enterprises
Harman Dhaliwal, PE	City of Fresno
Sophia Pagoulatos	City of Fresno
Hector Luna	County of Fresno
David Padilla	Caltrans, D6
Keyomi Jones	Caltrans, D6
Mike Aronson	Kittelson & Associates, Inc.

References

California Air Pollution Control Officers Association. 2021. "Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Health and Equity". Sacramento: State of California.

Caltrans. 2020. "Vehicle Miles Traveled-Focused Transportation Impact Study Guide". Sacramento: State of California.

Caltrans. 2021. "California Manual On Uniform Traffic Control Devices". Sacramento: State of California.

City of Fresno. 2014. "Fresno General Plan". Fresno: City of Fresno.

City of Fresno. 2016. "Active Transportation Plan". Fresno: City of Fresno.

City of Fresno. 2020. "CEQA Guidelines For Vehicle Miles Traveled Thresholds". Fresno: City of Fresno,

County of Fresno. 2000. "Fresno County General Plan". Fresno: Fresno County.

Governor's Office of Planning and Research. 2018. Technical Advisory On Evaluating Transportation Impacts In CEQA. Ebook. Sacramento: State of California.

Institute of Transportation Engineers. 2021. "Trip Generation Manual: 11th Edition". Washington: Institute of Transportation Engineers. Vol. 1-3.

Appendix A: Fresno COG Activity Based Model VMT Output

KITTELSON & ASSOCIATES
155 Grand Avenue, Suite 505
Oakland, CA 94612
P 510.839.1742

TECHNICAL MEMORANDUM

June 25, 2024 Project# 30398

To: Mr. Jose Luis Benavides, P.E., President
JLB Traffic Engineering, Inc.
516 W. Shaw Ave., Suite 103
Fresno, CA 93704

From: Mike Aronson, P.E.

CC:

RE: Fresno Herndon Hayes VMT

Introduction

Kittelson & Associates, Inc. (Kittelson) has applied the Fresno activity-based travel model to evaluate vehicle-miles of travel (VMT) associated with the proposed mixed-use project located southeast of the intersection of Hayes Avenue and Herndon Avenue in the City of Fresno. The project proposes to develop up to 22,666 square feet of commercial and up to 516 multi-family housing units. A new TAZ (2856) was created for 182 retail and 53 food service employees. A new TAX (2857) was created for 516 multi-family housing units.

The original TAZ containing the project, TAZ 523, did not have any land use in the Fresno model in the 2019 base year database. Therefore, the external (IX and XI) VMT per capita and per employee were estimated by averaging the external VMT rates for the surrounding TAZs (487, 524, 525).

Project VMT

The VMT associated with the proposed project is listed in Table 1.

Table 1: Fresno Herndon Hayes Project VMT per Capita

	VMT Per Capita
Project VMT Internal to Fresno County from Model	14.79
Project VMT External to Fresno County	3.65
Total Project VMT	18.44
Adjustment Multiplier for New/Old Model	1.05
Project VMT	**19.36**

Regional VMT

The total Fresno County regional VMT without and with the retail component of the proposed project is summarized in Table 2. The retail component of the project would increase regional VMT by approximately 0.025 percent.

Table 2: Regional VMT Results

Scenario	Fresno County Total VMT
2019 without Project Retail	21,850,375
2019 with Project Retail	21,855,832
Net Difference	+5,457

Average Trip Length

The average trip length is calculated as the total daily VMT to and from the project divided by the total daily vehicle trips (Table 3).

Table 3: Average Trip Length

Scenario	Residential TAZ 2857	Commercial TAZ 2856
Daily Vehicle Trips	3,478	3,300
Daily VMT	27,269	14,125
Average Trip Length	7.8	4.3

Appendix B: VMT Mitigations

Bella Vista VMT Analysis

TAZ:	**2857**
Land Use:	Residential
Fresno COG VMT Output:	19.36
City of Fresno VMT Threshold:	*14.01*
% deviation from target threshold:	27.63%

Project/Site Scale

Land Use

Measure	VMT Mitigation	Calculated Mitigation	Mitigation Cap	Resulting Reduction
T-1	Increase Residential Density	48.8%	30.0%	30.0%
T-2	Increase Job Density	0.0%	30.0%	0.0%
T-3	Provide Transit-Oriented Development	0.0%	31.0%	0.0%
T-4	Integrate Affordable Housing	0.0%	28.6%	0.0%
	Combined Land Use	48.8%	65.0%	30.0%

Trip Reduction Programs

Measure	VMT Mitigation	Calculated Mitigation	Mitigation Cap	Resulting Reduction
T-5	Implement CTR Program (Voluntary)	0.0%	4.0%	0.0%
T-6	Implement CTR Program (Mandatory)	0.0%	26.0%	0.0%
T-7	Implement CTR Marketing	0.0%	4.0%	0.0%
T-8	Provide Ridesharing Program	0.0%	8.0%	0.0%
T-9	Implement Subsidized Transit Program	0.0%	5.5%	0.0%
T-10	Provide End-of-Trip Bicycle Facilities	0.0%	4.4%	0.0%
T-11	Provide Employer-Sponsored Vanpool	0.0%	20.4%	0.0%
T-12	Price Workplace Parking	0.0%	20.0%	0.0%
T-13	Implement Employee Parking Cash-Out	0.0%	12.0%	0.0%
	Combined Trip Reduction Programs	0.0%	45.0%	0.0%

Parking or Road Pricing/Management

Measure	VMT Mitigation	Calculated Mitigation	Mitigation Cap	Resulting Reduction
T-14	Provide Electric Vehicle Charging Infrastructure	12.2%	11.9%	11.9%
T-15	Limit Residential Parking Supply	0.0%	13.7%	0.0%
T-16	Unbundle Parking Costs from Property Costs	0.0%	15.7%	0.0%
	Combined Parking or Road Pricing/Management	12.2%	35.0%	11.9%
	Combined Project/Site Scale Mitigations	***55.1%***	***70.0%***	***38.3%***

VMT Mitigation Calculations

TAZ:	**2857**
Land Use:	Residential
Fresno COG VMT Output:	19.36
Mitigation VMT Reduction:	-7.42
Project VMT after Mitigations:	11.94
City of Fresno VMT Threshold:	14.01
Target VMT Satisfied?	**TRUE**

CITY OF FRESNO
PUBLIC WORKS DEPARTMENT
TRAFFIC STUDY CHECKLIST

APPLICANT: Armen Basmajian

ASSIGNED PLANNER: Rob Holt

ACCELA/FAASTER REFERENCE NUMBER: P23-03993, P23-03990, P23-03982

Traffic Study Submittal:

- [x] Was prepared based on a scope of work approved by the City Traffic Engineer
- [x] Used the most recent version of Synchro for intersection analysis
- [x] Used the most recent version of the ITE Trip Generation
- [x] Was prepared and reviewed under the supervision and direction of a qualified engineer or authorized owner/principal of firm
- [x] Was prepared using count data collected within one year of the submittal date
- [x] Includes an electronic copy, assembled as a complete document
- [ ] Includes One (1) hard copy
  * Will be delivered to City of Fresno Planner
- [x] Conforms to the most recent version of the City's Traffic Study Guidelines
- [x] Includes operational analysis files (Synchro)

Traffic Study includes:

- [x] Entitlement/Accela (FAASTER) No./ Tract or Parcel Map No.
- [x] Assigned Planner's name
- [x] Stamp and/or signature of qualified engineer or authorized owner/principal of firm stating the study was prepared and reviewed under their supervision and direction
- [x] Project description
- [x] Methodology description
- [x] Project Trip Generation
- [ ] Trip Generation Comparison (if a General Plan Amendment)
  N/A
- [x] Delay analysis
- [x] Queuing analysis for all movements at all study intersections
- [x] Discussion of existing and planned bicycle, pedestrian and transit facilities
- [x] Collision analysis
- [x] On-site circulation analysis
- [x] Mitigations and Recommendations

CITY OF FRESNO
PUBLIC WORKS DEPARTMENT
TRAFFIC STUDY CHECKLIST

APPLICANT: Armen Basmajian

ASSIGNED PLANNER: Rob Holt

ACCELA/FAASTER REFERENCE NUMBER: P23-03993, P23-03990, P23-03982

Included Figures:

- [x] Vicinity Map
- [x] Site Plan
- [x] Trip distribution at intersections/along roadways
- [x] Trip distribution at proposed access points
- [x] Volumes for all scenarios analyzed
- [x] Lane configurations for all scenarios analyzed
- [x] Locations of approved projects

Included Appendices:

- [x] Approved Scope of Work
- [x] Model request
- [x] Model data
- [x] Count data
- [x] Level of Service analysis worksheets
- [x] Collision data
- [x] Warrants

CERTIFICATION OF APPLICANT: Read each of the statements below. After you have read the statements and understand them, please sign and date in the space provided at the end of this section:

1) I certify that I have read the Traffic Study Checklist thoroughly, followed any and all instruction, and have supplied the necessary information to allow staff to review my study or application and that the supplied information is true and correct information herein to the best of my knowledge and belief.

2) I understand that falsification or misrepresentation on my part of any of the information that I have supplied above constitutes sufficient grounds for return of my submittal, or should any of my responses be determined false, misleading and/or incomplete will subject my application/plans to review delays and may result in the requirement for the applicant to pay additional review fees.

Applicant's signature: [signature] Date: 3.4.25

Revised Traffic Impact Analysis Report

Bella Vita

Located on the Southeast Corner of
Herndon Avenue and Hayes Avenue

In the City of Fresno, California

Prepared for:

Marc O' Polo Enterprises
6729 North Willow Avenue, Suite 105
Fresno, CA 93710

March 4, 2025

Project No. 004-221

JLB TRAFFIC ENGINEERING, INC.

Traffic Engineering, Transportation Planning, & Parking Solutions
516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
Phone: (559) 570-8991
www.JLBtraffic.com

Traffic Engineering, Transportation Planning, & Parking Solutions

Revised Traffic Impact Analysis Report

For Bella Vita located on the Southeast Corner of Herndon Avenue and Hayes Avenue

In the City of Fresno, CA

March 4, 2025

This Revised Traffic Impact Analysis Report 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

Traffic Engineering, Transportation Planning, & Parking Solutions
516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
Phone: (559) 570-8991
www.JLBtraffic.com

Table of Contents

Introduction and Summary 1
Introduction 1
Summary 1
Existing Traffic Conditions 1
Existing plus Project Traffic Conditions 2
Near Term plus Project Traffic Conditions 2
Cumulative Year 2046 plus Project Traffic Conditions 2
Queuing Analysis 2
Scope of Work 3
Study Facilities 3
Study Intersections 3
Project Only Trip Assignment to State Facilities 3
Study Scenarios 4
Existing Traffic Conditions 4
Existing plus Project Traffic Conditions 4
Near Term plus Project Traffic Conditions 4
Cumulative Year 2046 plus Project Traffic Conditions 4
LOS Methodology 5
LOS Thresholds 5
Operational Analysis Assumptions and Defaults 6
Existing Traffic Conditions 7
Roadway Network 7
Collision Analysis 8
Traffic Signal Warrants 8
Results of Existing Level of Service Analysis 9
Existing plus Project Traffic Conditions 12
Project Description 12
Project Trip Generation 12
Trip Distribution 12
Project Access 13
Active Transportation Plan 13
Bikeways 13

Transit 14
Safe Routes to School 14
Roadway Network 15
Traffic Signal Warrants 15
Results of Existing plus Project Level of Service Analysis 16
Near Term plus Project Traffic Conditions 20
Description of Near Term Projects 20
Roadway Network 21
Traffic Signal Warrants 21
Results of Near Term plus Project Level of Service Analysis 21
Cumulative Year 2046 plus Project Traffic Conditions 24
Roadway Network 24
Traffic Signal Warrants 24
Results of Cumulative Year 2046 plus Project Level of Service Analysis 24
Project Only Trips Assignment to State Facilities 24
Queuing Analysis 27
Conclusions and Recommendations 30
Existing Traffic Conditions 30
Existing plus Project Traffic Conditions 30
Near Term plus Project Traffic Conditions 30
Cumulative Year 2046 plus Project Traffic Conditions 30
Queuing Analysis 30
Study Participants 31
References 32

List of Figures

Figure 1: Vicinity Map **10**
Figure 2: Existing - Traffic Volumes, Geometrics and Controls **11**
Figure 3: Project Site Plan **17**
Figure 4: Project Only Trips **18**
Figure 5: Existing plus Project - Traffic Volumes, Geometrics and Controls **19**
Figure 6: Near Term Projects' Trip Assignment **22**
Figure 7: Near Term plus Project - Traffic Volumes, Geometrics and Controls **23**
Figure 8: Cumulative Year 2046 plus Project - Traffic Volumes, Geometrics and Controls **25**
Figure 9: State Route 99 at Herndon Avenue – Project Only Trips **26**

List of Tables

Table I: Five-Year (2018-2022) Intersection Collision Analysis **8**
Table II: Existing Intersection LOS Results **9**
Table III: Project Trip Generation **12**
Table IV: Existing plus Project Intersection LOS Results **16**
Table V: Near Term Gross Projects' Trip Generation **20**
Table VI: Near Term plus Project Intersection LOS Results **21**
Table VII: Cumulative Year 2046 plus Project Intersection LOS Results **24**
Table VIII: Queuing Analysis **28**

List of Appendices

Appendix A: Scope of Work
Appendix B: Traffic Counts
Appendix C: Traffic Modeling
Appendix D: Methodology
Appendix E: Collision Data
Appendix F: Existing Traffic Conditions
Appendix G: Existing plus Project Traffic Conditions
Appendix H: Near Term plus Project Traffic Conditions
Appendix I: Cumulative Year 2046 plus Project Traffic Conditions
Appendix J: Traffic Signal Warrants

Introduction and Summary

Introduction

This Report describes a Revised Traffic Impact Analysis (TIA) prepared by JLB Traffic Engineering, Inc. (JLB) for Bella Vista (Project) located on the southeast corner of Herndon Avenue at Hayes Avenue in the City of Fresno. The Project proposes to develop up to 17,666 square feet of general retail, 5,000 square feet of fast-food restaurant with drive-through window and 396 multifamily residential units. Based on information provided to JLB, the proposed Project's land uses are consistent with the *Fresno General Plan*. This TIA has been revised in order to address preliminary comments received from the City of Fresno on August 22, 2024. Based on subsequent discussions with City of Fresno staff, this analysis does not include the residential driveway located on the east side of Hayes Avenue approximately 225 feet northwest of Veterans Boulevard. This analysis also includes the intersection of Hayes Avenue at Western Driveway in order to determine if the proposed location of the back-to-back left-turn pockets along Hayes Avenue are feasible. This intersection is a three-quarter access point for the future development on the southwest corner of Herndon Avenue and Hayes Avenue that is projected to be constructed by the Near Term plus Project scenario. Furthermore, the residential component of the Project has been reduced in size as the Project was not able to acquire the eastern portion of the site. Figure 1 shows the location of the proposed Project site relative to the surrounding roadway network.

The purpose of the TIA is to evaluate the potential on-site and off-site traffic impacts, identify short-term and long-term roadway needs, determine potential roadway improvement measures and identify any critical traffic issues that should be addressed in the ongoing planning process. The TIA primarily focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. The Scope of Work was prepared via consultation with City of Fresno, Fresno County 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) policies of the City of Fresno, Fresno County 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. Based on a review of the collision reports, a total of six (6) collisions were reported within the influence zone of the study intersections in the most recent five-year period. Based on the number of correctable collisions, JLB does not recommend changes to the existing traffic controls or intersection geometrics at any of these intersections.
- At present, all study intersections operate at an acceptable LOS during both peak periods.

Existing plus Project Traffic Conditions

- JLB analyzed the location of the existing and proposed roadways and access points relative to those in the vicinity of the Project site. Minor recommendations for the two commercial driveways along the east of Hayes Avenue are provided in the body of this Report. These recommendations have been addressed in the latest Project site plan.
- At buildout, the Project is estimated to generate approximately 5,968 daily trips, 423 AM peak hour trips and 483 PM peak hour trips.
- It is recommended that the Project construct Class I bikeways along its frontages to Hayes Avenue and Veterans Boulevard.
- It is recommended that the Project add a high visibility crosswalk across the north leg of the intersection of Hayes Avenue at Palo Alto Avenue.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peaks.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Projects is 100,395 weekday daily trips, 5,259 weekday AM peak hour trips and 8,970 weekday PM peak hour trips.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peaks.

Cumulative Year 2046 plus Project Traffic Conditions

- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peaks.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Scope of Work

The TIA focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project. On March 7, 2024, a Draft Scope of Work for the preparation of a Traffic Impact Analysis for this Project was provided to the City of Fresno, County of Fresno and Caltrans for their review and comment.

On March 19, 2024, Caltrans stated that they had no concerns with the Draft Scope of Work. On March 28, 2024, the City of Fresno states that the second residential driveway near the intersection of Hayes Avenue at Veterans Boulevard will likely not be allowed. Subsequently, the Project proponent met with the City of Fresno to discuss the second residential driveway and the City agreed that the driveway could remain as long as its access was limited to right-in and-right out. As a result, the Project will limit access to the second driveway to right-in right-out access by implementing a “pork chop” raised median as part of the driveway design. On March 29, 2024, the County of Fresno determined that the Project is not expected to significantly impact neighboring County of Fresno facilities.

The Scope of Work and the comments received from the lead agency and responsible agencies are included in Appendix A.

Study Facilities

The existing intersection peak hour turning movement and segment volume counts were conducted at the study intersections and segments in March and April 2024 while schools the vicinity of the Project site were in session. The intersection turning movement counts included pedestrian and bicycle 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. Hayes Avenue / Herndon Avenue
2. Hayes Avenue / Western Driveway (Future Not a Part of the Project)
3. Hayes Avenue / Southern Commercial Driveway (Future)
4. Hayes Avenue / Northern Residential Exit Only Driveway (Future)
5. Hayes Avenue / Palo Alto Avenue / Main Residential Driveway
6. Hayes Avenue / Veterans Boulevard

Project Only Trip Assignment to State Facilities

1. State Route 99 / Herndon 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 in March and April 2024.

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 Project Only Trips to the Existing Traffic Conditions scenario. The Project Only Trips to the study facilities were developed based on existing travel patterns, the Fresno COG ABM Project Select Zone, the surrounding roadway network, engineering judgment, data provided by the developer, knowledge of the study area, existing residential and commercial densities, existing K-12 schools, and the *Fresno General Plan* Circulation Element in the vicinity of the Project site. The Fresno COG Project Select Zone prepared by Fresno COG 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 2046 plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadways conditions based on the Cumulative Year 2046 plus Project Traffic Conditions. The Cumulative Year 2046 plus Project traffic volumes were obtained by using the Fresno COG activity-based model (ABM) (Base Year 2019 and Cumulative Year 2046) and existing traffic counts. Under this scenario, the increment method, as recommended by the Model Steering Committee was utilized to determine the Cumulative Year 2046 traffic volumes. The Fresno COG ABM results provided by Fresno COG are contained in Appendix C.

LOS Methodology

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) 7th 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.

While LOS is no longer the criteria of significance for traffic impacts in the state of California, the City of Fresno continues to apply congestion-related conditions or requirements for land development projects through planning approval processes outside of CEQA Guidelines in order to continue the implementation of *Fresno General Plan* policies.

LOS Thresholds

The *Fresno General Plan* has established various degrees of acceptable LOS on its major streets, which are dependent on four (4) Traffic Impact Zones (TIZ) within the City (City of Fresno, 2014). 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 the study facilities fall within TIZ III, LOS D is used to evaluate the potential LOS impacts for the study intersections within the City of Fresno pursuant to the *Fresno General Plan*.

The *Fresno County General Plan* 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 (Fresno County, 2000). For those areas that fall within the SOI of a City, the LOS threshold of the City is used in this report. In this case, all study facilities fall within the City of Fresno SOI, therefore, the City of Fresno LOS thresholds are utilized.

Caltrans no longer considers delay as a significant impact to the environment, for land use projects and plans. According to the Caltrans document VMT Focused Transportation Impact Study Guidelines dated May 2020, Caltrans review of land use projects and plans is focused on a VMT metric consistent with CEQA. In this TIA, however, all study intersections 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 on Uniform Traffic Control Devices* (CA MUTCD) based on approach speeds (Caltrans, 2024).
- 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.
- At all study intersections, the heavy vehicle factor observed for each intersection, or a minimum of 3 percent, were utilized under all scenarios.
- The number of observed pedestrians at existing intersections was utilized under all study scenarios.
- An average of 10 pedestrian calls per hour at signalized intersections.
- At existing intersections, the observed approach Peak Hour Factor (PHF) is utilized in the Existing, Existing plus Project and Near Term plus Project scenarios.
- At new intersections, a PHF of 0.88 is utilized in the Existing, Existing plus Project and Near Term plus Project scenarios.
- For the Cumulative Year 2046 plus Project scenario, the following PHF was utilized to reflect traffic operations and an increase in future traffic volumes. As roadways start to reach their saturated flow rates, PHF's tend to increase to 0.90 or higher in urban settings. A PHF of 0.92, or the existing PHF if higher, is utilized for all remaining study intersections.
    - For the intersections of Hayes Avenue at Southern Commercial Driveway, Hayes Avenue at Western Driveway, Hayes Avenue at Northern Residential Driveway and Hayes Avenue at Palo Alto Avenue, the following PHF's were utilized due to their proximity to the elementary school and middle school that are located on the northwest quadrant of Palo Alto Avenue at Hayes Avenue:
        - A PHF of 0.86, or the existing if higher, is utilized during the AM peak.
        - A PHF of 0.90, or the existing if higher, is utilized during the PM peak.
    - A PHF of 0.92, or the existing if higher, is utilized for all remaining study 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.

Herndon Avenue is an existing predominantly four-lane divided expressway adjacent to the Project site. In this area, Herndon Avenue extends through the City of Fresno easterly beyond the City of Clovis and westerly to its intersection with SR 99. The *Fresno General Plan* designates Herndon Avenue as a six-lane divided Expressway between Golden State Boulevard and Willow Avenues.

Veterans Boulevard is an existing six-lane northeast-southwest divided super arterial adjacent to the Project site. In this area, Veterans Boulevard extends between Shaw Avenue and Herndon Avenue. The *Fresno General Plan* designates Veterans Boulevard as a super arterial between Grantland Avenue and Herndon Avenue.

Hayes Avenue is an existing two-lane north-south divided collector adjacent to the Project site. In this area, Hayes Avenue extends between Source Avenue and Veterans Boulevard. South of SR 99, Hayes Avenue exists between Shaw Avenue and Belmont Avenue. The *Fresno General Plan* designates Hayes Avenue as a two- to four-lane collector.

Palo Alto Avenue is an existing local roadway designed as a collector in the vicinity to the Project site. In this area, Palo Alto extends between Riverside Drive and Hayes Avenue and serves as the principal access to River Vista Middle School, River Bluff Elementary School and residential properties to the south of Palo Alto Avenue.

State Route (SR) 99 is an existing four-to-six-lane freeway near the vicinity of the proposed Project site. SR 99 traverses the City of Fresno in a northwest-southeast direction and serves as the principal connection to various metropolitan areas within the Central San Joaquin Valley.

Collision Analysis

JLB conducted a search of SWITRS to obtain collision reports for the most recent five-year period (January 1st, 2018 to December 31st, 2022). 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 the California Highway Patrol (CHP) staff and members of its Allied Agencies throughout California can request various types of statistical reports in an electronic format." All collision summary reports between January 1st, 2018 and December 31st, 2022 were included in the collision analysis. In the five-year period, a total of six (6) 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, violation, and identifies involvement with another vehicle, a pedestrian/bicyclist or a fixed object. After a thorough review of the data contained within the collision for the five-year analysis period, no changes are recommended to the study intersections.

Table I: Five-Year (2018-2022) Intersection Collision Analysis

ID	Intersection	Number of Collisions	Type of Collision						Severity					Type of Violation						Motor Vehicle Involved with...			
			Broadside	Rear End	Head-On	Hit Object	Sideswipe	Other	Fatal	Severe Injury	Other Visible Injury	Complaint of Pain/Injury	Property Damage Only	Traffic Signals & Signs	Right of Way	Unsafe Speed	Improper Turning	Driving Under Influence	Other	Pedestrian/Bicyclist	Other Motor Vehicle	Fixed Object	Fixed Object
1	Hayes Avenue / Herndon Avenue	**4**	1	1	-	2	-	-	-	-	1	1	2	1	-	2	-	1	-	1	1	2	-
5	Hayes Avenue / El Paso Avenue	**1**	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	1	-	-
6	Hayes Avenue / Veterans Boulevard	**1**	-	-	-	1	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	1	-
Totals		**6**	**2**	**1**	**-**	**3**	**-**	**-**	**-**	**-**	**1**	**2**	**3**	**1**	**-**	**3**	**-**	**1**	**1**	**1**	**2**	**3**	**-**

Traffic Signal Warrants

The CA MUTCD indicates that an engineering study of traffic conditions, pedestrian characteristics and physical features of an intersection shall be conducted to determine whether the installation of traffic signal controls are justified. The CA MUTCD provides a total of nine (9) warrants to evaluate the need for traffic signal controls. These warrants include 1) Eight-Hour Vehicular Volume, 2) Four-Hour Vehicular Volume, 3) Peak Hour, 4) Pedestrian Volume, 5) School Crossing, 6) Coordinated Signal System, 7) Crash Experience, 8) Roadway Network and 9) Intersection Near a Grade Crossing. Signalization of an intersection may be appropriate if one or more of the signal warrants is satisfied. However, the CA MUTCD also states that "[t]he satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic control signal" (Caltrans, 2024).

If traffic signal warrants are satisfied when a LOS threshold impact is identified at an unsignalized intersection, then installation of a traffic signal control may serve as an improvement measure. For instances where traffic signal warrants are satisfied, a traffic signal control is not considered to be the default improvement measure. Since the installation of a traffic signal control typically results in increased average delay and requires the construction of additional lanes, an attempt is made to improve the intersection approach lane geometrics in order to improve its LOS while maintaining the existing intersection controls. If the additional lanes did not result in acceptable LOS at the intersection, then in those cases implementation of a traffic signal control would be considered.

Warrants 1, 2 and 3 were prepared for the unsignalized intersections under the Existing Traffic Conditions scenario. These warrants are contained in Appendix J. At present, Warrant 1 is not met for any unsignalized study intersection. Warrant 2 is not met for any unsignalized study intersection. Warrant 3 is not met for any unsignalized study intersection during either peak period. Based on the traffic signal warrants, operational analysis and engineering judgment, the signalization is not recommended for any of the unsignalized intersections.

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, all study intersections operate at an acceptable LOS during both peak periods.

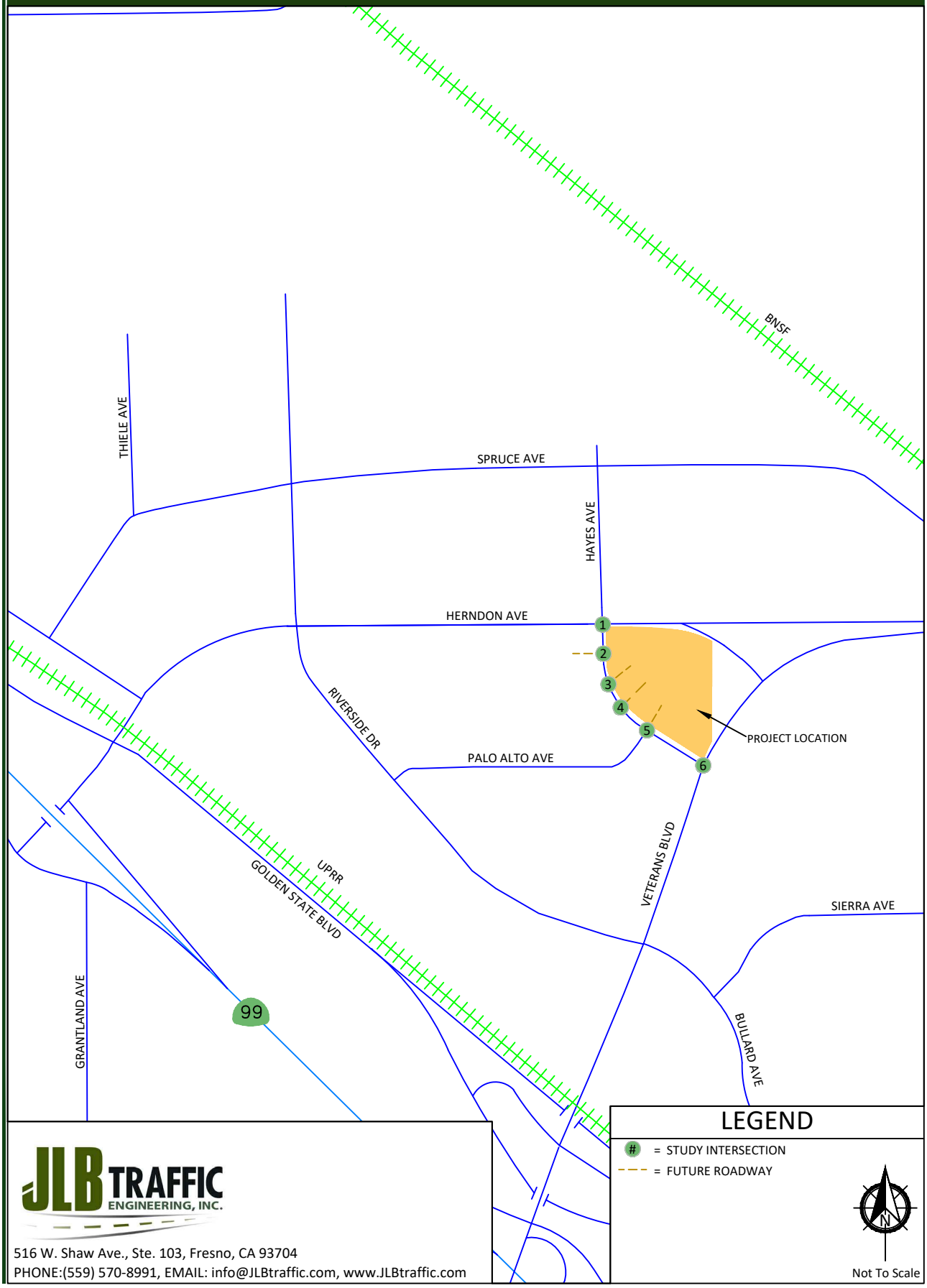
Table II: Existing Intersection LOS Results

ID	*Intersection*	*Intersection Control*	*AM (7 - 9) Peak Hour*		*PM (4 - 6) Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Hayes Avenue / Herndon Avenue	Traffic Signal	14.8	B	13.6	B
2	Hayes Avenue / W. Driveway	Does Not Exist	-	-	-	-
3	Hayes Avenue / S. Commercial Driveway	Does Not Exist	-	-	-	-
4	Hayes Avenue / N. Residential Driveway	Does Not Exist	-	-	-	-
5	Palo Alto Avenue / Hayes Avenue	All-Way Stop	16.3	C	8.2	A
6	Veterans Boulevard / Hayes Avenue	Traffic Signal	10.4	B	8.6	A

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.

Bella Vita - City of Fresno
Vicinity Map

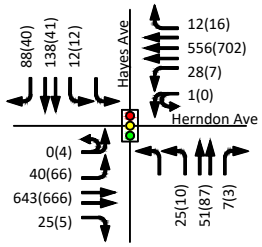
Figure 1



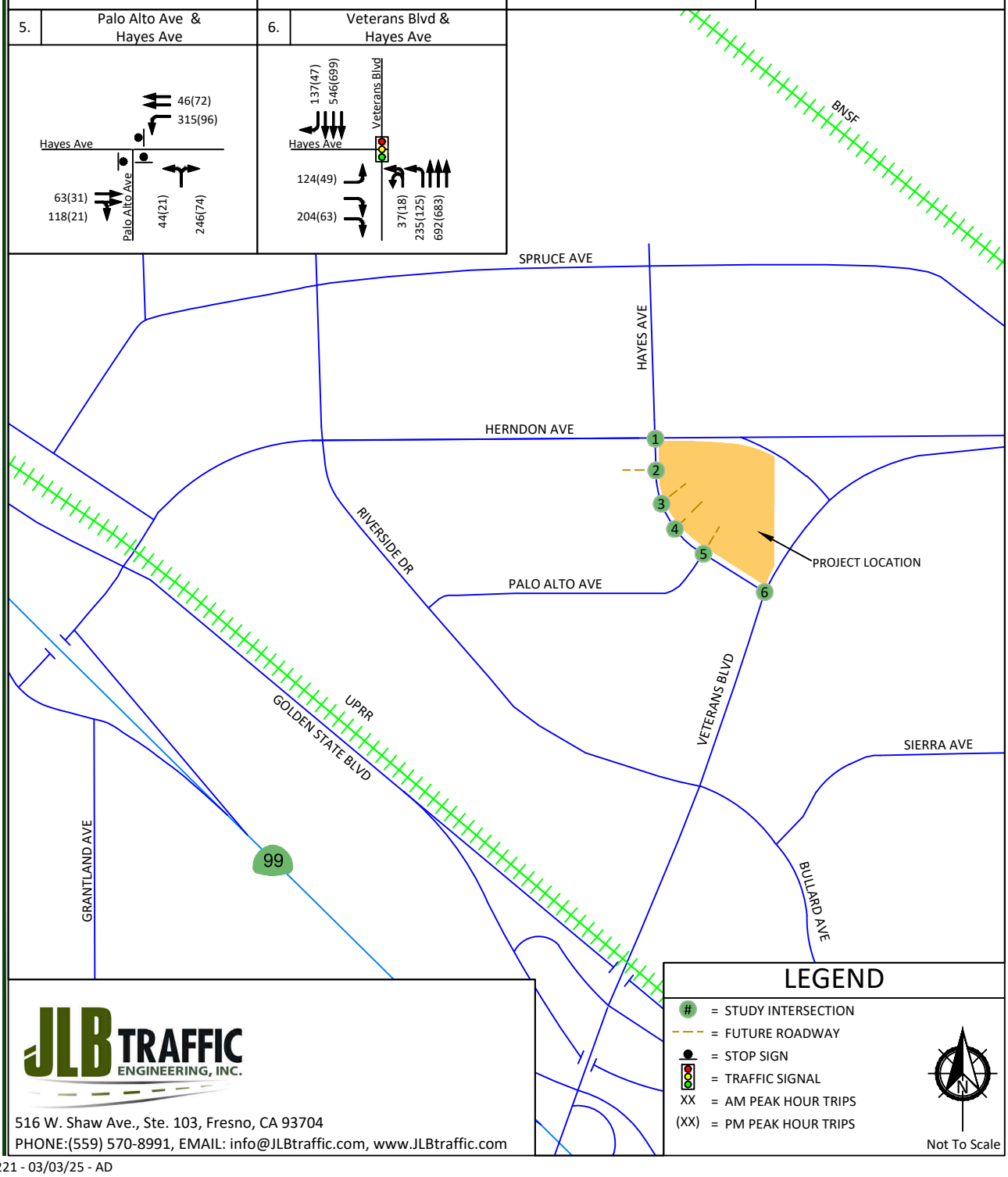
JLB TRAFFIC ENGINEERING, INC.
516 W. Shaw Ave., Ste. 103, Fresno, CA 93704
PHONE:(559) 570-8991, EMAIL: info@JLBtraffic.com, www.JLBtraffic.com

Bella Vita - City of Fresno
Existing - Traffic Volumes, Geometrics and Controls

Figure 2

1. Hayes Ave & Herndon Ave	2. Hayes Ave & Western Drwy	3. Hayes Ave & S. Commercial Drwy	4. Hayes & N. Residential Drwy
	DOES NOT EXIST	DOES NOT EXIST	DOES NOT EXIST

5. Palo Alto Ave & Hayes Ave	6. Veterans Blvd & Hayes Ave



LEGEND

- # = STUDY INTERSECTION
- = FUTURE ROADWAY
- = STOP SIGN
- = TRAFFIC SIGNAL
- XX = AM PEAK HOUR TRIPS
- (XX) = PM PEAK HOUR TRIPS

Not To Scale

JLB TRAFFIC ENGINEERING, INC.
516 W. Shaw Ave., Ste. 103, Fresno, CA 93704
PHONE:(559) 570-8991, EMAIL: info@JLBtraffic.com, www.JLBtraffic.com

Existing plus Project Traffic Conditions

Project Description

The Project proposes to develop up to 17,666 square feet of general commercial, 5,000 square feet of fast-food restaurant with drive-through windows and 516 multifamily residential units. Based on information provided to JLB, the Project is consistent with the *Fresno General Plan*. Figure 3 illustrates the latest Project Site Plan.

Project Trip Generation

The trip generation rates for the proposed Project were obtained from the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table III presents the trip generation rates for the proposed Project with trip generations for Multifamily Housing (220), Strip Retail Plaza (822) and Fast-Food Restaurant with Drive-Through Window (934). At buildout, the Project is estimated to generate approximately 5,968 daily trips, 423 AM peak hour trips and 483 PM peak hour trips.

Table III: 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*
						%						*%*				
Multifamily Housing Low-Rise Not Close to Transit (220)	396	DU	6.74	2,669	0.40	24	76	38	120	158	0.51	63	37	127	75	202
Strip Retail Plaza < 40 KSF (822)	17.666	KSF	54.45	962	2.36	60	40	25	17	42	6.59	50	50	58	58	116
Fast-Food Restaurant with Drive-Through Window (934)	5.000	KSF	467.48	2,337	44.61	51	49	114	109	223	33.03	52	48	86	79	165
Total Driveway Trips				**5,968**				**177**	**246**	**423**				**271**	**212**	**483**

Note: KSF = Thousand Square Feet
DU = Dwelling Units

Trip Distribution

The trip distribution assumptions were developed based on existing travel patterns, the Fresno COG ABM Project Select Zone, the existing roadway network, engineering judgment, data provided by the developer, knowledge of the study area, existing residential and commercial densities, existing k-12 schools that will serve the Project, and the *Fresno General Plan* Circulation Element in the vicinity of the Project site. The Project's trip generation data was provided to Fresno COG to conduct a Project-specific Traffic Analysis Zone (TAZ) analysis using the Fresno COG ABM (Cumulative Year 2046). The Fresno COG Project Select Zone results are contained in Appendix C. A Project Site Plan which includes the Project driveway trips can be found in Figure 3. Figure 4 illustrates the Project Only Trips at the study intersections.

Project Access

Based on the Project Site Plan, access to and from the Project site will be from four (4) proposed access points. The first access point is located along the east side of Hayes Avenue approximately 200 feet south of Herndon Avenue. This access point is proposed to be limited to right-in right-out access. The second access point is located along the east side of Hayes Avenue approximately 500 feet south of Herndon Avenue. This access point is proposed to have full access. The first and second access points are designated for the commercial portion. The third access point is located on the east side of Hayes Avenue approximately 240 feet north of Palo Alto and is proposed to be an exit only access point. The fourth access point is located at the intersection of Hayes Avenue at Palo Alto Avenue. This access point is proposed to have full access. The third and fourth access points are designated for the multifamily residential.

JLB analyzed the location of the existing and proposed roadways and access points relative to those in the vicinity of the Project site. After a review of the original site plan, it was recommended that the second commercial access driveway be shifted south approximately ten (10) feet so that it better aligns with the internal driveway aisle to the east and the commercial driveway widths be increased to 35 feet. These recommendations have been addressed in the most recent site plan.

Active Transportation Plan

The *Fresno Active Transportation Plan* (ATP) is an extensive guide detailing the conception for active transportation in the City of Fresno that was adopted in December 2016. This ATP aims to improve safety, increase non-motorized trips, improve access and fill in gaps in networks for Fresno's pedestrians and bicyclists. In order to achieve these goals for active transportation, this ATP proposes a comprehensive network of citywide bikeways, trails and sidewalks. The recommended network would add 166 miles of Class I Bike Paths, 691 miles of Class II Bike Lanes, 69 miles of Class III Bike Routes, 21 miles of Class IV Separated Bikeways and 661 miles of sidewalks. This ATP also recommends bicycle detection at traffic signals, destination signage, bicycle parking, showers and changing facilities and bikeway maintenance. This network will be constructed in conjunction with adjacent land developments, roadway maintenance and active transportation infrastructure projects using funds from different local, state and federal sources.

Bikeways

The *Fresno ATP* classifies bicycle facilities into the following types:

- Class I Bikeway (Bike Path) – Provides a completely separated right-of-way for exclusive use of bicycles and pedestrians with crossflow minimized.
- Class II Bikeway (Bike Lane) – Provides a striped lane for one-way bike travel on a street or highway.
- Class III Bikeway (Bike Route) – Provides a shared use with pedestrians or motor vehicle traffic, typically on lower volume roadways.
- Class IV Bikeways (Separated Bikeways) – Provides a protected lane for one-way bike travel (one-way cycle track) and protected lanes for two-way bike travel (two-way cycle track) on a street or highway.

Class I (Bike Path) Bikeways exist in the vicinity of the Project site along portions of Veterans Boulevard. Class II (Bike Lane) Bikeways exist in the vicinity of the Project site along portions of Riverside Drive, Spruce Avenue, Hayes Avenue, Veterans Boulevard, Bullard Avenue and Polk Avenue. The *Fresno ATP* recommends that Class I and Class II Bikeways be implemented adjacent to and in the vicinity of the Project site (City of Fresno, 2016). Class I Bikeways are planned adject to the Project site along the east side of Hayes Avenue and along the north side of Veterans Boulevard. Class II Bikeways are planned adjacent to the Project site along Hayes Avenue and Veterans Boulevard. Class I Bikeways are planned in the vicinity of the Project site along portions of Riverside Drive, Herndon Avenue, and Veterans Boulevard. Class II Bikeways are planned in the vicinity of the Project site along portions of Spruce Avenue, Riverside Drive, Hayes Avenue, Veterans Boulevard, Palo Alto Avenue and Bullard Avenue. Therefore, it is recommended that the Project construct Class I bikeways along its frontages to Hayes Avenue and Veterans Boulevard.

Transit

Fresno Area Express (FAX), is the transit operator in the City of Fresno. At present, there are two (2) FAX Routes that operate in the vicinity of the proposed Project site. These routes that operate in the vicinity of the Project site are FAX Routes 3 and 20. FAX Route 3 runs on Herndon Avenue with the nearest stop to the Project is located on Riverside Drive approximately 1,000 feet south of Herndon Avenue. Route 3 operates at 45-minute intervals on weekdays and weekends. This route provides direct connections to Marketplace at El Paseo, the Crossing at Herndon Avenue and Millburn Avenue, shopping center at Herndon Avenue and Marks Avenue, Palm Bluffs at Herndon Avenue and Palm Avenue, shopping center at Herndon Avenue and Blackstone Avenue, shopping center at Herndon Avenue and Cedar Avenue, shopping center at Willow Avenue at Alluvial Avenue and Clovis Community College. FAX Route 20 runs on Riverside Drive with the nearest stop to the Project is located on Riverside Drive approximately 1,000 feet south of Herndon Avenue. Route 20 operates at 45-minute intervals on weekdays and weekends. This route provides direct connection to Marketplace at El Paseo, shopping center at Bullard Avenue and Figarden Drive, Walmart Supercenter at Brawley Avenue and San Jose, shopping center at Shaw Avenue at Marks Avenue, the intersection of Hughes Avenue and Shields Avenue, Fresno High School and Veterans Affairs Medical Circle. 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 Central Unified School District (CUSD). CUSD 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 miles for grades 7th through 12th.

Based on attendance area boundaries at the time of the preparation of this TIA, elementary school students would attend River Bluff Elementary School located at the northeast quadrant of Riverside Drive and Palo Alto Avenue. River Bluff Elementary School is located 0.15 and 0.35 miles from the nearest and farthest future home on the Project. Therefore, it is anticipated that elementary school students will need to walk, bike or be driven to school.

The most direct path from the Project to River Bluff Elementary School can begin from the Project access at the intersection of Hayes Avenue at Palo Alto Avenue. Currently, the intersection of Hayes Avenue at Palo Alto Avenue is controlled by an all-way stop with a crosswalk across the west leg (across Palo Alto Avenue). Students would cross the north leg (Hayes Avenue) to reach the northwest corner of the intersection of Hayes Avenue at Palo Alto Avenue. Students would proceed west along the north side of Palo Alto Avenue until reaching the nearest campus entrance.

Based on attendance area boundaries at the time of the preparation of this TIA, middle school students would attend Rio Vista Middle School located at the northeast quadrant of Riverside Drive and Palo Alto Avenue. Rio Vista Middle School is located 0.25 and 0.45 miles from the nearest and farthest future home on the Project. Therefore, it is anticipated that middle school students will need to walk, bike or be driven to school.

The most direct path from the Project to Rio Vista Middle School can begin from the Project access at the intersection of Hayes Avenue at Palo Alto Avenue. Currently, the intersection of Hayes Avenue at Palo Alto Avenue is controlled by an all-way stop with a crosswalk across the west leg (across Palo Alto Avenue). Students would cross the north leg (Hayes Avenue) to reach the northwest corner of the intersection of Hayes Avenue at Palo Alto Avenue. Students would proceed west along the north side of Palo Alto Avenue until reaching the nearest campus entrance.

To serve elementary and middle school students, it is recommended that the Project add a high visibility crosswalk across the north leg of Hayes Avenue.

Based on the attendance area boundaries at the time of the preparation of this TIA, high school students would attend Justin Garza High School located on the northeast corner of Grantland Avenue and Ashlan Avenue. Justin Garza High School is located 2.8 and 2.9 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.

Roadway Network

The Existing plus Project Traffic Conditions scenario assumes that the existing roadway geometrics and traffic controls will remain in place with the exception of the Project with its access points. Figure 5 illustrates the assumed intersection geometrics and traffic controls for these intersections under this scenario.

Traffic Signal Warrants

Warrant 3 was prepared for the unsignalized intersections under the Existing plus Project Traffic Conditions scenario. These warrants are contained in Appendix J. Under this scenario, there are no study intersections that are projected to satisfy the peak hour signal warrant during either peak period. Based on the traffic signal warrants, operational analysis and engineering judgment, signalization is not recommended for any of the unsignalized intersections.

Results of Existing plus Project Level of Service Analysis

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 IV presents a summary of the Existing plus Project peak hour LOS at the study intersections.

Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

Table IV: Existing plus Project Intersection LOS Results

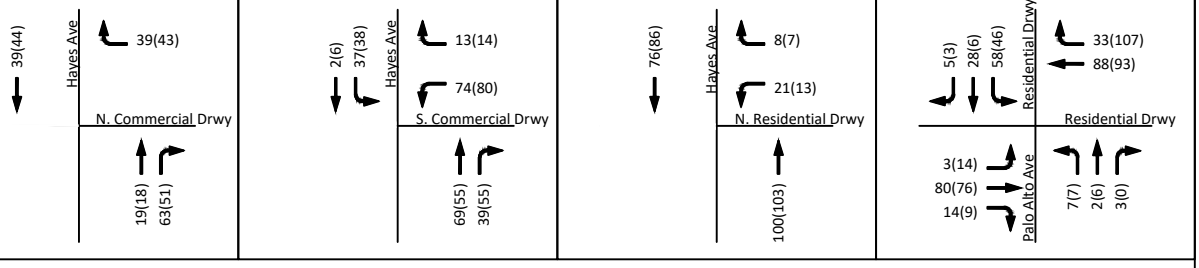
ID	*Intersection*	*Intersection Control*	*AM (7 - 9) Peak Hour*		*PM (4 - 6) Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Hayes Avenue / Herndon Avenue	Traffic Signal	15.8	B	15.0	B
2	Hayes Avenue / W. Driveway	Does Not Exist	-	-	-	-
3	Hayes Avenue / S. Commercial Driveway	One-Way Stop	12.2	B	11.6	B
4	Hayes Avenue / N. Residential Driveway	One Way Stop	10.3	B	10.0	B
5	Palo Alto Avenue / Hayes Avenue	All-Way Stop	20.6	C	9.4	A
6	Veterans Boulevard / Hayes Avenue	Traffic Signal	11.7	B	10.2	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.

Bella Vita - City of Fresno
Project Site Plan

Figure 3

A	Hayes Ave & N. Commercial Drwy	B	Hayes Ave & S. Commercial Drwy	C	Hayes Ave & N. Residential Drwy	D	Palo Alto Ave Hayes Ave



LEGEND

- # = STUDY INTERSECTION
- XX = AM PROJECT ONLY TRIPS
- (XX) = PM PROJECT ONLY TRIPS

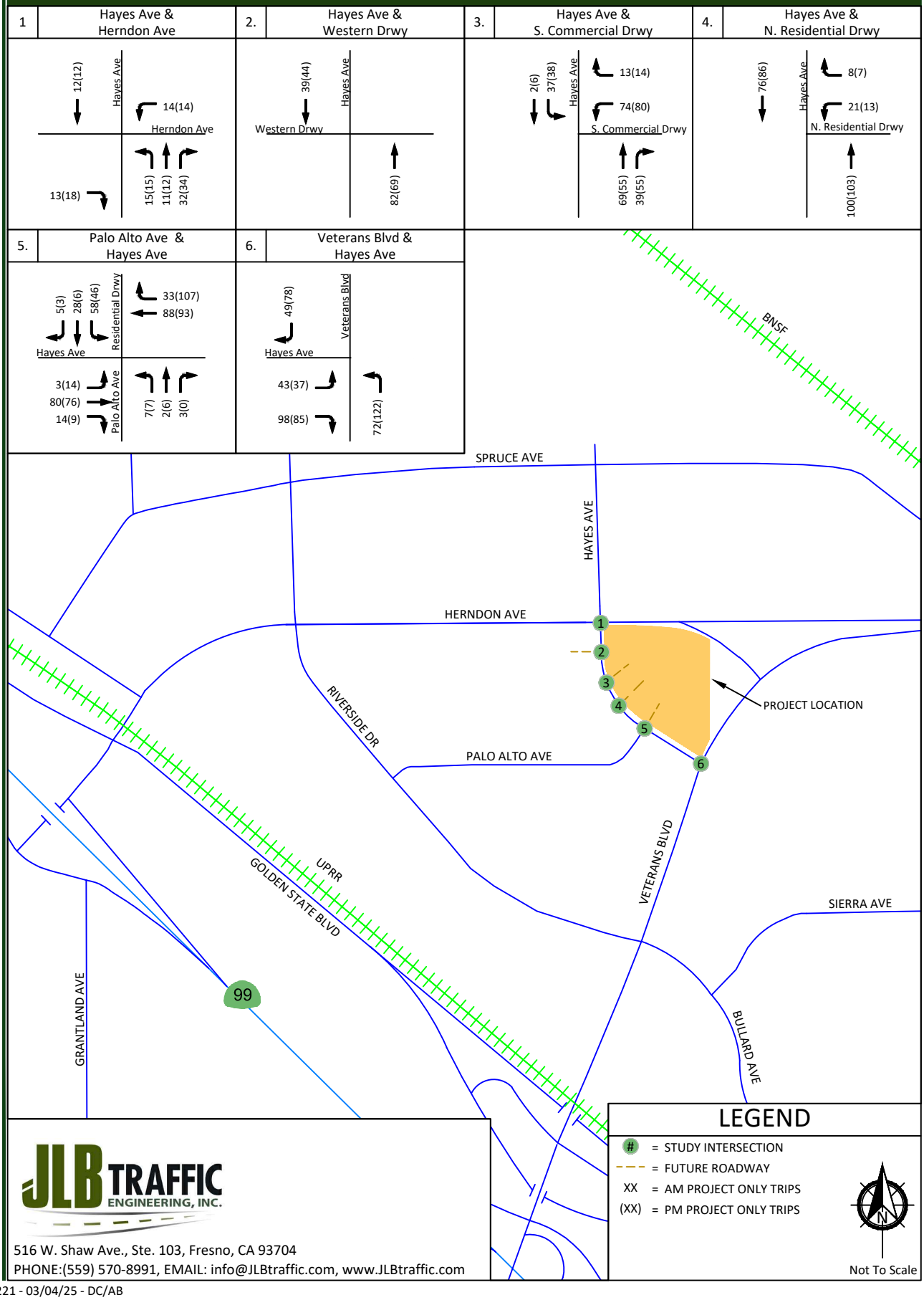
Not To Scale

JLB TRAFFIC ENGINEERING, INC.

516 W. Shaw Ave., Ste. 103, Fresno, CA 93704
PHONE:(559) 570-8991, EMAIL: info@JLBtraffic.com, www.JLBtraffic.com

Bella Vita - City of Fresno
Project Only Trips

Figure 4

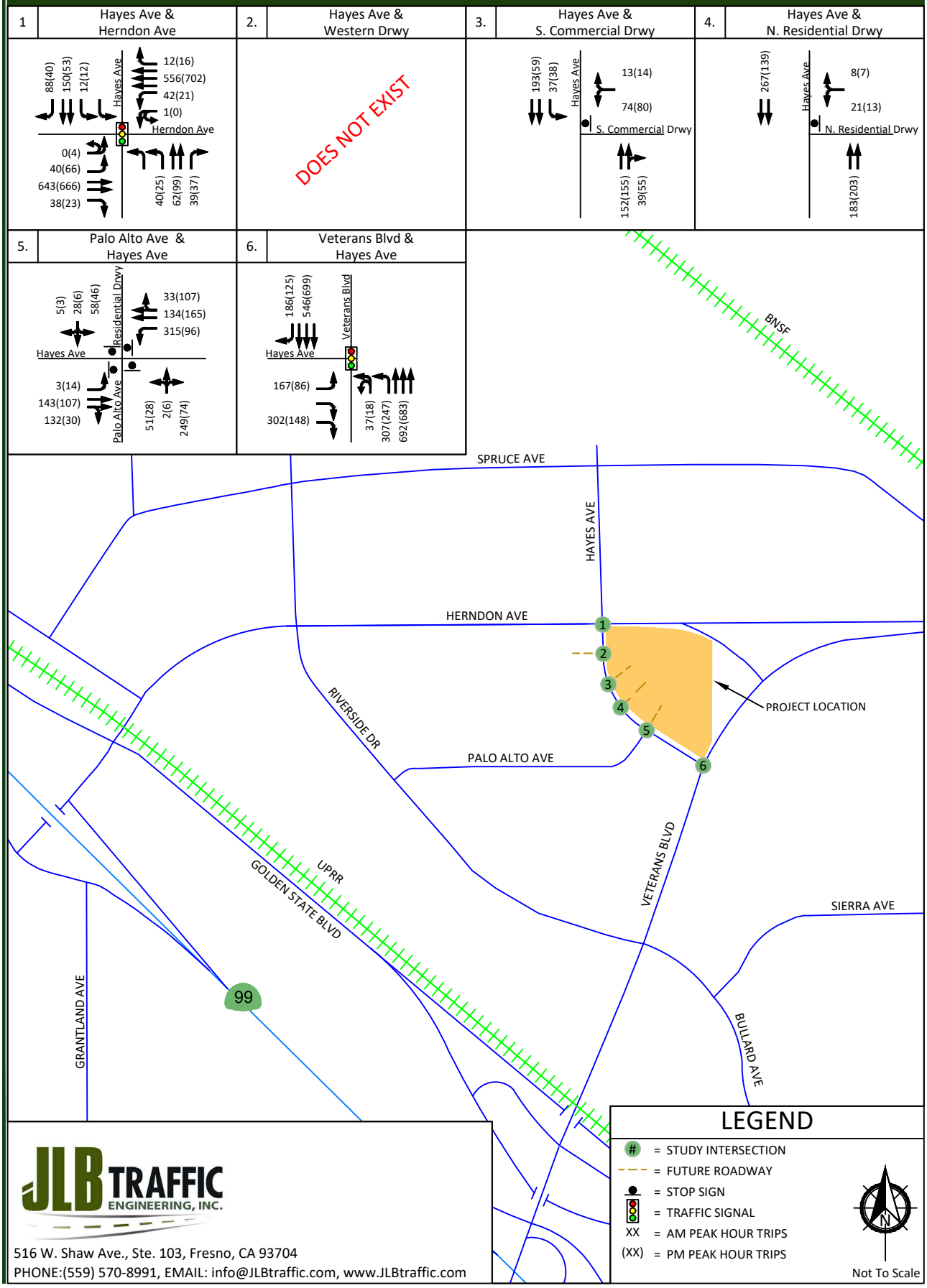


JLB TRAFFIC ENGINEERING, INC.

516 W. Shaw Ave., Ste. 103, Fresno, CA 93704
PHONE:(559) 570-8991, EMAIL: info@JLBtraffic.com, www.JLBtraffic.com

Bella Vita - City of Fresno
Existing plus Project - Traffic Volumes, Geometrics and Controls

Figure 5



JLB TRAFFIC ENGINEERING, INC.
516 W. Shaw Ave., Ste. 103, Fresno, CA 93704
PHONE:(559) 570-8991, EMAIL: info@JLBtraffic.com, www.JLBtraffic.com

Near Term plus Project Traffic Conditions

Description of Near Term Projects

Near Term 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 Near Term 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 Near Term Projects listed in Table V were within the proximity of the Project site.

Table V: Near Term Gross Projects' Trip Generation

Near Term Project ID	*Near Term Project Name*	*Daily Trips*	*AM Peak Hour*	*PM Peak Hour*
A	TT 5756[1]	962	71	96
B	TT 6162[1]	179	13	18
C	TT 6195[2]	839	62	84
D	TT 6199[2]	1,103	82	110
E	TT 6234[2]	4,574	340	456
F	TT 6308[2]	1,273	95	127
G	El Paseo Commercial Development (portion of)[3]	57,708	2,257	4,987
H	Fresno Costco[3]	10,616	284	934
I	Jack in the Box[3]	1,210	115	85
J	Justin Garza Highschool (portion of)[1]	795	204	62
K	Mixed Use Development at Herndon and Hayes[2]	5,036	454	397
L	Parc West[2]	6,608	518	693
M	Professional Offices at Herndon and Blythe (portion of)[2]	1,178	79	117
N	Residential Development at Dakota and Grantland[2]	1,699	133	178
O	Riverside Apartments[2]	2,101	161	196
P	Shaw and 99 Mixed-Use Development (portion of)[2]	3,331	301	321
Q	Westbridge Apartments[2]	1,183	90	109
Total Near Term Gross Project Trips		**100,395**	**5,259**	**8,970**

Note: 1 = Trip Generation prepared by JLB Traffic Engineering, Inc. based on readily available information
2 = Trip Generation based on JLB Traffic Engineering, Inc. Traffic Impact Analysis Report
3 = Trip Generation based on a Traffic Impact Analysis Report by another Traffic Engineering Firm

The trip generation listed in Table V is that which is anticipated to be added to the streets and highways by Near Term Projects between the time of the preparation of this Report and five (5) years after buildout of the proposed Project. As shown in Table V, the total trip generation for the Near Term Projects is 100,395 weekday daily trips, 5,259 weekday AM peak hour trips and 8,970 weekday PM peak hour trips. It should be noted that a large percentage of the non-residential trips are often pass-by or diverted trips and thus the net new trips from the near term projects would likely be substantially lower. Nevertheless, this TIA provides a conservative analysis of the traffic impacts by utilizing the total Near Term Gross Project trips. Figure 6 illustrates the location of the Near Term Projects and their combined trip assignment to the study intersections under the Near Term plus Project Traffic Conditions scenario.

Roadway Network

The Near Term plus Project Traffic Conditions scenario assumes that the Existing plus Project Traffic Conditions roadway geometrics and traffic controls will remain in place with one exception. It is anticipated the intersection of Hayes Avenue at Western Driveway (which is not part of the Project) is constructed by this scenario. This intersection is a three-quarter access point for the future development on the southwest corner of Herndon Avenue and Hayes Avenue that is projected to be constructed by the Near Term plus Project scenario. Figure 7 illustrates the assumed intersection geometrics and traffic controls for these intersections under this scenario.

Traffic Signal Warrants

Warrant 3 was prepared for the unsignalized intersections under the Near Term plus Project Traffic Conditions scenario. These warrants are contained in Appendix J. Under this scenario, the study intersection Palo Alto Avenue at Hayes Avenue is projected to satisfy the peak hour signal warrant during the AM peak period. Based on the operational analysis and engineering judgment, signalization is not recommended for the intersection of Palo Alto Avenue at Hayes Avenue is not recommended.

Results of Near Term plus Project Level of Service Analysis

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 VI presents a summary of the Near Term plus Project peak hour LOS at the study intersections.

Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

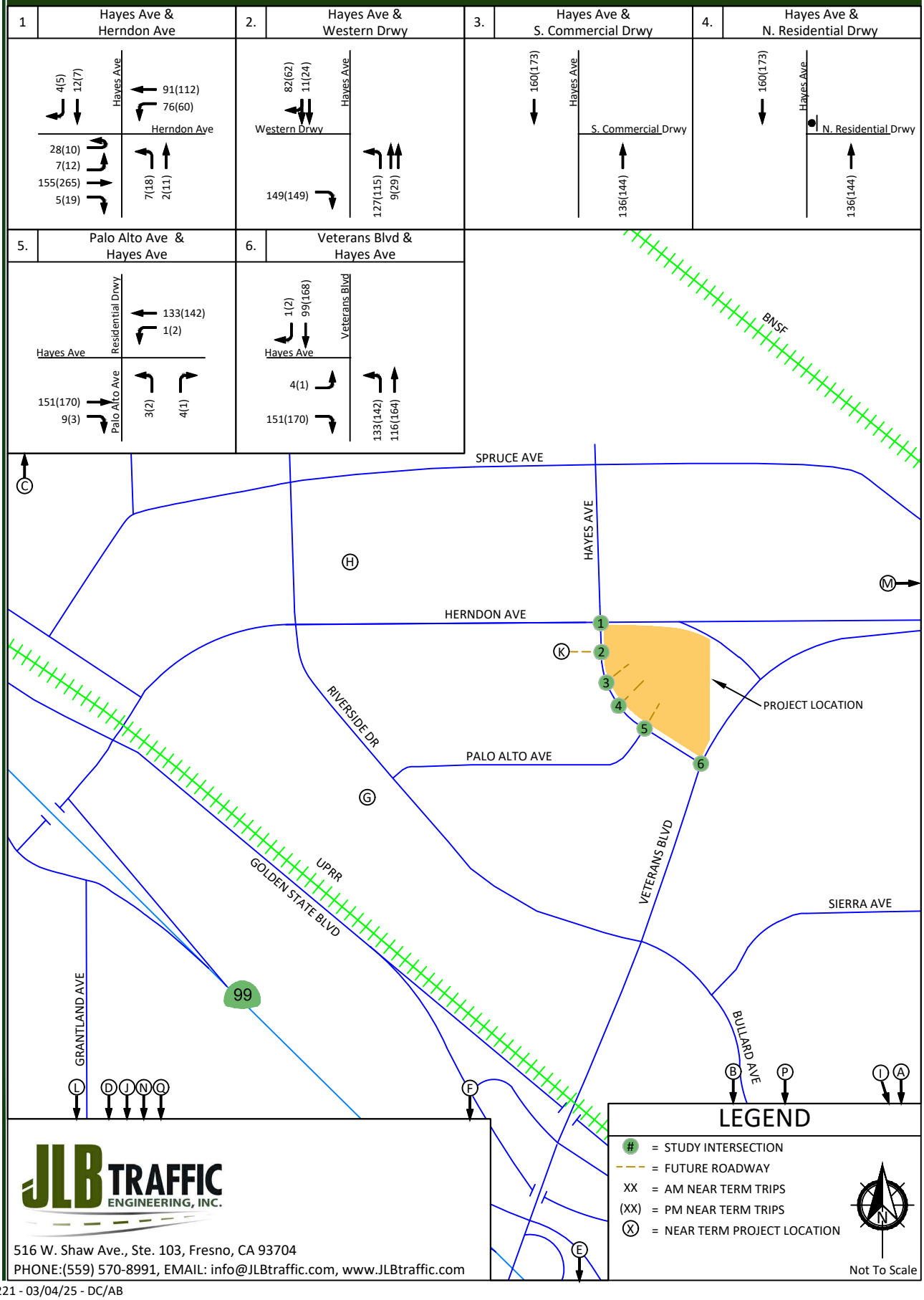
Table VI: Near Term plus Project Intersection LOS Results

ID	*Intersection*	*Intersection Control*	*AM (7 - 9) Peak Hour*		*PM (4 - 6) Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Hayes Avenue / Herndon Avenue	Traffic Signal	17.6	B	17.4	B
2	Hayes Avenue / W. Driveway	One-Way Stop	10.5	B	9.8	A
3	Hayes Avenue / S. Commercial Driveway	One-Way Stop	15.9	C	15.4	C
4	Hayes Avenue / N. Residential Driveway	One Way Stop	11.6	B	11.2	B
5	Palo Alto Avenue / Hayes Avenue	All-Way Stop	26.1	D	11.3	B
6	Veterans Boulevard / Hayes Avenue	Traffic Signal	15.2	B	12.3	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.

Bella Vita - City of Fresno
Near Term Project Trip Assignment

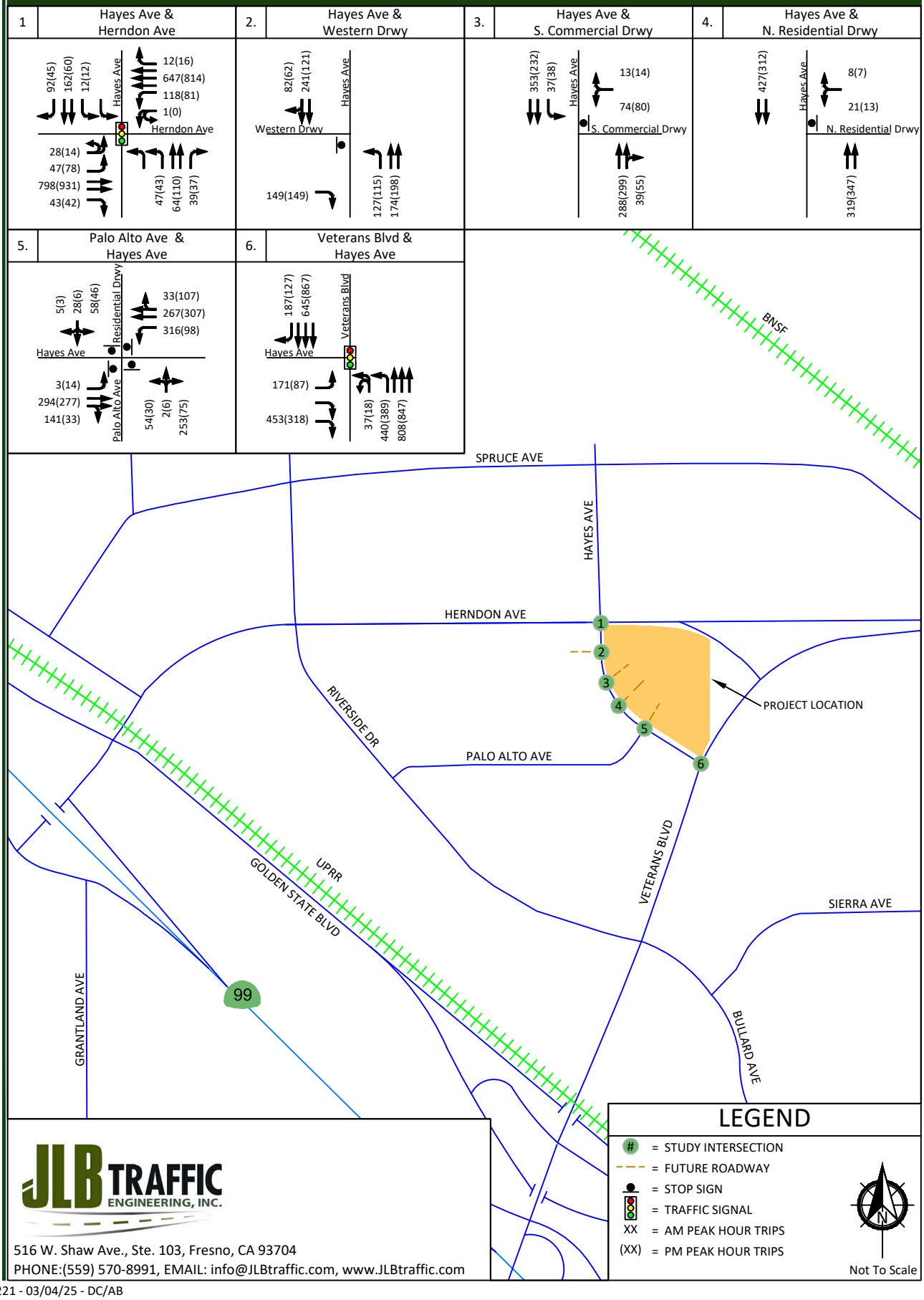
Figure 6



JLB TRAFFIC ENGINEERING, INC.
516 W. Shaw Ave., Ste. 103, Fresno, CA 93704
PHONE:(559) 570-8991, EMAIL: info@JLBtraffic.com, www.JLBtraffic.com

Bella Vita - City of Fresno
Near Term plus Project - Traffic Volumes, Geometrics and Controls

Figure 7



JLB TRAFFIC ENGINEERING, INC.
516 W. Shaw Ave., Ste. 103, Fresno, CA 93704
PHONE:(559) 570-8991, EMAIL: info@JLBtraffic.com, www.JLBtraffic.com

Cumulative Year 2046 plus Project Traffic Conditions

Roadway Network

The Cumulative Year 2046 plus Project Traffic Conditions scenario assumes that the Near Term plus Project roadway geometrics and traffic controls will remain in place. Figure 8 illustrates the assumed intersection geometrics and traffic controls for these intersections under this scenario.

Traffic Signal Warrants

Warrant 3 was prepared for the unsignalized intersections under the Cumulative Year 2046 plus Project Traffic Conditions scenario. These warrants are contained in Appendix J. Under this scenario, the study intersection Palo Alto Avenue at Hayes Avenue is projected to satisfy the peak hour signal warrant during the AM peak period. Based on the operational analysis and engineering judgment, signalization is not recommended for the intersection of Palo Alto Avenue at Hayes Avenue is not recommended.

Results of Cumulative Year 2046 plus Project Level of Service Analysis

Figure 8 illustrates the Cumulative Year 2046 plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2046 plus Project Traffic Conditions scenario are provided in Appendix I. Table VII presents a summary of the Cumulative Year 2046 plus Project peak hour LOS at the study intersections.

Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peak periods.

Table VII: Cumulative Year 2046 plus Project Intersection LOS Results

ID	*Intersection*	*Intersection Control*	*AM (7 - 9) Peak Hour*		*PM (4 - 6) Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Hayes Avenue / Herndon Avenue	Traffic Signal	18.2	B	17.7	B
2	Hayes Avenue / W. Driveway	One-Way Stop	10.5	B	9.7	A
3	Hayes Avenue / S. Commercial Driveway	One-Way Stop	15.9	C	15.1	C
4	Hayes Avenue / N. Residential Driveway	One Way Stop	11.6	B	11.2	B
5	Palo Alto Avenue / Hayes Avenue	All-Way Stop	29.9	D	11.4	B
6	Veterans Boulevard / Hayes Avenue	Traffic Signal	13.2	B	13.8	B

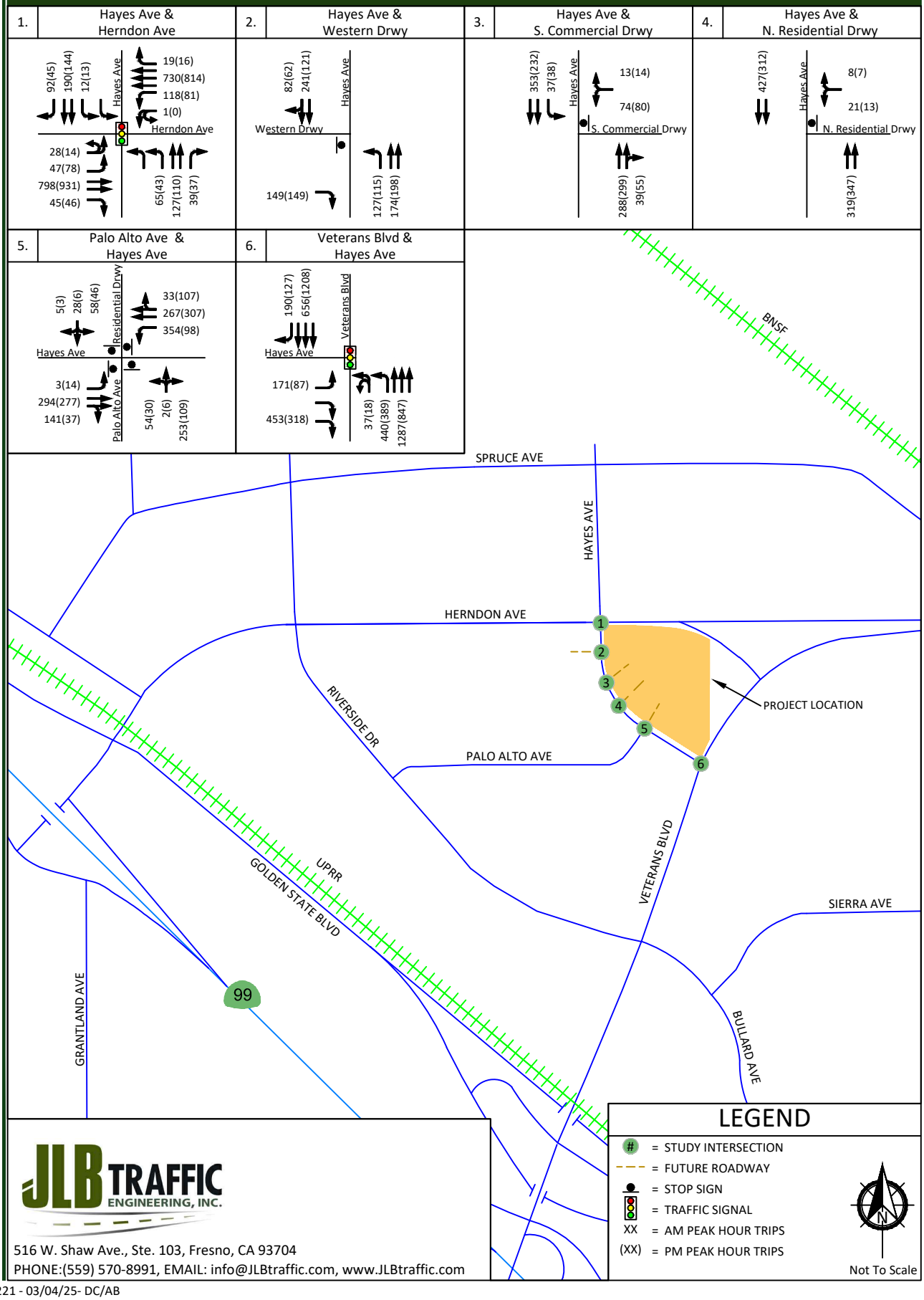
Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls.
LOS for two-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Project Only Trips Assignment to State Facilities

Figure 9 illustrates the Project Only Trips to the State Route 99 at Herndon Avenue interchange.

Bella Vita - City of Fresno
Cumulative Year 2046 plus Project - Traffic Volumes, Geometrics and Controls

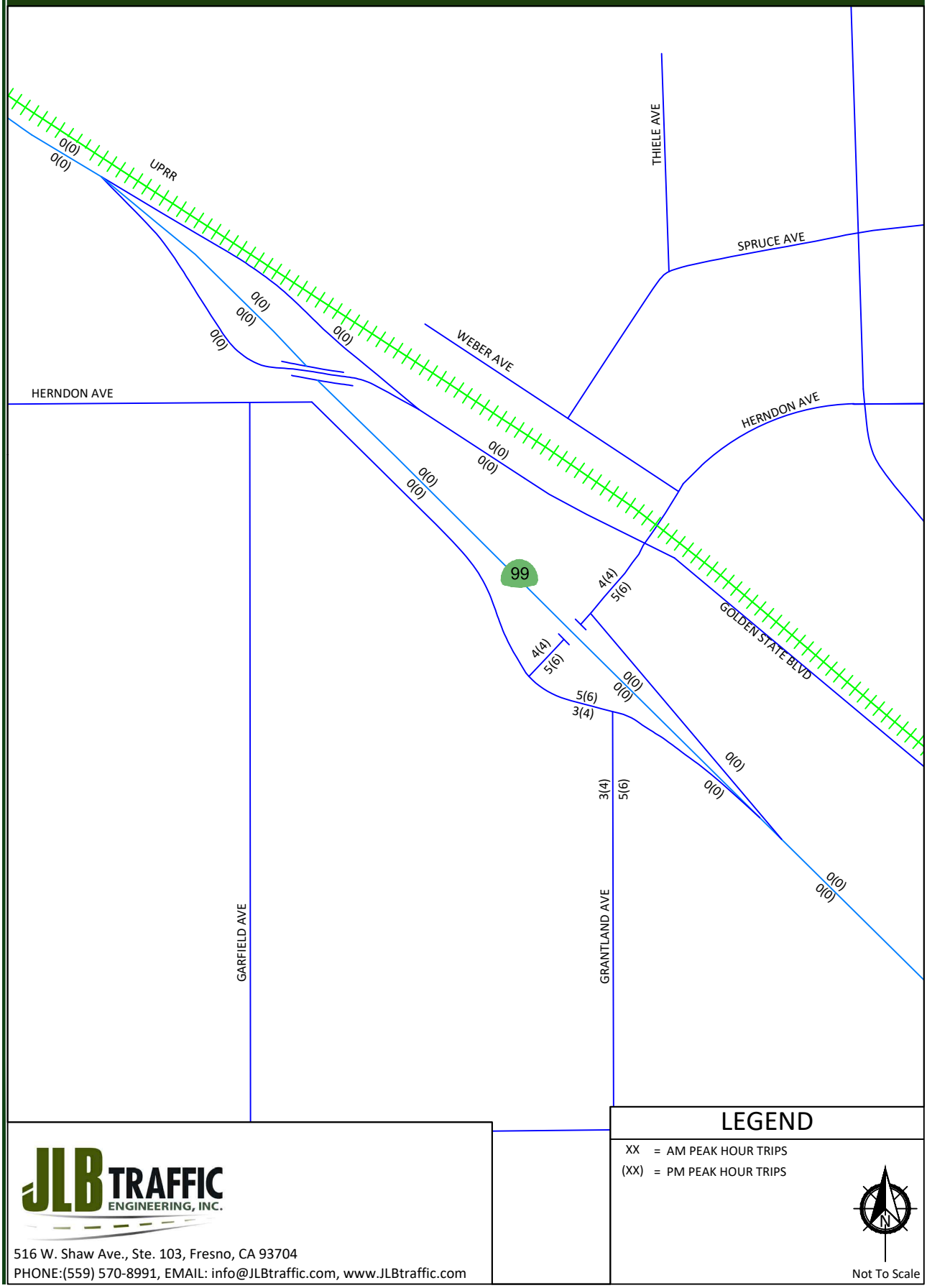
Figure 8



JLB TRAFFIC ENGINEERING, INC.
516 W. Shaw Ave., Ste. 103, Fresno, CA 93704
PHONE:(559) 570-8991, EMAIL: info@JLBtraffic.com, www.JLBtraffic.com

Bella Vita - City of Fresno
State Route 99 at Herndon Avenue- Project Only Trips

Figure 9



LEGEND

XX = AM PEAK HOUR TRIPS

(XX) = PM PEAK HOUR TRIPS

Not To Scale

JLB TRAFFIC ENGINEERING, INC.

516 W. Shaw Ave., Ste. 103, Fresno, CA 93704

PHONE:(559) 570-8991, EMAIL: info@JLBtraffic.com, www.JLBtraffic.com

Queuing Analysis

Table VIII 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 SimTraffic output information. Synchro provides both 50th and 95th percentile maximum queue lengths (in feet). According to the *Synchro Studio 11 User Guide*, "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" (Cubic ITS, Inc., 2019). The queues shown in Table VIII are the 95th percentile queue lengths for the respective lane movements.

The *California Highway Design Manual* (CA HDM) provides guidance for determining deceleration lengths for the left-turn and right-turn lanes based on design speeds. According to the CA HDM, tapers for right-turn lanes are "usually unnecessary since main line traffic need not be shifted laterally to provide space for the right-turn lane. If, in some rare instances, a lateral shift were needed, the approach taper would use the same formula as for a left-turn lane" (Caltrans, 2019). Therefore, a bay taper length pursuant to the CA HDM would need to be added, as necessary, to the recommended storage lengths presented in Table VIII.

The storage capacity for the Cumulative Year 2046 plus Project Traffic Conditions shall be based on the SimTraffic output files and engineering judgment. The values in bold presented in Table VIII are the projected queue lengths that will likely need to be accommodated by the Cumulative Year 2046 plus Project Traffic Conditions scenario. At the remaining approaches of the study intersections, the existing storage capacity will be sufficient to accommodate the maximum queue.

After a review of the SimTraffic simulation, it is anticipated that the northbound left-turn pocket at the intersection of Hayes Avenue at Western Driveway will receive a maximum of four cars. The southbound left-turn pocket at the intersection of Hayes Avenue at Southern Commercial Driveway will receive a maximum of three cars. Both of the storage pockets and tapers have enough space to fit approximately three cars. Based on this analysis, it was determined that the inbound left-turn storage for these driveways may exceed their available space on some occasions. Given the relatively low volumes of northbound/southbound traffic along Hayes Avenue, which has four lanes, these queues are anticipated to clear quickly. Therefore, it is recommended that the development of the southwest corner of Herndon Avenue and Hayes Avenue modify the concrete median to create the access to accommodate the northbound left-turn entrance.

Table VIII: Queuing Analysis

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2046 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM
1	Hayes Avenue / Herndon Avenue	Eastbound Dual Lefts	250	37	44	32	62	67	138	64	87
		Eastbound Through	>500	152	142	159	153	206	256	213	204
		Eastbound Through	>500	144	127	147	148	219	283	245	214
		Eastbound Right	>300	15	6	17	22	16	24	23	20
		Westbound Dual Lefts	250	29	10	34	29	86	60	74	57
		Westbound Through	>500	108	124	101	127	121	132	130	120
		Westbound Through	>500	110	120	112	125	110	139	132	133
		Westbound Through	>500	83	79	62	95	106	146	122	142
		Westbound Right	150	6	12	8	10	12	14	21	15
		Northbound Dual Lefts	140	23	34	44	48	33	39	54	40
		Northbound Through	>500	57	102	74	86	71	95	125	104
		Northbound Through	>500	17	25	16	16	15	16	28	17
		Northbound Right	>180	22	12	32	54	38	40	47	39
		Southbound Dual Lefts	100	30	35	26	17	15	29	34	22
		Southbound Through	>500	53	22	56	39	78	23	71	67
		Southbound Through	>500	78	40	77	30	96	58	100	90
		Southbound Right	80	54	31	58	29	47	40	41	35
2	Hayes Avenue / Western Driveway	Eastbound Right	*	*	*	*	*	65	50	65	57
		Northbound Left	*	*	*	*	*	55	37	**64**	38
		Northbound Through	*	*	*	*	*	0	0	0	0
		Northbound Through	*	*	*	*	*	0	0	0	0
		Southbound Through	*	*	*	*	*	0	0	0	0
		Southbound Through-Right	*	*	*	*	*	7	0	7	15
3	Hayes Avenue / Southern Commercial Driveway	Westbound Left-Right	*	*	*	68	66	53	68	85	84
		Northbound Through	*	*	*	0	0	0	0	0	0
		Northbound Through-Right	*	*	*	0	0	0	0	0	0
		Southbound Left	*	*	*	17	29	32	27	30	**34**
		Southbound Through	*	*	*	0	0	0	0	0	0
		Southbound Through	*	*	*	0	0	0	0	0	0
4	Hayes Avenue / Northern Residential Driveway	Westbound Left-Right	*	*	*	42	39	43	41	45	38
		Northbound Through	*	*	*	0	0	0	0	0	0
		Northbound Through	*	*	*	0	0	0	0	0	0
		Southbound Through	*	*	*	0	0	0	0	0	0
		Southbound Through	*	*	*	0	0	0	0	0	0

Note: * = Does not exist or is not projected to exist

Table VIII: Queuing Analysis (Continued)

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2046 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM
5	Palo Alto Avenue / Hayes Avenue	Eastbound Left	*	*	*	17	31	9	33	**23**	23
		Eastbound Through	>500	45	32	49	44	81	39	96	44
		Eastbound Through-Right	>500	89	48	90	62	149	68	181	67
		Westbound Left	150	92	65	119	64	130	61	**176**	70
		Westbound Through	>500	50	49	59	61	88	94	121	88
		Westbound Through	>500	31	41	*	*	*	*	*	*
		Westbound Through-Right	*	*	*	68	70	65	77	90	83
		Northbound Left-Right	>300	103	56	*	*	*	*	*	*
		Northbound Left-Through-Right	*	*	*	113	56	129	72	159	94
		Southbound Left-Through-Right	*	*	*	60	46	69	47	76	46
6	Veterans Boulevard / Hayes Avenue	Eastbound Left	>300	77	49	136	68	140	69	135	68
		Eastbound Right	>300	55	33	55	61	90	56	67	64
		Eastbound Right	170	51	27	67	40	97	62	78	79
		Northbound Dual Left	260	196	81	179	118	434	460	**360**	245
		Northbound Through	>500	168	125	148	127	1930	430	293	140
		Northbound Through	>500	157	98	116	115	1884	208	218	112
		Northbound Through	>500	82	38	84	61	1527	116	186	115
		Southbound Through	>500	137	155	156	177	152	149	143	206
		Southbound Through	>500	122	136	145	163	138	156	143	222
		Southbound Through	>500	48	99	100	118	141	157	131	215
		Southbound Right	100	61	46	71	78	100	58	87	**115**

Note: * = Does not exist or is not projected to exist

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. Based on a review of the collision reports, a total of six (6) collisions were reported within the influence zone of the study intersections in the most recent five-year period. Based on the number of correctable collisions, JLB does not recommend changes to the existing traffic controls or intersection geometrics at any of these intersections.
- At present, all study intersections operate at an acceptable LOS during both peak periods.

Existing plus Project Traffic Conditions

- JLB analyzed the location of the existing and proposed roadways and access points relative to those in the vicinity of the Project site. After a review of the original site plan, it was recommended that the second commercial access driveway be shifted south approximately ten (10) feet so that it better aligns with the internal driveway aisle to the east and the commercial driveway widths be increased to 35 feet. These recommendations have been addressed in the most recent site plan.
- At buildout, the proposed Project is estimated to generate approximately 5,968 daily trips, 423 AM peak hour trips and 483 PM peak hour trips.
- It is recommended that the Project construct Class I bikeways along its frontages to Hayes Avenue and Veterans Boulevard.
- It is recommended that the Project add a high visibility crosswalk across the north leg of the intersection of Hayes Avenue at Palo Alto Avenue.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peaks.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Projects is 100,395 weekday daily trips, 5,259 weekday AM peak hour trips and 8,970 weekday PM peak hour trips.
- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peaks.

Cumulative Year 2046 plus Project Traffic Conditions

- Under this scenario, all study intersections are projected to operate at an acceptable LOS during both peaks.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Study Participants

JLB Traffic Engineering, Inc. Personnel:

Jose Luis Benavides, PE, TE	Project Manager
Matthew Arndt, EIT	Project Engineer – Traffic Operations
Christian Sanchez, EIT	Project Engineer – Engineering Design
Adrian Benavides	Engineer II
Arjun Dillon	Engineering Aide
Diana Cortes	Engineering Aide

Persons Consulted:

Armen Basmajian	Marc O' Polo Enterprises
Harmanjit Dhaliwal, PE	City of Fresno
Sophia Pagoulatos	City of Fresno
Jill Gormley, PE	City of Fresno
Agela Reis	City of Fresno
Hector Luna	County of Fresno
David Padilla	Caltrans, D6
Keyomi Jones	Caltrans, D6
Mike Aronson, PE	Kittelson and Associates, Inc.

References

Caltrans. 2019. "Highway Design Manual". Sacramento: State of California.

Caltrans. 2024. "California Manual on Uniform Traffic Control Devices". Sacramento: State of California.

Caltrans. 2020. “Vehicle Miles Traveled-Focused Transportation Impact Study Guide”. Sacramento: State of California.

City of Fresno. 2009. "Traffic Impact Study Guidelines". Fresno: City of Fresno.

City of Fresno. 2014. "Fresno General Plan". Fresno: City of Fresno.

City of Fresno. 2016. "City of Fresno Active Transportation Plan". Fresno: City of Fresno.

County of Fresno. 2000. "Fresno County General Plan". Fresno: Fresno County.

County of Fresno. 2014. "Guidelines for The Preparation of Traffic Impact Studies Within the County of Fresno". Fresno: County of Fresno.

Cubic ITS, Inc. 2019. “Synchro Studio 11 User Guide”. Sugar Land: Trafficware, LLC.

"Department of Transportation | FAX". 2021. Fresno.Gov. https://www.fresno.gov/transportation/fax/.

Institute of Transportation Engineers. 2017. "Trip Generation Manual". Washington: Institute of Transportation Engineers.

National Academies of Sciences, Engineering, and Medicine. 2022. “Highway Capacity Manual 7th Edition: A Guide for Multimodal Mobility Analysis” Washington: The National Academies Press.

Transportation Research Board. 2016. "Highway Capacity Manual". Washington: The National Academy of Sciences.

Appendix A: Scope of Work

March 7, 2024

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 and Vehicle Miles Traveled Analysis for the Mixed-Use Development on the Southeast Corner of Herndon Avenue and Hayes Avenue in the City of Fresno (JLB Project 004-221)***

Dear Mr. Dhaliwal,

JLB Traffic Engineering, Inc. (JLB) hereby submits this Draft Scope of Work for the preparation of a **Traffic Impact Analysis (TIA) and Vehicle Miles Traveled (VMT) Analysis** for the **Mixed Use Development (Project)** located on the southeast corner of Herndon Avenue and Hayes Avenue in the City of Fresno. The Project proposes to develop 2.2 net acres with up to 22,666 square feet of commercial and 21.22 net acres with up to 516 multi-family residential units. Based on information provided to JLB, the Project is consistent with the City of Fresno General Plan. An aerial of the Project vicinity and Project Site Plan are shown in Exhibits A and B, respectively.

The purpose of the TIA and VMT analysis are to evaluate the potential on-site and off-site traffic impacts, identify roadway and circulation needs, determine potential mitigation measures and identify any critical traffic issues that should be addressed in the on-going planning process. JLB proposes the following Scope of Work to evaluate the on-site and off-site traffic impacts of the proposed Project.

Scope of Work

- JLB will obtain recent or schedule and conduct new traffic counts at the study facility(ies) as necessary. These counts will include pedestrians and vehicles.
- JLB will 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 2046 scenarios.
- 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. Particular attention will be paid to conflicting traffic movements, location of local roadways to major streets, and onsite vehicular ingress and egress routes.

- JLB will prepare California Manual on Uniform Traffic Control Devices (CA MUTCD) Warrant 1 "8-hour" and Warrant 2 "4-hour" for the existing unsignalized study intersections under the Existing Traffic Conditions scenario.
- JLB will conduct a qualitative safe route 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 prepare CA MUTCD Warrant 3 "Peak Hour" for unsignalized study intersections under all study scenarios.
- JLB will qualitatively analyze existing and planned transit routes 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, knowledge of the existing and planned circulation network in the vicinity of the Project, and the Fresno COG Activity Based Model (ABM).
- 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.
- JLB will prepare Project's VMT based on output from the Fresno COG ABM and the City's VMT guidelines.

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, plus Approved and Pending Developments Traffic Conditions with proposed mitigation measures (if any); and
4. Cumulative Year 2046 plus Project Traffic Conditions with proposed mitigation measures (if any).

Weekday peak hours to be analyzed (Tuesday, Wednesday, or Thursday only)

1. 7 - 9 AM Peak Hour
2. 4 - 6 PM Peak Hour

Study Intersections

1. Herndon Avenue / Hayes Avenue
2. Southern Project Commercial Driveway / Hayes Avenue (future intersection)
3. Palo Alto Avenue / Hayes Avenue
4. Veterans Boulevard / Hayes Avenue
5. Veterans Boulevard / Project Residential Driveway (future intersection)

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 the following State facilities

1. SR 99 at Herndon Avenue

Trip Generation

The trip generation rates for the proposed Project were obtained from the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table I presents the trip generation rates for the proposed Project with trip generations for Multifamily Housing (Low Rise) (220), Fast-Food Restaurant with Drive-Through Window (934) and Strip Retail Plaza (<40k) (822). At buildout, the Project is estimated to generate approximately 6,777 daily trips, 471 AM peak hour trips and 544 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*
Multifamily Housing (Low Rise) (220)	516	d.u.	6.74	3,478	0.40	24	76	49	157	206	0.51	63	37	166	97	263
Strip Retail Plaza (<40k) (822)	17.666	k.s.f.	54.45	962	2.36	60	40	25	17	42	6.59	50	50	58	58	116
Fast-Food Restaurant with Drive-Through Window (934)	5.000	k.s.f.	467.48	2,337	44.61	51	49	114	109	223	33.03	52	48	86	79	165
Total Driveway Trips				**6,777**				**188**	**283**	**471**				**310**	**234**	**544**

Note: d.u. = Dwelling Units
k.s.f. = Thousand Square Feet

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 5756	SEQ Polk Ave and Ashlan Ave
2. TT 6162	NEC Hayes Ave and Ashlan Ave
3. TT 6195	NWQ Riverside Dr and Herndon Ave
4. TT 6198	NWC Grantland Ave and Shaw Ave
5. TT 6199	SEQ Grantland Ave and Ashlan Ave
6. TT 6195	NWQ Riverside Dr and Herndon Ave
7. TT 6234	West of Hayes Ave and Dakota Ave
8. TT 6258	West of Hayes Ave and Holland Ave
9. TT 6308	NEC Bryan Ave and Ashlan Ave
10. Bella Vista Professional Offices	NWC Herndon Ave and Spruce Ave
11. Dakota and Grantland Subdivision	SEC Grantland Ave and Dakota Ave
12. El Paseo Commercial Development (portion of)	NWC Herndon Ave and Riverside Dr
13. Fresno Costco	NEQ Herndon Ave and Riverside Ave
14. Herndon-Hayes	SWC Herndon Ave and Hayes Ave

15. Jack in the Box	SEC Barcus Ave and Shaw Ave
16. Justin Garza Highschool	NEC Grantland Ave and Ashlan Ave
17. Parc West	NWC Grantland Ave and Ashlan Ave
18. Riverside Apartments	SEQ Riverside Dr and Herndon Ave
19. Shaw and 99 Mixed-Use Development	NWQ Island Waterpark Dr and Shaw Ave
20. Westbridge Apartments	SEQ Grantland Ave and Barstow Ave

The Scope of Work is based on our understanding of this Project and our experience with similar TIAs. JLB hereby requests written comments (letter or email) on the above scope of work preferably by March 29, 2024. In the absence of comments by March 29, 2024, 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, require additional information, or need additional time to review the above Draft Scope of Work please contact me by phone at (559) 317-6243, or via email at marndt@JLBtraffic.com.

Sincerely,

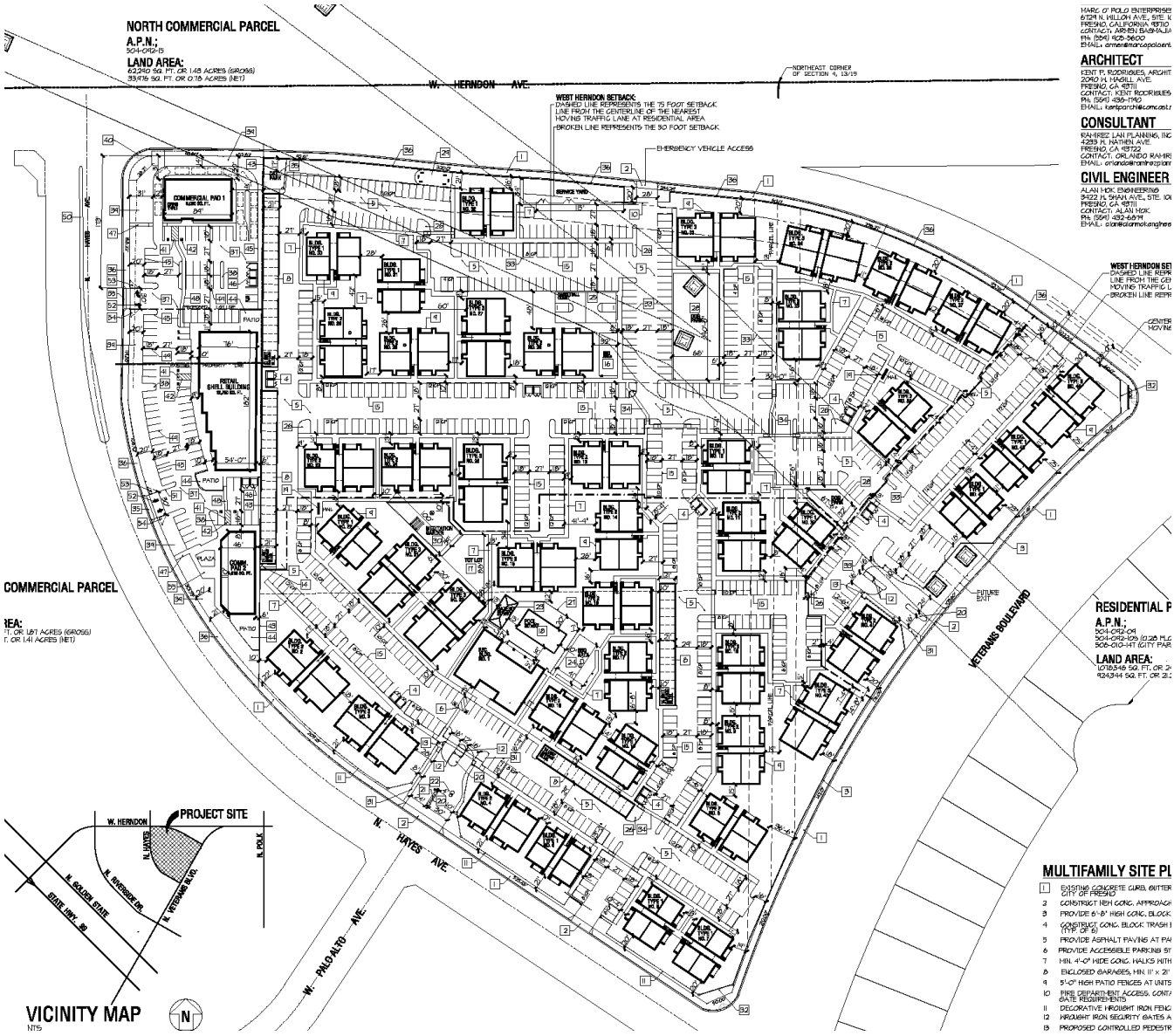
Matthew Arndt
Engineer I/II

c: Jill Gormley, T.E., City of Fresno
Sophia Pagoulatos, City of Fresno
Hector Luna, County of Fresno
David Padilla, Caltrans
Jose Luis Benavides, P.E., T.E., JLB Traffic Engineering, Inc.

JLB TRAFFIC ENGINEERING, INC.
www.JLBtraffic.com
info@JLBtraffic.com
516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
(559) 570-8991

Exhibit A – Aerial

Exhibit B – Project Site Plan



Matt Arndt

From: Jones, Keyomi L@DOT <Keyomi.Jones@dot.ca.gov>
Sent: Tuesday, March 19, 2024 2:12 PM
To: Matt Arndt
Cc: Padilla, Dave@DOT
Subject: SEC Herndon and Hayes TIA and VMT Analysis

Good afternoon Matt,

Regarding the submitted scope of work for TIA and VMT Analysis, based on our preliminary review Caltrans doesn't have any concerns with the SOW. Once completed, please provide us with a copy of the TIA. My apologies for the delay.

Thank you,

Keyomi Jones, Tranportation Planner
Caltrans District 6|Transportation Planning
Local Development Review and Regional Planning

Mobile 559-981-7284
Web www.dot.ca.gov | **Email** keyomi.jones@dot.ca.gov
1352 W. Olive Avenue|Fresno, CA 93728

Matt Arndt

From: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>
Sent: Thursday, March 28, 2024 11:07 AM
To: Matt Arndt
Cc: Jill Gormley; Sophia Pagoulatos; Luna, Hector; Padilla, Dave@DOT; Jose Benavides
Subject: RE: SEC Herndon and Hayes TIA and VMT Analysis

Matt,

With the trip distribution provided, the City is agreeable to the scope with the following comments:

- Residential Driveway 2 may not be allowed due to the proximity to the intersection of Hayes and Veterans. Please show analysis in each scenario (Existing Plus Project, Near Term, and Cumulative) that does not show this as an access point.

Thanks,

Harmanjit Dhaliwal, PE
Licensed Engineer Manager
Land Planning & Subdivision Inspection Section, Public Works Department
2600 Fresno Street, Room 4016
Fresno, CA 93721-3623
Direct: (559) 621-8694
Main: (559) 621-8800
www.fresno.gov
Building a Better Fresno

From: Matt Arndt <marndt@jlbtraffic.com>
Sent: Friday, March 22, 2024 4:58 PM
To: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>
Cc: Jill Gormley <Jill.Gormley@fresno.gov>; Sophia Pagoulatos <Sophia.Pagoulatos@fresno.gov>; Luna, Hector <HLuna@fresnocountyca.gov>; Padilla, Dave@DOT <dave.padilla@dot.ca.gov>; Jose Benavides <jbenavides@jlbtraffic.com>
Subject: RE: SEC Herndon and Hayes TIA and VMT Analysis

External Email: Use caution with links and attachments

Hello,

Attached to this email is the trip distribution for the SEC of Herndon and Hayes Development. Please review and let me know if you have any questions or requests for the Draft Scope of Work on this project.

Sincerely,

Matthew Arndt

Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
Office: (559) 570-8991
Direct: (559) 317-6243
Cell: (559) 360-1886
www.JLBtraffic.com

From: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>
Sent: Wednesday, March 13, 2024 10:18 AM
To: Matt Arndt <marndt@jlbtraffic.com>
Cc: Jill Gormley <Jill.Gormley@fresno.gov>; Sophia Pagoulatos <Sophia.Pagoulatos@fresno.gov>; Luna, Hector <HLuna@fresnocountyca.gov>; Padilla, Dave@DOT <dave.padilla@dot.ca.gov>; Jose Benavides <jbenavides@jlbtraffic.com>
Subject: RE: SEC Herndon and Hayes TIA and VMT Analysis

Good Morning Matt,

To complete the City's review of the Scope we will need the COG Model.

Thanks,

Harmanjit Dhaliwal, PE
Licensed Engineer Manager
Land Planning & Subdivision Inspection Section, Public Works Department
2600 Fresno Street, Room 4016
Fresno, CA 93721-3623
Direct: (559) 621-8694
Main: (559) 621-8800
www.fresno.gov
Building a Better Fresno

From: Matt Arndt <marndt@jlbtraffic.com>
Sent: Thursday, March 07, 2024 3:57 PM
To: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>
Cc: Jill Gormley <Jill.Gormley@fresno.gov>; Sophia Pagoulatos <Sophia.Pagoulatos@fresno.gov>; Luna, Hector <HLuna@fresnocountyca.gov>; Padilla, Dave@DOT <dave.padilla@dot.ca.gov>; Jose Benavides <jbenavides@jlbtraffic.com>
Subject: SEC Herndon and Hayes TIA and VMT Analysis

External Email: Use caution with links and attachments

Hello,

Attached to this email is the Draft Scope of Work for the preparation of a Traffic Impact Analysis and Vehicle Miles Traveled Analysis for a Mixed-Use Development located on the southeast corner of Herndon Avenue and Hayes Avenue in the City of Fresno. We kindly ask that you take a moment to review and comment on the proposed Draft Scope of Work. If you have any questions or require additional information, please contact me by phone at (559)317-6243 or by responding to this email. We appreciate your time and attention to this matter and look forward to hearing from you soon.

Sincerely,

Matthew Arndt

JLB TRAFFIC ENGINEERING

Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
Office: (559) 570-8991
Direct: (559) 317-6243
Cell: (559) 360-1886
www.JLBtraffic.com

Matt Arndt

From: Luna, Hector <HLuna@fresnocountyca.gov>
Sent: Friday, March 29, 2024 11:44 AM
To: Matt Arndt; Harmanjit Dhaliwal
Cc: Jill Gormley; Sophia Pagoulatos; Padilla, Dave@DOT; Jose Benavides
Subject: RE: SEC Herndon and Hayes TIA and VMT Analysis

The planned development is not expected to significantly impact neighboring county facilities.

Regards,

Hector E. Luna | **Senior Planner**
Department of Public Works and Planning |
Water and Natural Resources Division
2220 Tulare St. 6th Floor Fresno, CA 93721
Main Office: (559) 600-4497 | Direct: (559) 600-4216
Email: hluna@FresnoCountyCa.gov
Your input matters! Customer Service Survey

From: Matt Arndt <marndt@jlbtraffic.com>
Sent: Friday, March 22, 2024 4:58 PM
To: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>
Cc: Jill Gormley <Jill.Gormley@fresno.gov>; Sophia Pagoulatos <Sophia.Pagoulatos@fresno.gov>; Luna, Hector <HLuna@fresnocountyca.gov>; Padilla, Dave@DOT <dave.padilla@dot.ca.gov>; Jose Benavides <jbenavides@jlbtraffic.com>
Subject: RE: SEC Herndon and Hayes TIA and VMT Analysis

CAUTION!!! - EXTERNAL EMAIL - THINK BEFORE YOU CLICK

Hello,

Attached to this email is the trip distribution for the SEC of Herndon and Hayes Development. Please review and let me know if you have any questions or requests for the Draft Scope of Work on this project.

Sincerely,

Matthew Arndt

Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

516 W. Shaw Ave., Ste. 103
Fresno, CA 93704

Office: (559) 570-8991
Direct: (559) 317-6243
Cell: (559) 360-1886
www.JLBtraffic.com

From: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>
Sent: Wednesday, March 13, 2024 10:18 AM
To: Matt Arndt <marndt@jlbtraffic.com>
Cc: Jill Gormley <Jill.Gormley@fresno.gov>; Sophia Pagoulatos <Sophia.Pagoulatos@fresno.gov>; Luna, Hector <HLuna@fresnocountyca.gov>; Padilla, Dave@DOT <dave.padilla@dot.ca.gov>; Jose Benavides <jbenavides@jlbtraffic.com>
Subject: RE: SEC Herndon and Hayes TIA and VMT Analysis

Good Morning Matt,

To complete the City's review of the Scope we will need the COG Model.

Thanks,

Harmanjit Dhaliwal, PE
Licensed Engineer Manager
Land Planning & Subdivision Inspection Section, Public Works Department
2600 Fresno Street, Room 4016
Fresno, CA 93721-3623
Direct: (559) 621-8694
Main: (559) 621-8800
www.fresno.gov
Building a Better Fresno

From: Matt Arndt <marndt@jlbtraffic.com>
Sent: Thursday, March 07, 2024 3:57 PM
To: Harmanjit Dhaliwal <Harmanjit.Dhaliwal@fresno.gov>
Cc: Jill Gormley <Jill.Gormley@fresno.gov>; Sophia Pagoulatos <Sophia.Pagoulatos@fresno.gov>; Luna, Hector <HLuna@fresnocountyca.gov>; Padilla, Dave@DOT <dave.padilla@dot.ca.gov>; Jose Benavides <jbenavides@jlbtraffic.com>
Subject: SEC Herndon and Hayes TIA and VMT Analysis

External Email: Use caution with links and attachments

Hello,

Attached to this email is the Draft Scope of Work for the preparation of a Traffic Impact Analysis and Vehicle Miles Traveled Analysis for a Mixed-Use Development located on the southeast corner of Herndon Avenue and Hayes

Avenue in the City of Fresno. We kindly ask that you take a moment to review and comment on the proposed Draft Scope of Work. If you have any questions or require additional information, please contact me by phone at (559)317-6243 or by responding to this email. We appreciate your time and attention to this matter and look forward to hearing from you soon.

Sincerely,

Matthew Arndt

Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
Office: (559) 570-8991
Direct: (559) 317-6243
Cell: (559) 360-1886
www.JLBtraffic.com

Appendix B: Traffic Counts

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

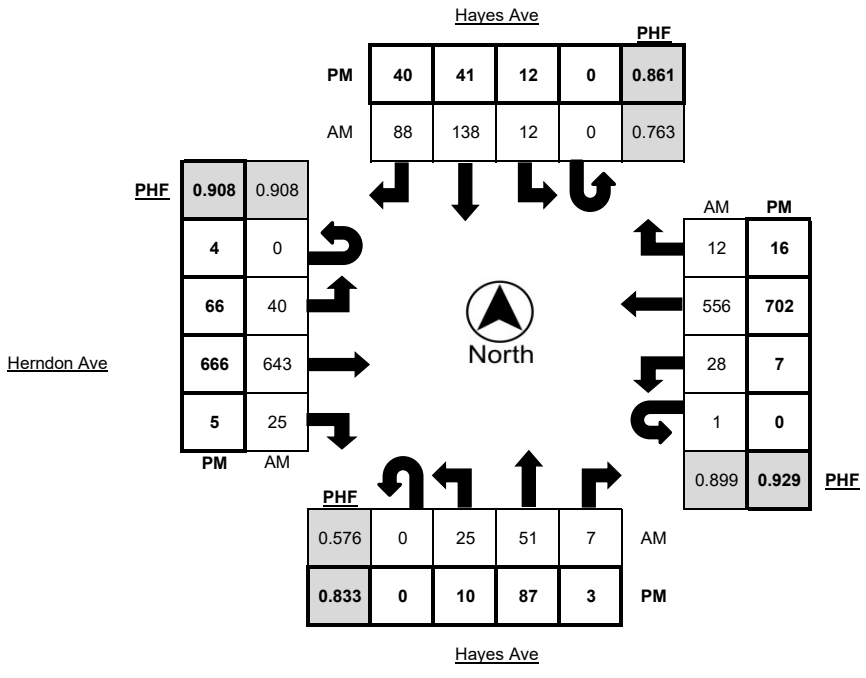
LOCATION W Herndon Avenue / N Hayes Avenue
LATITUDE 36.8369
COUNTY Fresno
LONGITUDE -119.9016
COLLECTION DATE Tuesday, April 9, 2024
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	0	2	8	1	2	0	2	16	25	0	1	7	99	1	7	0	2	136	0	2
7:15 AM - 7:30 AM	0	2	14	0	4	0	5	27	26	2	0	4	136	7	4	0	5	159	2	3
7:30 AM - 7:45 AM	0	3	7	2	0	0	3	53	22	2	0	8	162	7	1	0	5	156	3	4
7:45 AM - 8:00 AM	0	8	10	1	2	0	0	32	20	3	0	12	176	7	5	1	10	118	4	6
8:00 AM - 8:15 AM	0	12	20	4	1	0	4	26	20	1	0	16	169	4	5	0	8	123	3	1
8:15 AM - 8:30 AM	0	2	16	2	0	0	1	13	12	0	0	15	172	2	4	0	2	99	2	2
8:30 AM - 8:45 AM	0	1	12	0	1	0	2	9	11	0	1	11	151	0	1	0	2	135	4	4
8:45 AM - 9:00 AM	0	2	11	1	1	0	4	8	15	0	0	9	138	0	5	0	0	102	4	4
TOTAL	**0**	**32**	**98**	**11**	**11**	**0**	**21**	**184**	**151**	**8**	**2**	**82**	**1203**	**28**	**32**	**1**	**34**	**1028**	**22**	**26**

	Northbound					Southbound					Eastbound					Westbound				
Time	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	0	3	22	3	2	0	3	15	8	1	1	23	165	2	3	0	2	156	7	2
4:15 PM - 4:30 PM	0	1	19	1	2	0	2	9	11	2	1	22	177	4	2	0	0	192	3	3
4:30 PM - 4:45 PM	0	3	21	1	2	0	5	13	9	1	0	10	165	0	0	0	5	179	5	3
4:45 PM - 5:00 PM	0	3	20	1	0	0	3	8	10	1	3	17	153	0	3	0	0	163	4	1
5:00 PM - 5:15 PM	0	3	27	0	1	0	2	11	10	1	0	17	171	1	0	0	2	168	4	1
5:15 PM - 5:30 PM	0	0	19	2	0	0	1	8	16	0	2	12	182	0	2	0	1	180	8	1
5:30 PM - 5:45 PM	0	3	10	0	0	0	2	8	8	0	1	15	157	1	1	0	3	176	5	3
5:45 PM - 6:00 PM	0	5	11	1	2	0	8	11	18	0	0	12	126	0	0	0	3	160	8	1
TOTAL	**0**	**21**	**149**	**9**	**9**	**0**	**26**	**83**	**90**	**6**	**8**	**128**	**1296**	**8**	**11**	**0**	**16**	**1374**	**44**	**15**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks
7:15 AM - 8:15 AM	0	25	51	7	7	0	12	138	88	8	0	40	643	25	15	1	28	556	12	14
4:15 PM - 5:15 PM	0	10	87	3	5	0	12	41	40	5	4	66	666	5	5	0	7	702	16	8

	PHF	Trucks
AM	0.943	2.7%
PM	0.938	1.4%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

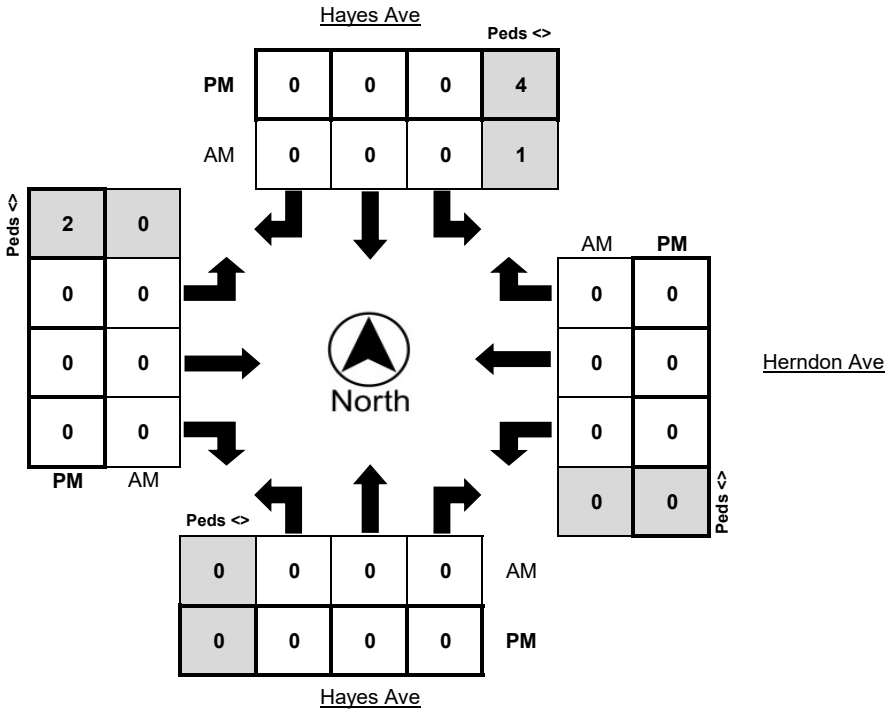
LOCATION W Herndon Avenue / N Hayes Avenue
LATITUDE 36.8369
COUNTY Fresno
LONGITUDE -119.9016
COLLECTION DATE Tuesday, April 9, 2024
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**1**	**4**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:15 AM - 8:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 5:15 PM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	2

	Bikes	Peds
AM Peak Total	0	1
PM Peak Total	**0**	**6**



JLB Traffic Engineering, Inc.

516 West Shaw Avenue, Suite 103
Fresno, CA, 93704
Traffic Engineering, Transportation, & Parking Solutions
www.JLBtraffic.com

File Name : 03 Hayes Avenue at Palo Alto Avenue
Site Code : 00000000
Start Date : 3/13/2024
Page No : 1

Groups Printed- Unshifted

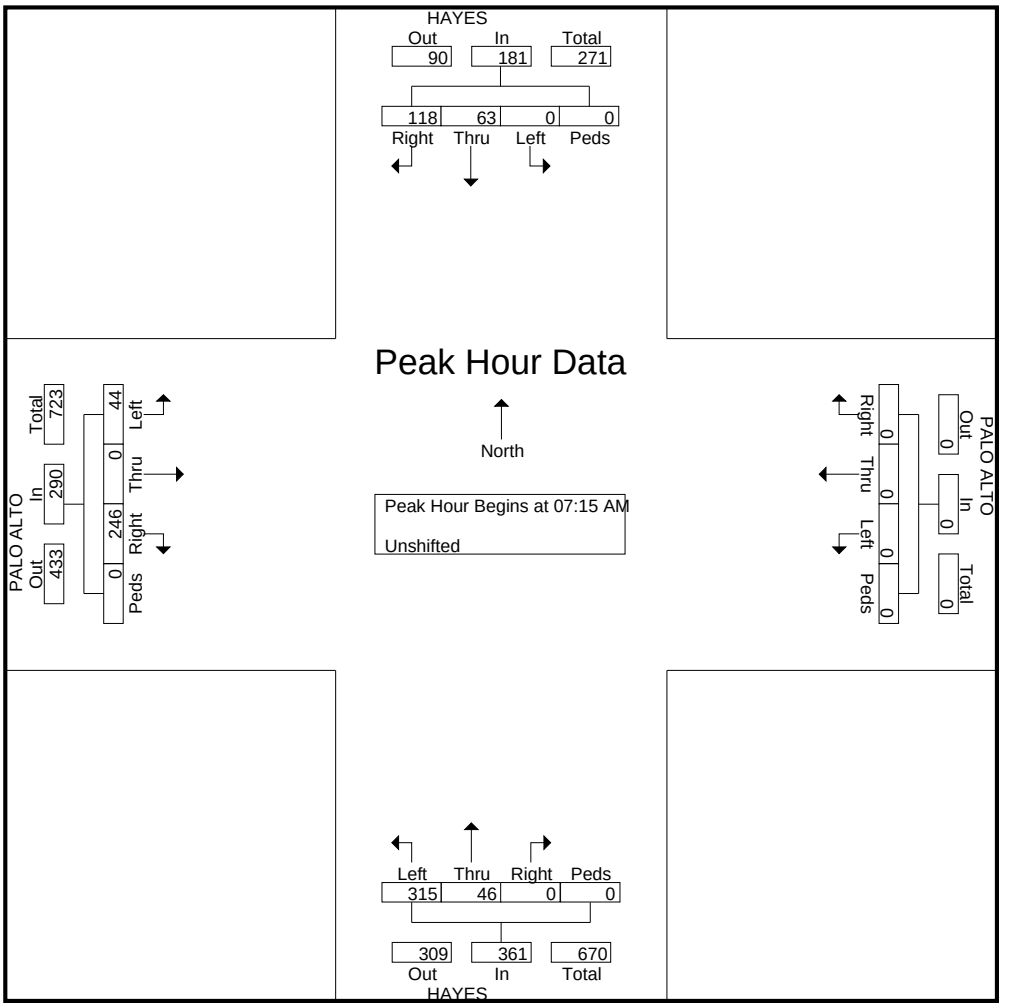
	HAYES From North					PALO ALTO From East					HAYES From South					PALO ALTO From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	5	10	0	0	15	0	0	0	0	0	0	6	20	0	26	15	0	1	0	16	57
07:15 AM	13	15	0	0	28	0	0	0	0	0	0	4	62	0	66	32	0	5	0	37	131
07:30 AM	35	23	0	0	58	0	0	0	0	0	0	13	109	0	122	58	0	3	0	61	241
07:45 AM	46	11	0	0	57	0	0	0	0	0	0	11	96	0	107	67	0	14	0	81	245
Total	99	59	0	0	158	0	0	0	0	0	0	34	287	0	321	172	0	23	0	195	674
08:00 AM	24	14	0	0	38	0	0	0	0	0	0	18	48	0	66	89	0	22	0	111	215
08:15 AM	7	17	0	0	24	0	0	0	0	0	0	10	25	0	35	28	0	5	0	33	92
08:30 AM	3	9	0	3	15	0	0	0	0	0	0	7	9	0	16	10	0	3	0	13	44
08:45 AM	5	15	0	0	20	0	0	0	0	0	0	8	9	0	17	13	0	1	0	14	51
Total	39	55	0	3	97	0	0	0	0	0	0	43	91	0	134	140	0	31	0	171	402
*** BREAK ***																					
04:00 PM	6	11	0	0	17	0	0	0	0	0	0	16	32	1	49	21	0	5	0	26	92
04:15 PM	2	11	0	0	13	0	0	0	0	0	0	11	23	0	34	22	0	6	0	28	75
04:30 PM	1	8	0	0	9	0	0	0	0	0	0	11	19	0	30	17	0	1	0	18	57
04:45 PM	7	9	0	0	16	0	0	0	0	0	0	17	20	0	37	11	0	4	1	16	69
Total	16	39	0	0	55	0	0	0	0	0	0	55	94	1	150	71	0	16	1	88	293
05:00 PM	6	9	0	1	16	0	0	0	0	0	0	16	20	0	36	17	0	4	0	21	73
05:15 PM	5	5	0	0	10	0	0	0	0	0	0	24	26	0	50	26	0	6	0	32	92
05:30 PM	6	9	0	0	15	0	0	0	0	0	0	19	28	0	47	17	0	4	0	21	83
05:45 PM	4	8	0	0	12	0	0	0	0	0	0	13	22	0	35	14	0	7	0	21	68
Total	21	31	0	1	53	0	0	0	0	0	0	72	96	0	168	74	0	21	0	95	316
Grand Total	175	184	0	4	363	0	0	0	0	0	0	204	568	1	773	457	0	91	1	549	1685
Apprch %	48.2	50.7	0	1.1		0	0	0	0		0	26.4	73.5	0.1		83.2	0	16.6	0.2		
Total %	10.4	10.9	0	0.2	21.5	0	0	0	0	0	0	12.1	33.7	0.1	45.9	27.1	0	5.4	0.1	32.6	

JLB Traffic Engineering, Inc.

516 West Shaw Avenue, Suite 103
Fresno, CA, 93704
Traffic Engineering, Transportation, & Parking Solutions
www.JLBtraffic.com

File Name : 03 Hayes Avenue at Palo Alto Avenue
Site Code : 00000000
Start Date : 3/13/2024
Page No : 2

	HAYES From North					PALO ALTO From East					HAYES From South					PALO ALTO From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	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	13	15	0	0	28	0	0	0	0	0	0	4	62	0	66	32	0	5	0	37	131
07:30 AM	35	**23**	0	0	**58**	0	0	0	0	0	0	13	**109**	0	**122**	58	0	3	0	61	241
07:45 AM	**46**	11	0	0	57	0	0	0	0	0	0	11	96	0	107	67	0	14	0	81	**245**
08:00 AM	24	14	0	0	38	0	0	0	0	0	0	**18**	48	0	66	**89**	0	**22**	0	**111**	215
Total Volume	118	63	0	0	181	0	0	0	0	0	0	46	315	0	361	246	0	44	0	290	832
% App. Total	65.2	34.8	0	0		0	0	0	0		0	12.7	87.3	0		84.8	0	15.2	0		
PHF	.641	.685	.000	.000	.780	.000	.000	.000	.000	.000	.000	.639	.722	.000	.740	.691	.000	.500	.000	.653	.849

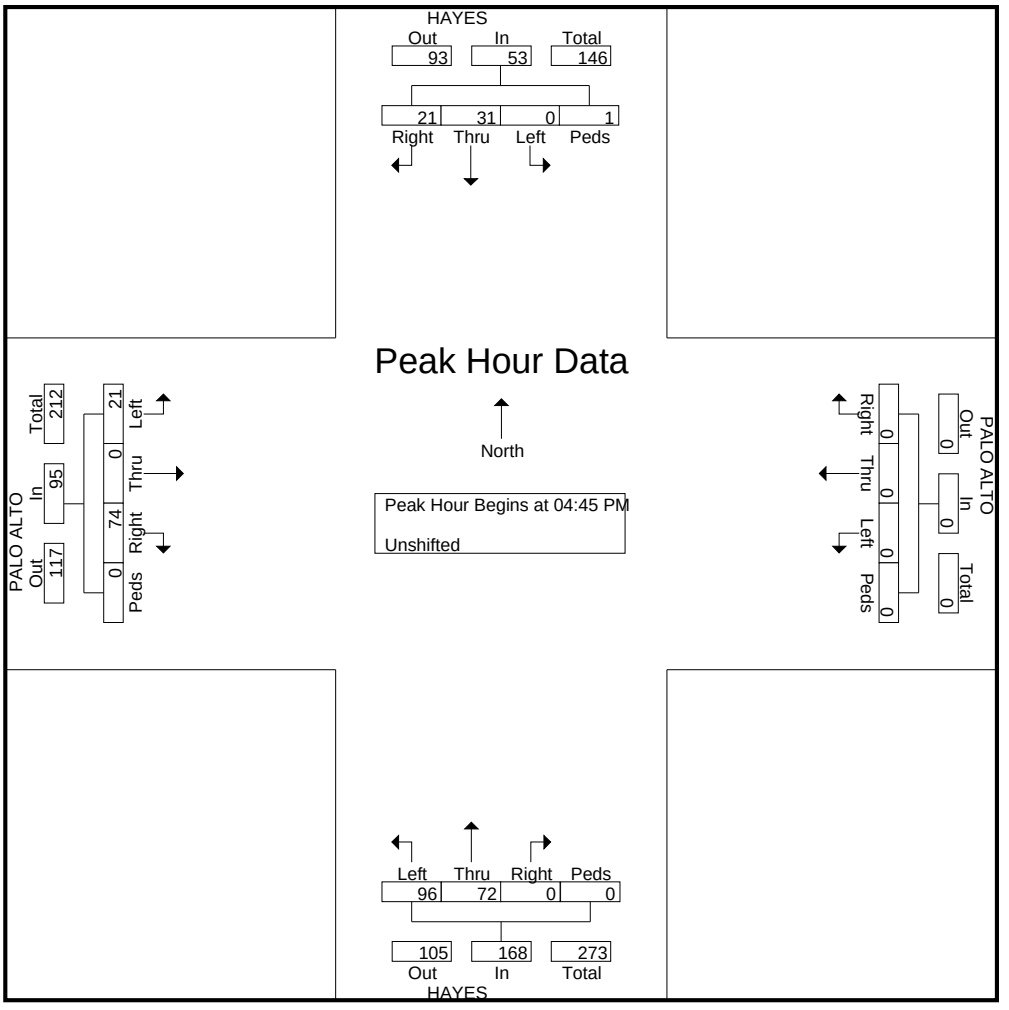


JLB Traffic Engineering, Inc.

516 West Shaw Avenue, Suite 103
Fresno, CA, 93704
Traffic Engineering, Transportation, & Parking Solutions
www.JLBtraffic.com

File Name : 03 Hayes Avenue at Palo Alto Avenue
Site Code : 00000000
Start Date : 3/13/2024
Page No : 3

	HAYES From North					PALO ALTO From East					HAYES From South					PALO ALTO From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	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	**7**	**9**	0	0	**16**	0	0	0	0	0	0	17	20	0	37	11	0	4	**1**	16	69
05:00 PM	6	9	0	**1**	16	0	0	0	0	0	0	16	20	0	36	17	0	4	0	21	73
05:15 PM	5	5	0	0	10	0	0	0	0	0	0	**24**	26	0	**50**	**26**	0	**6**	0	**32**	**92**
05:30 PM	6	9	0	0	15	0	0	0	0	0	0	19	**28**	0	47	17	0	4	0	21	83
Total Volume	24	32	0	1	57	0	0	0	0	0	0	76	94	0	170	71	0	18	1	90	317
% App. Total	42.1	56.1	0	1.8		0	0	0	0		0	44.7	55.3	0		78.9	0	20	1.1		
PHF	.857	.889	.000	.250	.891	.000	.000	.000	.000	.000	.000	.792	.839	.000	.850	.683	.000	.750	.250	.703	.861



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

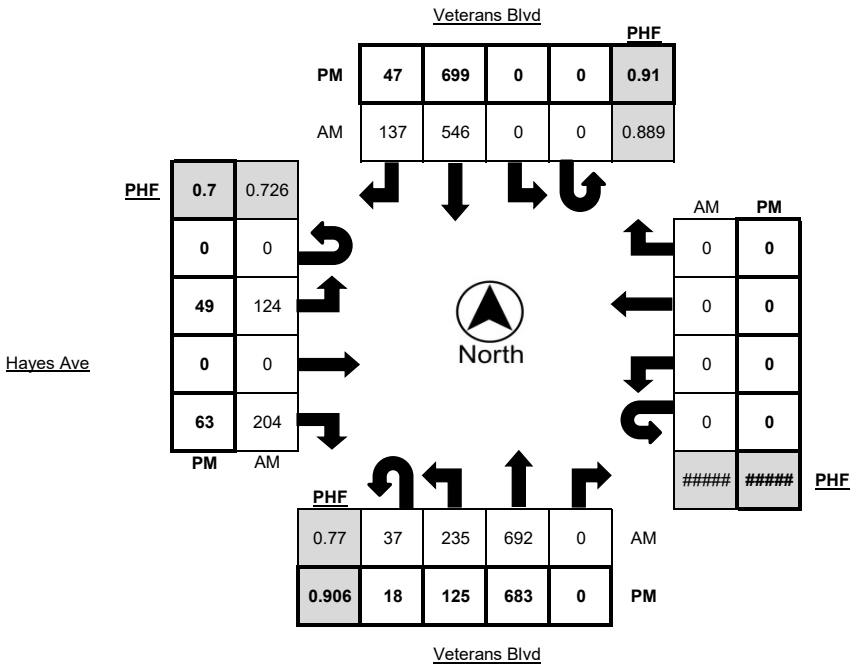
LOCATION N Veterans Boulevard / N Hayes Avenue
LATITUDE 36.8334
COUNTY Fresno
LONGITUDE -119.8985
COLLECTION DATE Tuesday, April 9, 2024
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	13	31	112	0	2	0	0	106	9	5	0	10	0	19	0	0	0	0	0	0
7:15 AM - 7:30 AM	10	47	145	0	8	0	0	128	28	1	0	24	0	24	1	0	0	0	0	0
7:30 AM - 7:45 AM	12	89	212	0	4	0	0	137	52	0	0	27	0	49	0	0	0	0	0	0
7:45 AM - 8:00 AM	5	64	174	0	8	0	0	114	32	2	0	26	0	65	0	0	0	0	0	0
8:00 AM - 8:15 AM	10	35	161	0	1	0	0	167	25	4	0	47	0	66	2	0	0	0	0	0
8:15 AM - 8:30 AM	7	23	190	0	6	0	0	91	6	0	0	20	0	24	0	0	0	0	0	0
8:30 AM - 8:45 AM	6	17	170	0	4	0	0	74	4	1	0	4	0	10	0	0	0	0	0	0
8:45 AM - 9:00 AM	4	12	139	0	6	0	0	66	5	1	0	9	0	6	0	0	0	0	0	0
TOTAL	**67**	**318**	**1303**	**0**	**39**	**0**	**0**	**883**	**161**	**14**	**0**	**167**	**0**	**263**	**3**	**0**	**0**	**0**	**0**	**0**

	Northbound					Southbound					Eastbound					Westbound				
Time	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	2	33	180	0	6	0	0	128	7	3	0	20	0	27	1	0	0	0	0	0
4:15 PM - 4:30 PM	4	24	181	0	4	0	0	113	10	5	0	12	0	18	0	0	0	0	0	0
4:30 PM - 4:45 PM	4	29	165	0	4	0	0	152	11	3	0	13	0	16	1	0	0	0	0	0
4:45 PM - 5:00 PM	6	41	181	0	3	0	0	149	15	3	0	10	0	11	1	0	0	0	0	0
5:00 PM - 5:15 PM	6	35	174	0	3	0	0	196	9	4	0	20	0	20	1	0	0	0	0	0
5:15 PM - 5:30 PM	3	26	170	0	1	0	0	183	11	2	0	8	0	17	1	0	0	0	0	0
5:30 PM - 5:45 PM	3	23	158	0	1	0	0	171	12	0	0	11	0	15	1	0	0	0	0	0
5:45 PM - 6:00 PM	6	18	144	0	3	0	0	186	10	1	0	2	0	16	0	0	0	0	0	0
TOTAL	**34**	**229**	**1353**	**0**	**25**	**0**	**0**	**1278**	**85**	**21**	**0**	**96**	**0**	**140**	**6**	**0**	**0**	**0**	**0**	**0**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks	U-Turn	Left	Thru	Right	Trucks
7:15 AM - 8:15 AM	37	235	692	0	21	0	0	546	137	7	0	124	0	204	3	0	0	0	0	0
4:45 PM - 5:45 PM	18	125	683	0	8	0	0	699	47	9	0	49	0	63	4	0	0	0	0	0

	PHF	Trucks
AM	0.854	1.6%
PM	0.915	1.2%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

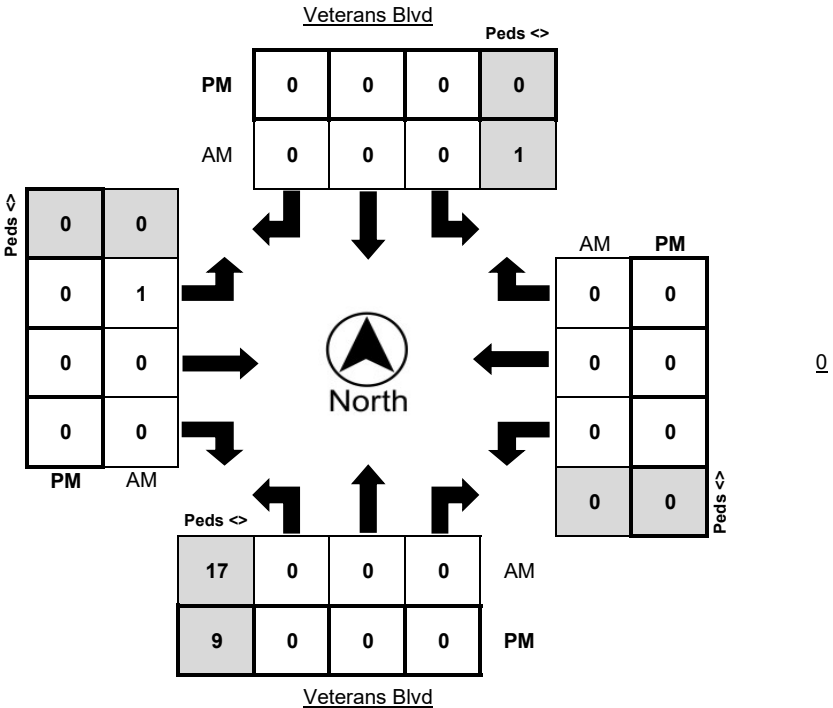
LOCATION N Veterans Boulevard / N Hayes Avenue
LATITUDE 36.8334
COUNTY Fresno
LONGITUDE -119.8985
COLLECTION DATE Tuesday, April 9, 2024
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	1	0	0	0	8	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**19**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:15 AM - 8:15 AM	0	0	0	1	0	0	0	17	1	0	0	0	0	0	0	0
4:45 PM - 5:45 PM	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	1	18
PM Peak Total	0	9



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

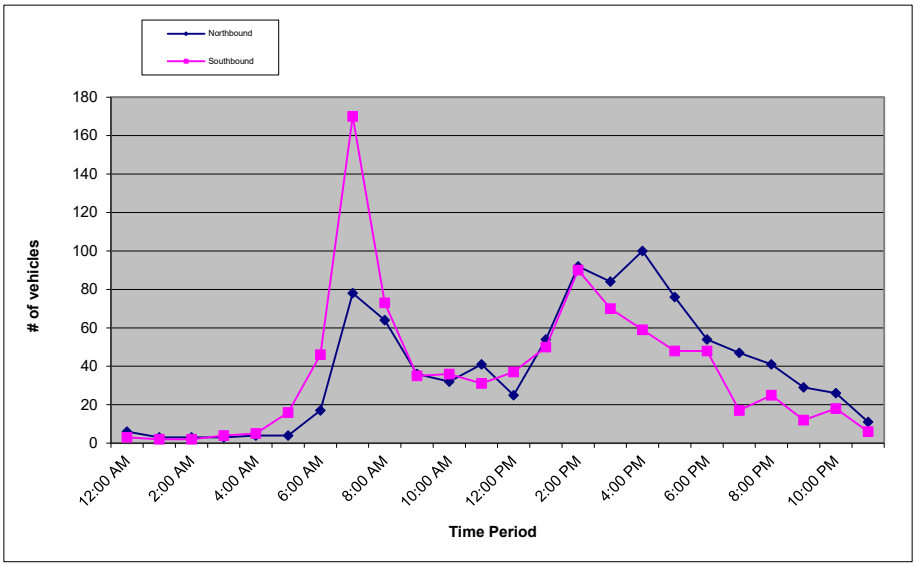
24 Hour Count Report

Prepared For: **JLB Traffic Engineering, Inc.**
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

STREET	Hayes Ave	**LATITUDE**	36.8342354
SEGMENT	North of Palo Alto Ave	**LONGITUDE**	-119.9001796
COLLECTION DATE	Tuesday, April 9, 2024	**WEATHER**	Clear
NUMBER OF LANES	4		

	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	**Total**	1st	2nd	3rd	4th	**Total**	**Totals**
12:00 AM	3	2	0	1	**6**	1	0	1	1	**3**	**9**
1:00 AM	0	1	1	1	**3**	0	1	0	1	**2**	**5**
2:00 AM	1	1	0	1	**3**	1	1	0	0	**2**	**5**
3:00 AM	0	0	2	1	**3**	1	1	1	1	**4**	**7**
4:00 AM	0	1	2	1	**4**	0	1	1	3	**5**	**9**
5:00 AM	1	1	0	2	**4**	1	2	6	7	**16**	**20**
6:00 AM	4	3	3	7	**17**	7	8	18	13	**46**	**63**
7:00 AM	17	17	19	25	**78**	19	37	57	57	**170**	**248**
8:00 AM	22	14	16	12	**64**	38	17	10	8	**73**	**137**
9:00 AM	7	6	13	10	**36**	11	8	6	10	**35**	**71**
10:00 AM	4	3	11	14	**32**	8	10	4	14	**36**	**68**
11:00 AM	10	16	9	6	**41**	8	11	6	6	**31**	**72**
12:00 PM	12	3	6	4	**25**	10	10	11	6	**37**	**62**
1:00 PM	17	11	10	16	**54**	10	9	14	17	**50**	**104**
2:00 PM	18	30	30	14	**92**	20	18	31	21	**90**	**182**
3:00 PM	17	16	22	29	**84**	17	17	20	16	**70**	**154**
4:00 PM	29	23	24	24	**100**	21	12	18	8	**59**	**159**
5:00 PM	31	16	16	13	**76**	13	9	12	14	**48**	**124**
6:00 PM	16	11	15	12	**54**	13	15	12	8	**48**	**102**
7:00 PM	10	11	10	16	**47**	6	6	1	4	**17**	**64**
8:00 PM	8	11	11	11	**41**	9	4	5	7	**25**	**66**
9:00 PM	6	13	6	4	**29**	4	3	4	1	**12**	**41**
10:00 PM	6	5	5	10	**26**	4	7	3	4	**18**	**44**
11:00 PM	5	2	4	0	**11**	3	2	1	0	**6**	**17**
Total	**50.7%**				**930**	**49.3%**				**903**	
	1833										

AM%	**39.0%**	**AM Peak**	**272**	**7:15 am to 8:15 am**	**AM P.H.F.**	**0.83**
PM%	**61.0%**	**PM Peak**	**182**	**2:00 pm to 3:00 pm**	**PM P.H.F.**	**0.75**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

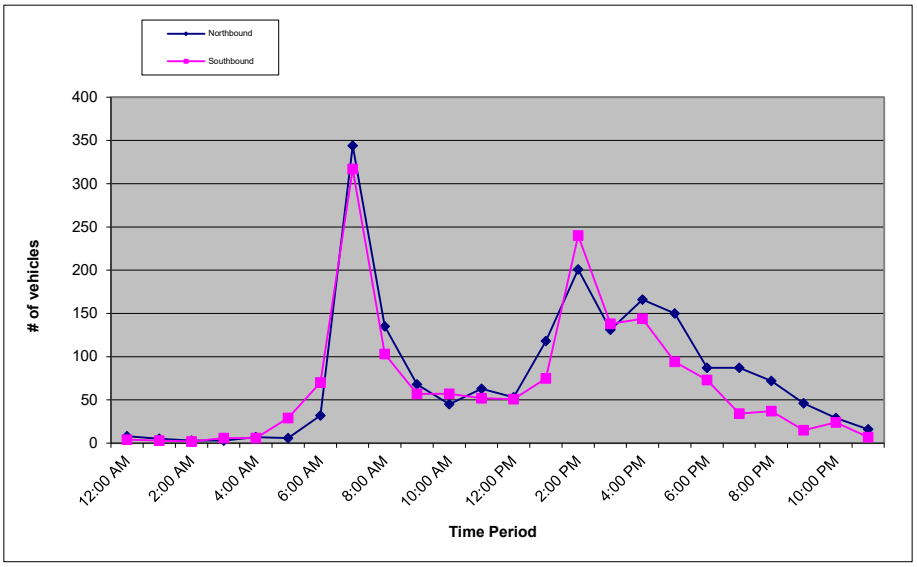
24 Hour Count Report

Prepared For: **JLB Traffic Engineering, Inc.**
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

STREET	Hayes Ave	**LATITUDE**	36.8342354
SEGMENT	South of Palo Alto Ave	**LONGITUDE**	-119.9001796
COLLECTION DATE	Tuesday, April 9, 2024	**WEATHER**	Clear
NUMBER OF LANES	4		

	Northbound					Southbound					Hourly
Hour	1st	2nd	3rd	4th	**Total**	1st	2nd	3rd	4th	**Total**	**Totals**
12:00 AM	4	3	0	1	**8**	1	0	2	1	**4**	**12**
1:00 AM	0	2	1	2	**5**	0	1	2	0	**3**	**8**
2:00 AM	1	1	0	1	**3**	1	1	0	0	**2**	**5**
3:00 AM	0	0	2	1	**3**	1	1	3	1	**6**	**9**
4:00 AM	0	1	4	2	**7**	0	1	2	3	**6**	**13**
5:00 AM	2	2	0	2	**6**	4	7	8	10	**29**	**35**
6:00 AM	4	8	4	16	**32**	7	14	21	28	**70**	**102**
7:00 AM	39	74	137	94	**344**	48	73	84	112	**317**	**661**
8:00 AM	68	29	21	17	**135**	50	18	18	17	**103**	**238**
9:00 AM	17	9	24	18	**68**	14	12	14	17	**57**	**125**
10:00 AM	6	7	17	15	**45**	11	19	7	20	**57**	**102**
11:00 AM	19	16	18	10	**63**	10	18	11	13	**52**	**115**
12:00 PM	17	10	14	12	**53**	12	17	14	8	**51**	**104**
1:00 PM	22	20	28	48	**118**	17	13	17	28	**75**	**193**
2:00 PM	38	56	64	43	**201**	32	69	84	55	**240**	**441**
3:00 PM	40	23	34	34	**131**	31	24	39	44	**138**	**269**
4:00 PM	41	35	40	50	**166**	44	30	30	40	**144**	**310**
5:00 PM	50	37	35	28	**150**	23	25	16	30	**94**	**244**
6:00 PM	19	19	28	21	**87**	19	19	22	13	**73**	**160**
7:00 PM	28	17	16	26	**87**	14	8	6	6	**34**	**121**
8:00 PM	19	23	13	17	**72**	9	7	10	11	**37**	**109**
9:00 PM	16	16	9	5	**46**	4	6	4	1	**15**	**61**
10:00 PM	7	6	5	11	**29**	6	7	3	8	**24**	**53**
11:00 PM	5	4	5	2	**16**	4	2	1	0	**7**	**23**
Total	**53.4%**				**1875**	**46.6%**				**1638**	
	3513										

AM%	**40.6%**	**AM Peak**	**692**	**7:15 am to 8:15 am**	**AM P.H.F.**	**0.78**
PM%	**59.4%**	**PM Peak**	**442**	**2:15 pm to 3:15 pm**	**PM P.H.F.**	**0.75**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

24 Hour Count Report

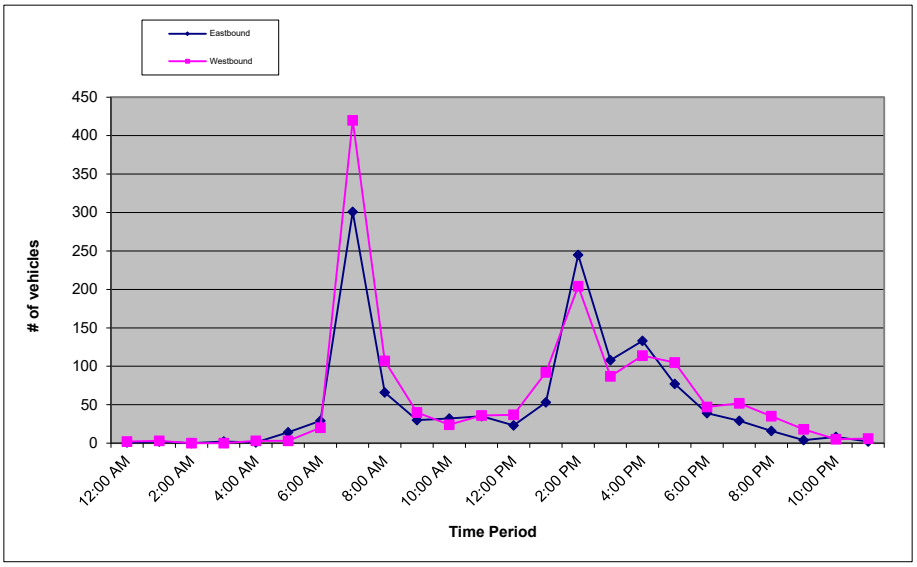
Prepared For: **JLB Traffic Engineering, Inc.**
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

STREET Palo Alto Ave
SEGMENT West of Hayes Ave
COLLECTION DATE Tuesday, April 9, 2024
NUMBER OF LANES 2

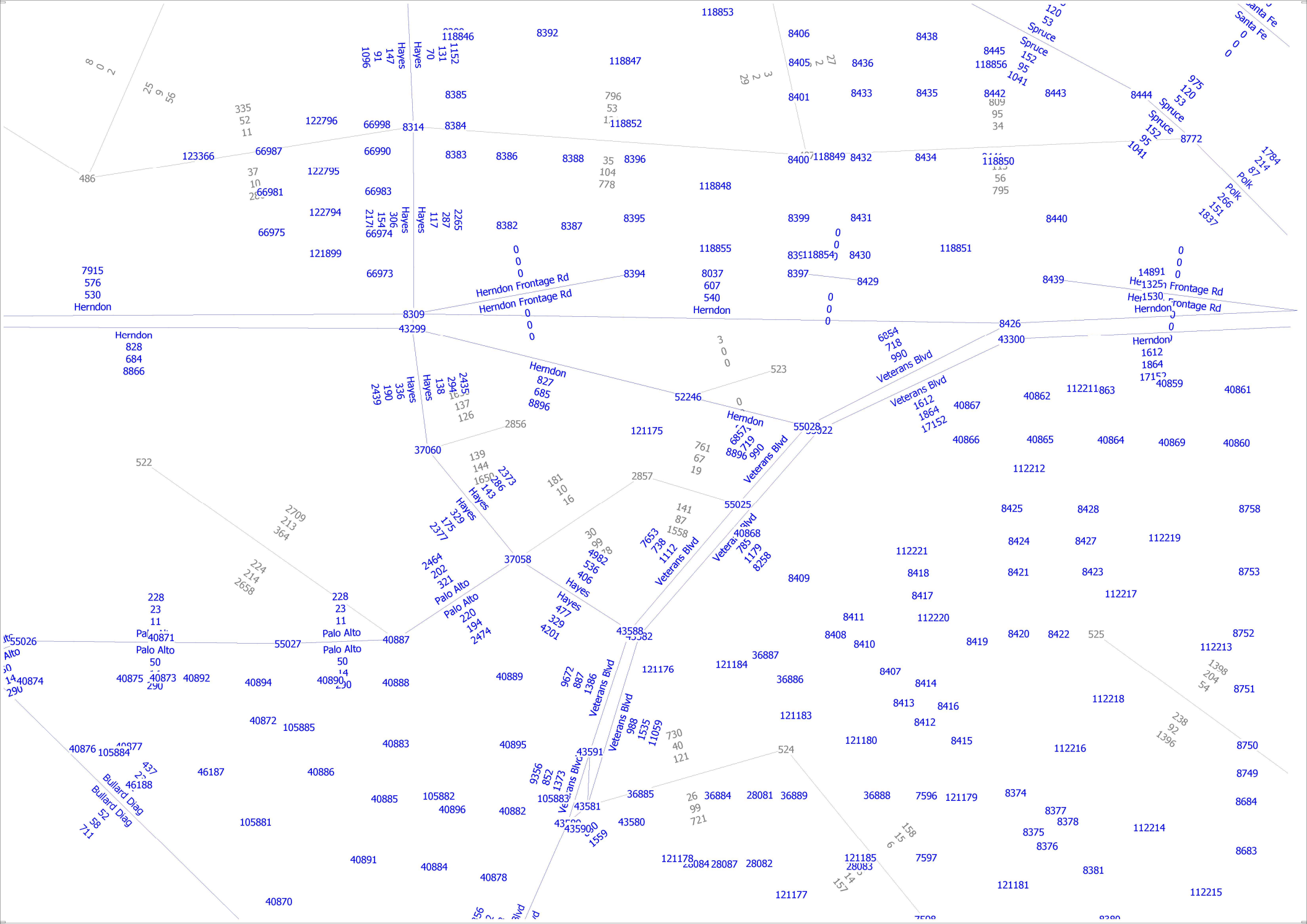
LATITUDE 36.8342354
LONGITUDE -119.9001796
WEATHER Clear

	Eastbound					Westbound					Hourly
Hour	1st	2nd	3rd	4th	**Total**	1st	2nd	3rd	4th	**Total**	**Totals**
12:00 AM	0	0	1	0	**1**	1	1	0	0	**2**	**3**
1:00 AM	0	0	2	0	**2**	0	1	0	2	**3**	**5**
2:00 AM	0	0	0	0	**0**	0	0	0	0	**0**	**0**
3:00 AM	0	0	2	0	**2**	0	0	0	0	**0**	**2**
4:00 AM	0	0	1	0	**1**	0	0	2	1	**3**	**4**
5:00 AM	3	5	2	4	**14**	1	1	0	1	**3**	**17**
6:00 AM	2	6	4	17	**29**	2	5	2	11	**20**	**49**
7:00 AM	40	66	85	110	**301**	33	87	176	124	**420**	**721**
8:00 AM	35	7	12	12	**66**	69	21	9	8	**107**	**173**
9:00 AM	6	6	10	8	**30**	13	5	13	9	**40**	**70**
10:00 AM	5	11	4	12	**32**	4	6	7	7	**24**	**56**
11:00 AM	4	15	8	8	**35**	11	8	12	5	**36**	**71**
12:00 PM	6	8	6	3	**23**	9	8	11	9	**37**	**60**
1:00 PM	13	7	11	22	**53**	11	12	26	43	**92**	**145**
2:00 PM	29	77	90	49	**245**	37	52	71	44	**204**	**449**
3:00 PM	18	18	21	51	**108**	27	18	14	28	**87**	**195**
4:00 PM	46	26	20	41	**133**	35	20	24	35	**114**	**247**
5:00 PM	21	21	13	22	**77**	30	26	28	21	**105**	**182**
6:00 PM	13	6	15	5	**39**	10	10	18	9	**47**	**86**
7:00 PM	10	6	7	6	**29**	20	10	8	14	**52**	**81**
8:00 PM	3	3	6	4	**16**	14	12	3	6	**35**	**51**
9:00 PM	0	3	1	0	**4**	10	3	4	1	**18**	**22**
10:00 PM	2	0	0	6	**8**	1	1	0	3	**5**	**13**
11:00 PM	2	0	0	0	**2**	1	2	1	2	**6**	**8**
Total	**46.1%**				**1250**	**53.9%**				**1460**	
	2710										

AM%	**43.2%**	**AM Peak**	**752**	**7:15 am to 8:15 am**	**AM P.H.F.**	**0.72**
PM%	**56.8%**	**PM Peak**	**449**	**2:00 pm to 3:00 pm**	**PM P.H.F.**	**0.70**



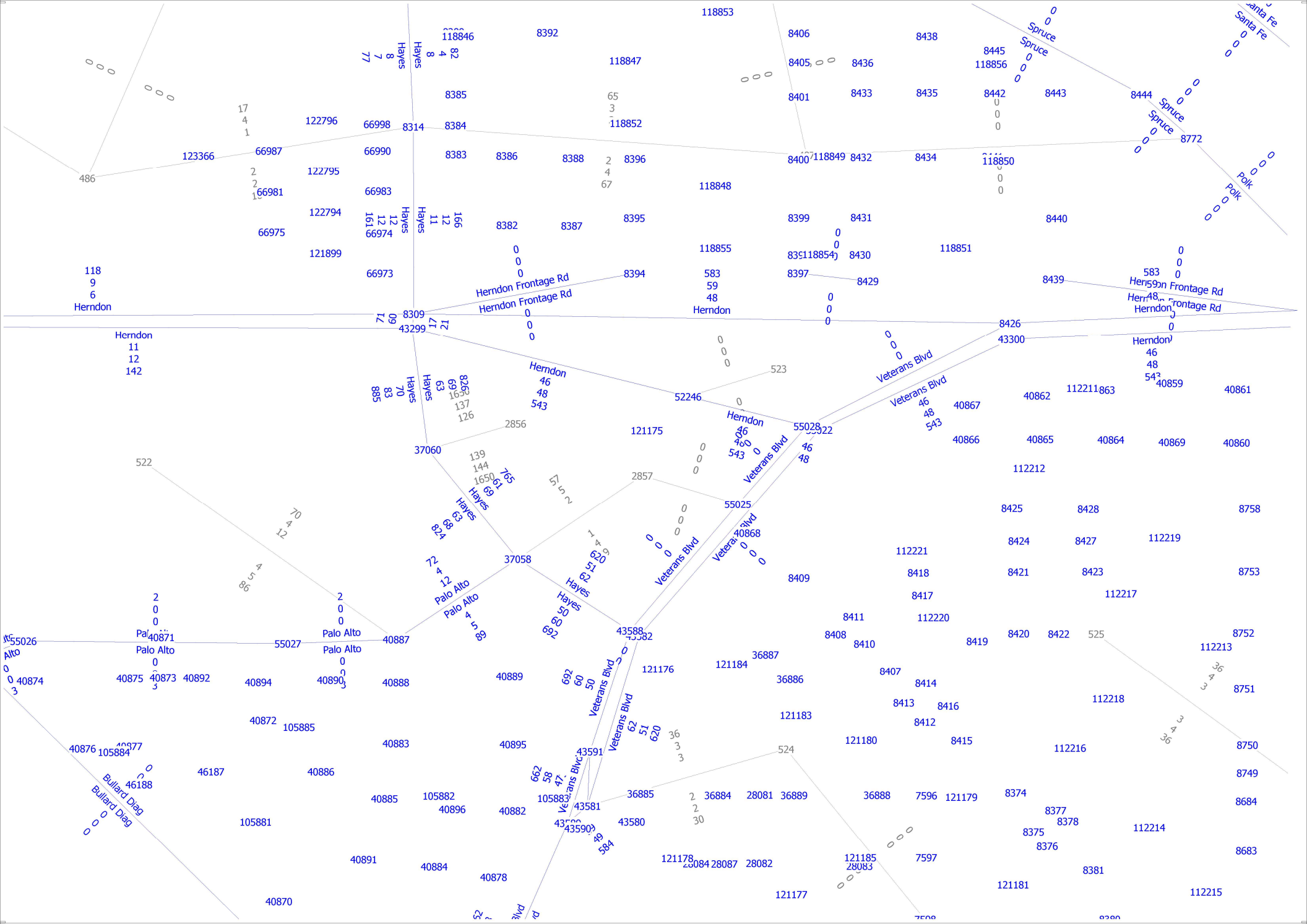
Appendix C: Traffic Modeling

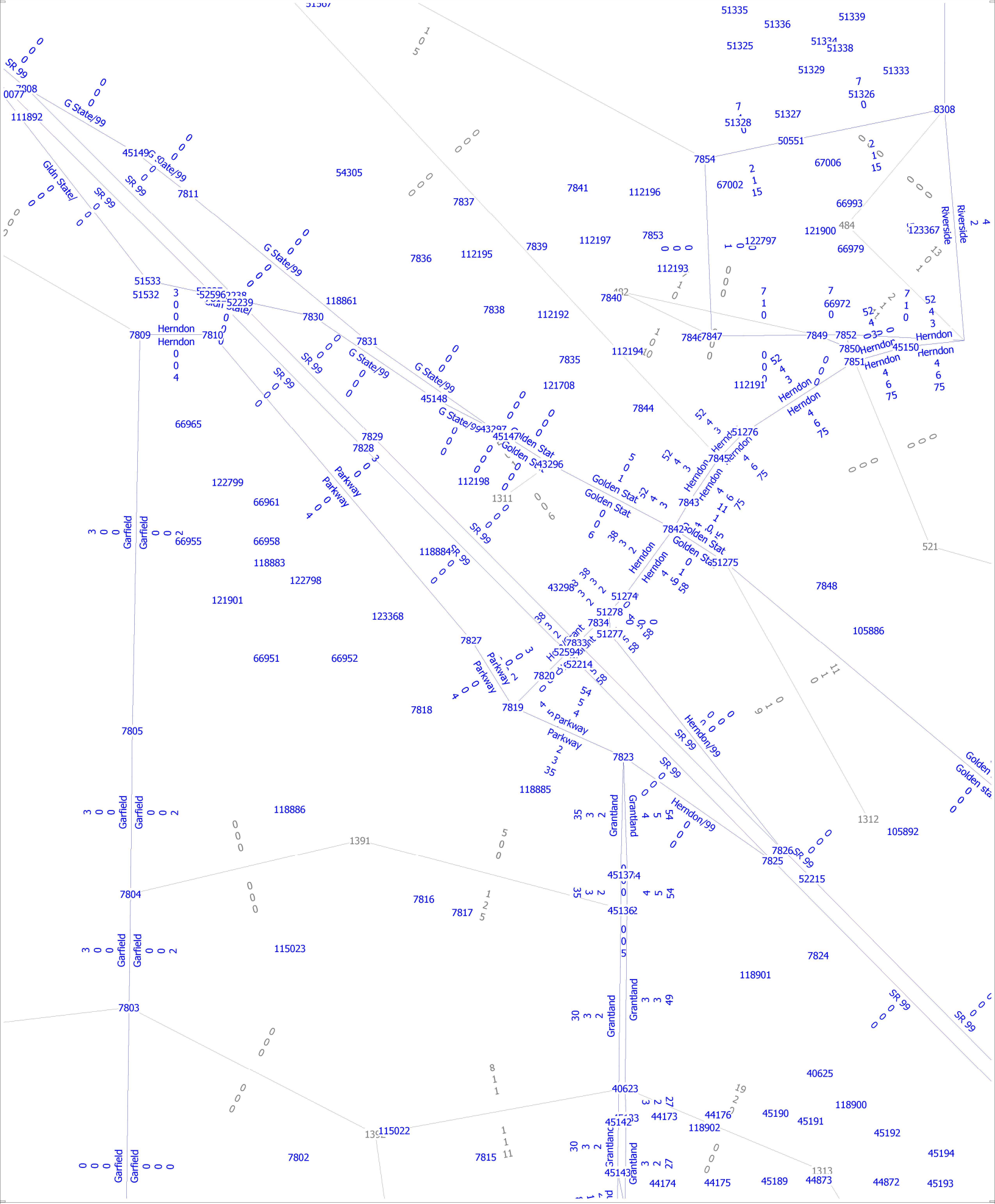


SEC Herndon and Hayes TIA and VMT
Base Year 2019
AM, PM and Daily Volumes

cube

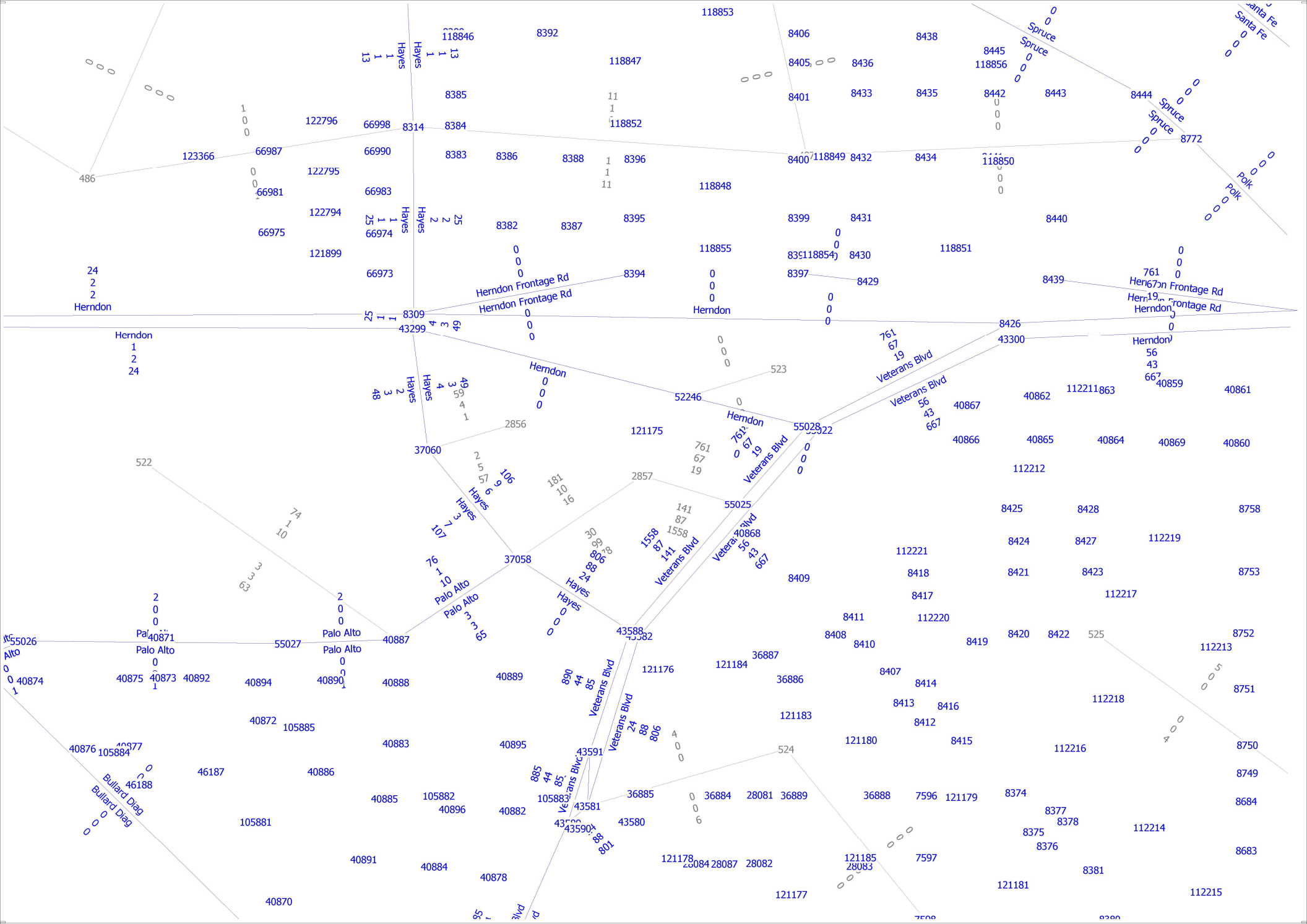
(Licensed to JLB Traffic Engineering, Inc)


Herndon Frontage Rd
Herndon
Hayes
Spruce
Polk
Veterans Blvd
Palo Alto
Bullard Diag
Santa Fe
8309
43299
8426
43300
37060
37058
55028
55025
40887
43588
8772
8314
8444
8401
8405
8406
8438
8445
118856
118853
118846
8392
118847
8385
8384
118852
8436
8433
8435
8442
8443
8396
8400
118849
8432
8434
118850
118848
8395
8399
8431
8440
118855
118854
8430
118851
8394
8397
8429
8439
583
59
48
543
46
523
52246
2856
121175
2857
40859
40861
40862
112211
863
40867
40866
40865
40864
40869
40860
112212
8425
8428
8758
8424
8427
112219
112221
8418
8421
8423
8753
8409
8417
112217
8411
112220
8408
8410
8419
8420
8422
525
8752
112213
36887
121184
121176
8407
8414
36886
8413
8416
112218
121183
8412
121180
8415
112216
8750
524
8749
8374
8684
8377
8378
112214
8375
8376
8683
121185
7597
28083
8381
121181
112215
28084
28087
28082
121178
40884
40878
40870
40891
105881
40885
105882
40896
40882
43590
43580
36885
36884
28081
36889
36888
7596
121179
43581
43591
105883
40883
40895
105884
40876
40877
46187
40886
46188
40872
105885
40874
40875
40873
40892
40894
40890
40888
40889
121177
40871
55026
55027
40868
40867
40862
40866
40865
40864
40869
40860
40861
40859
112211
863
40858
40863
40857
40856
40855
40854
40853
40852
40851
40850
40849
40848
40847
40846
40845
40844
40843
40842
40841
40840
40839
40838
40837
40836
40835
40834
40833
40832
40831
40830
40829
40828
40827
40826
40825
40824
40823
40822
40821
40820
40819
40818



SEC Herndon and Hayes TIA and VMT
Base Year 2019 - Commercial Select Zone
AM, PM and Daily Volumes

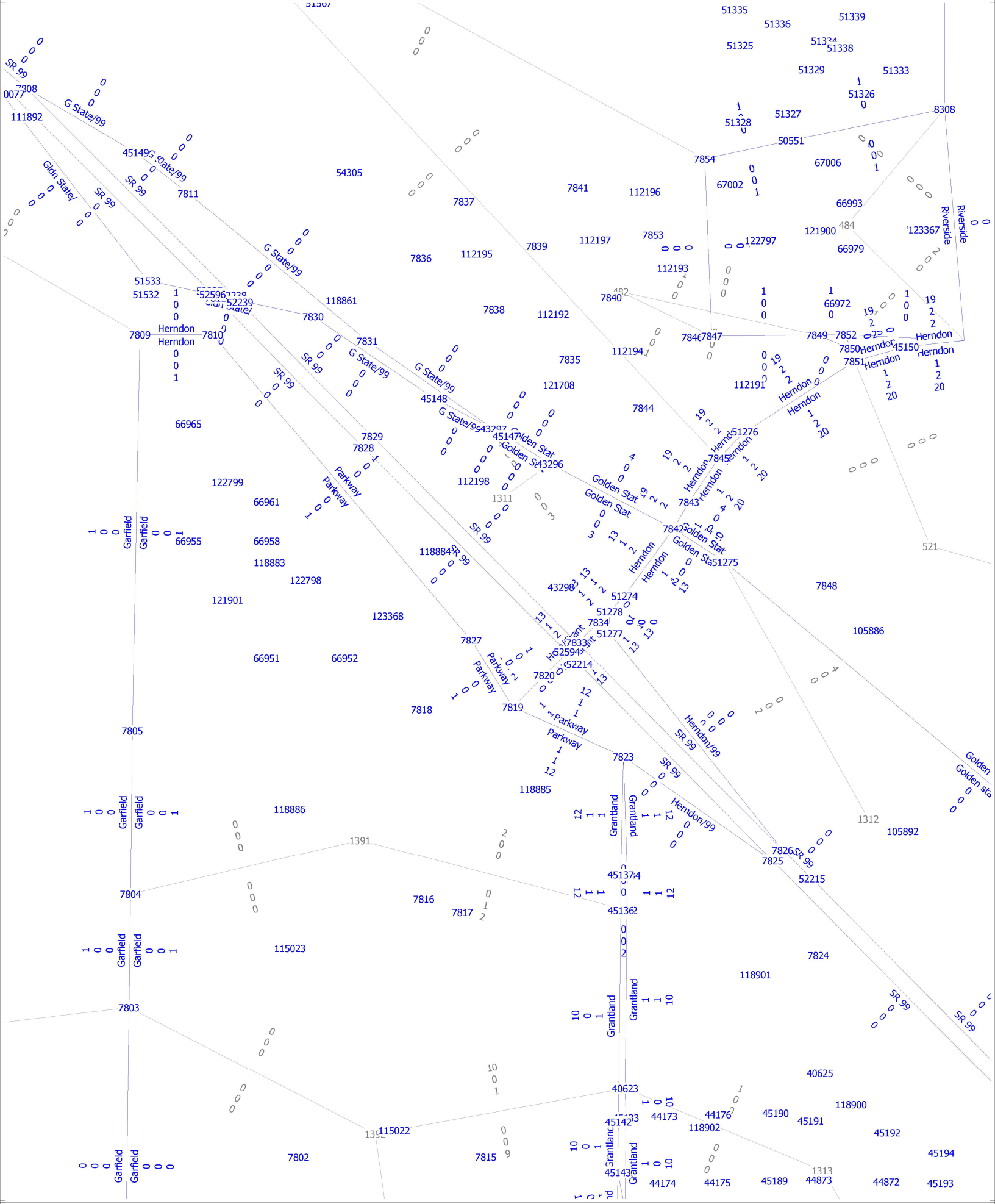
cube
(Licensed to JLB Traffic Engineering, Inc)



SEC Herndon and Hayes TIA and VMT
Base Year 2019 - Residential Select Zone
AM, PM and Daily Volumes

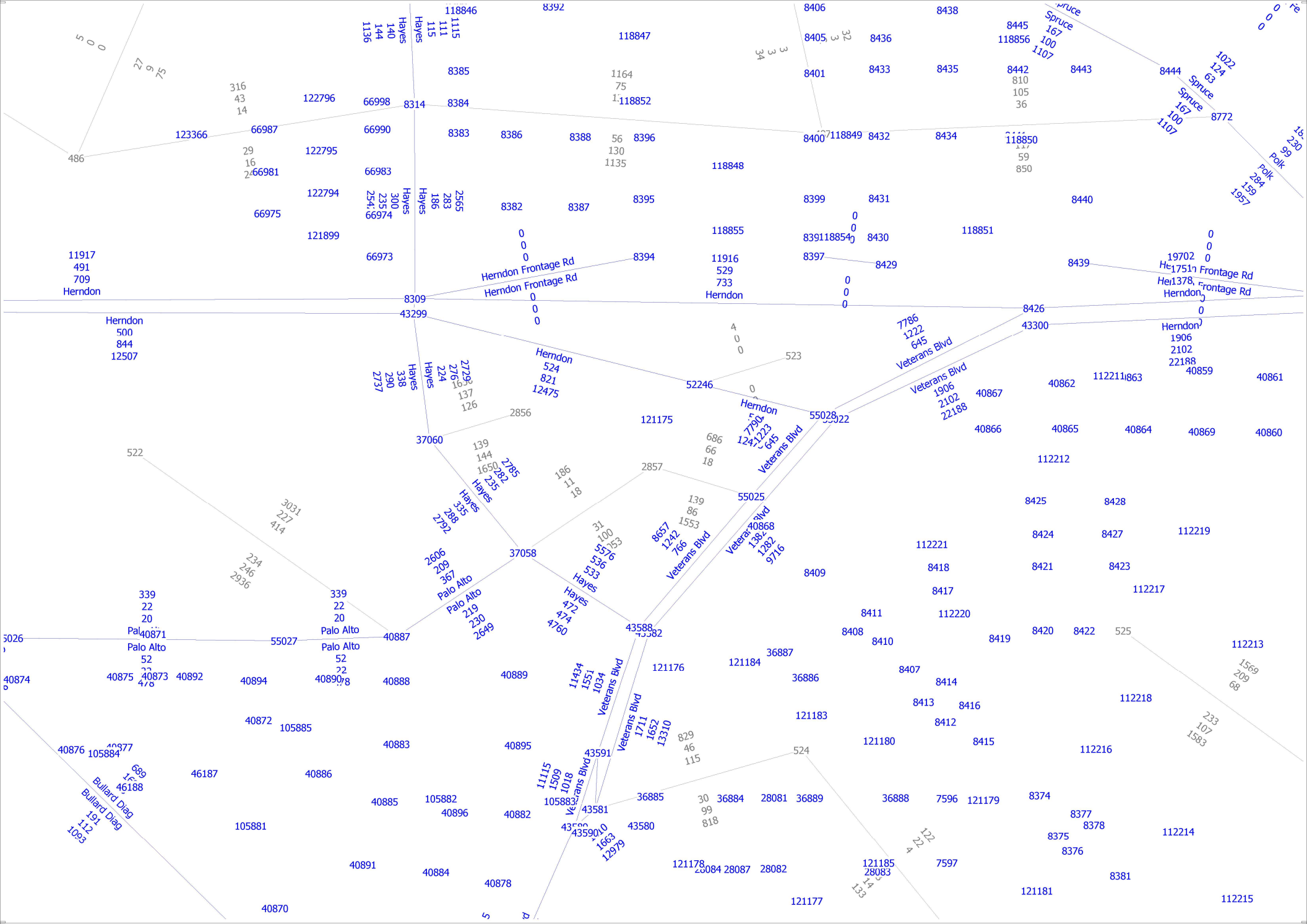
cube

(Licensed to JLB Traffic Engineering, Inc)



SEC Herndon and Hayes TIA and VMT
Base Year 2019 - Residential Select Zone
AM, PM and Daily Volumes

cube
(Licensed to JLB Traffic Engineering, Inc)



SEC Herndon and Hayes TIA and VMT
Cumulative Year 2046
AM, PM and Daily Volumes

cube

(Licensed to JLB Traffic Engineering, Inc)

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 7th Edition 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 an LOS.

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 signs and yield signs.

Signalized Intersections

LOS can be characterized for the entire intersection, each intersection approach and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay and volume-to-capacity ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a surrogate measure of driver discomfort and fuel consumption. The volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group. A description of LOS for signalized intersections is found in Table A-1.

Table A-1: Signalized Intersection LOS Description (Motorized Vehicle 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 the volume-to-capacity ratio is really low 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, the 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 individual 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

Note: Source: Highway Capacity Manual 7th Edition

All-Way Stop Controlled Intersections

All-way stop controlled intersections are common in the United States. They are characterized by having all approaches controlled by stop sign without any street having priority. Streets intersecting at all-way stop controlled intersections can be public or private. The intersection analysis boundaries for an all-way stop controlled intersection are assumed to be those of an isolated intersection, no upstream or downstream effects are accounted for in analysis.

Two-Way Stop Controlled Intersections

Two-way stop controlled (TWSC) intersections are also common in the United States. A typical configuration is a four-leg intersection in which one street, the major street, is uncontrolled and the other street, the minor street, is controlled by stop signs. The other typical intersection is a three-leg intersection in which a single minor street approach is controlled by a stop sign.

For the analysis of the motorized vehicle mode, the methodology addresses special circumstances that may exist at two-way stop controlled intersections including two-stage gap acceptance, approaches with shared lanes, the presence of upstream traffic signals and flared approaches for minor-street right-turning vehicles. Table A-2 provides a description of LOS at unsignalized intersections.

Table A-2: Unsignalized Intersection LOS Description (Motorized Vehicle 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

Note: Source: HCM 7th Edition, Exhibit 21-8.

Roundabout Controlled Intersections

Roundabouts are intersections with a generally circular shape, characterized by yield on entry and circulation around a central island. Roundabouts have been used successfully throughout the world and are being used increasingly in the United States, especially since 1990. Intersection analysis models generally fall into two categories: regression models and analytical models. Regression models use field data to develop statistically derived relationships between geometric features and performance measures such as capacity and delay. Analytical models are based on traffic flow theory combined with field measures of driver behavior, resulting in an analytical formulation of the relationship of driver behavior, resulting in an analytical formulation of the relationship between those field measures and performance measures such as capacity and delay. Table A-3 provides a description of LOS at roundabout intersections.

Table A-3: Roundabout 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

Note: Source: HCM 7th Edition, Exhibit 22-8.

Segment Levels of Service

Segments are portions of roads without any interruption of flow. These typically include basic freeway segments, multilane highway segments, freeway weaving segments, freeway merge and diverge segments, two-lane highway segments and urban street segments.

Urban Street Segments (Motorized Vehicle Mode)

The term "urban street segments" refers to two elements that are found: points and segments. A point is the boundary between links and is represented by an intersection or ramp terminal. A link is a length of roadway between two points. A link and its boundary are referred to as a segment. A signalized intersection is always used to define a boundary. Only intersections, or ramp terminals, in which the segment through volumes is uncontrolled can exist along the segment. A midsegment traffic control signal provided for the exclusive use of pedestrians should not be used to define a segment boundary. Chapter 18 of the Highway Capacity Manual categorizes each LOS as follows:

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 80 percent of the base free flow speed (FFS) and the volume-to-capacity ratio is no greater than 1.0.

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 80 percent of the base FFS and the volume-to-capacity ratio is no greater than 1.0.

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 and the volume-to-capacity ratio is no greater than 1.0.

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 or inappropriate signal timing at the boundary intersections. The travel speed is between 40 and 50 percent of the base FFS and the volume-to-capacity ratio is no greater than 1.0.

LOS E is characterized as an unstable operation and has 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 and the volume-to-capacity ratio is no greater than 1.0.

LOS F is characterized by 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 or the volume-to-capacity ratio is greater than 1.0.

Urban Street Segments LOS

Two performance measures are used to characterize vehicular LOS for a given direction of travel along an urban street segment. One measure is travel speed for through vehicles. This speed reflects the factors that influence running time along the link and the delay uncured by through vehicles at the boundary intersections. The second measures Is the volume-to-capacity ratio for the through movements at the downstream boundary intersection. These performance measures indicate the degree of mobility provided by the segment. Table A-4 provides a description of LOS for Urban Street Segments.

Table A-4: Urban Street Segment Levels of Service (Motorized Vehicle Mode)

LOS	*Travel Speed Threshold by Base Free-Flow Speed (miles/hour)*							*Volume-to-Capacity Ratio*
	55	**50**	**45**	**40**	**35**	**30**	**25**	
A	>44	>40	>36	>32	>28	>24	>20	≤ 1.0
B	>37	>34	>30	>27	>23	>20	>17	
C	>28	>25	>23	>20	>18	>15	>13	
D	>22	>20	>18	>16	>14	>12	>10	
E	>17	>15	>14	>12	>11	>9	>8	
F	≤17	≤15	≤14	≤12	≤11	≤9	≤8	
F	Any							> 1.0

Note: a = Volume-to-capacity ratio of through movement at downstream boundary intersection.
Source: Highway Capacity Manual 7th Edition, Exhibit 18-1.

Basic Freeway and Multilane Highway Segments

Segments of multilane highways and basic freeways outside the influence of merging maneuvers, diverging maneuvers, weaving maneuvers, or signalized intersections define LOS by density. Density describes a motorist's proximity to other vehicles and is related to a motorist's freedom to maneuver within the traffic stream. Chapter 12 of the Highway Capacity Manual categorizes each LOS as follows:

LOS A describes free-flow operations. FFS prevails on the freeway or multilane highway, and vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The effects of incidents or point breakdowns are easily absorbed.

LOS B represents reasonably free-flow operations, and FFS on the freeway or multilane highway is maintained. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents are still easily absorbed.

LOS C provides for flow with speeds near the FFS of the freeway or multilane highway. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service quality will be significant. Queues may be expected to form behind any significant blockages.

LOS D is the level at which speeds begin to decline with increasing flows, with density increasing more quickly. Freedom to maneuver within the traffic stream is seriously limited, and drivers experience reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.

LOS E describes operation at or near capacity. Operations on the freeway or multilane highway at this level are highly volatile because there are virtually no usable gaps within the traffic stream, leaving little room to maneuver within the traffic stream. Any disruption to the traffic stream, such as vehicles entering from a ramp or an access point or a vehicle changing lanes, can establish a disruption wave that propagates throughout the upstream traffic stream. Toward the upper boundary of LOS E, the traffic stream has no ability to dissipate even the most minor disruption, and any incident can be expected to produce a serious breakdown and substantial queuing. The physical and psychological comfort afforded to drivers is poor.

LOS F describes unstable flow. Such conditions exist within queues forming behind bottlenecks. Breakdowns occur for a number of reasons:

- Traffic incidents can temporarily reduce the capacity of a short segment so that the number of vehicles arriving at a point is greater than the number of vehicles that can move through it.
- Points of recurring congestion, such as merge or weaving segments and lane drops, experience very high demand in which the number of vehicles arriving is greater than the number of vehicles that can be discharged.
- In analyses using forecast volumes, the projected flow rate can exceed the estimated capacity of a given location.

Basic Freeway

Basic Freeway segments generally have four to eight lanes (in both directions) and posted speed limits between 50 and 75 mi/hr. The median type depends on right-of-way constraints and other factors. The performance measures include capacity, free flow speed, demand and volume-to-capacity ratio, space mean speed, average density and LOS. The following performance measures are evaluated for each segment: capacity, FFS, demand-to-capacity or volume-to-capacity ratios, space mean average, average density, travel time, vehicle miles traveled, vehicle hours of travel and vehicle hours of delay. Table A-5 provides a description of LOS for Basic Freeway Segments.

Multilane Highway

Multilane Highway segments generally have four to six lanes (in both directions) and posted speed limits between 40 and 55 mi/hr. These highways may be divided, undivided or divided by a two-way left-turn lane. The performance measures include capacity, free flow speed, demand and volume-to-capacity ratio, space mean speed, average density and LOS. The following performance measures are evaluated for each segment: capacity, FFS, demand-to-capacity or volume-to-capacity ratios, space mean average, average density, travel time, vehicle miles traveled, vehicle hours of travel and vehicle hours of delay. Table A-5 provides a description of LOS for Multilane Highway Segments.

Table A-5: Basic Freeway and Multilane Highway Segment Level of Service Description

Level of Service	*Density (Passenger Cars per Mile per Lane)*	
	Urban	*Rural*
A	≤11	≤6
B	>11 to 18	>6 to 14
C	>18 to 26	>14 to 22
D	>26 to 35	>22 to 29
E	>35 to 45	>29 to 39
F	>45 or Demand Exceeds Capacity	>39 or Demand Exceeds Capacity

Note: Source: HCM 7th Edition, Exhibit 10-6.

Two-Lane Highway Segments

Two-Lane Highways generally have one lane per direction. The single lane in each direction may be supplemented with passing lanes, truck climbing lanes, turnouts or pullouts. If allowed, passing maneuvers are limited by the availability of gaps in the opposing traffic stream and by the availability of sufficient sight distance for a driver to discern the approach of an opposing vehicle safely. A principal measure of LOS is average speed, percent followers and follower density. Chapter 15 of the Highway Capacity Manual categorizes each LOS as follows:

At **LOS A**, motorists experience operating speeds near the posted speed limit and little difficulty in passing. Platooning is minimal and follower density is very low.

At **LOS B through LOS D,** represent gradations between the conditions for LOS A and LOS E.

At **LOS E**, speeds may still be reasonable, but platooning is significant and follower density is high. Passing, if allowed is essentially impossible.

LOS F exists whenever demand flow in one or both directions exceeds the segment's capacity. When demand exceeds capacity, it is expected that there will be a reduction in the capacity at the bottleneck.

Two-Lane Highway

The performance measures include average speed, FFS and follower density. The LOS output is calculated for an establish segment boundary that includes consistent terrain, lane widths, shoulder widths, facility classification and demand flow rate. Table A-6 provides a description of LOS for Two-Lane Highway Segments.

Table A-6: Two-Lane Highway Segment Level of Service Description

LOS	*Follower Density (Followers per Mile per Lane)*	
	Higher-Speed Highways Posted Speed Limit ≥ 50 miles per hour	*Lower-Speed Highways Posted Speed Limit < 50 miles per hour*
A	≤2.0	≤2.5
B	>2.0 to 4.0	>2.5 to 5.0
C	>4.0 to 8.0	>5.0 to 10.0
D	>8.0 to 12.0	>10.0 to 15.0
E	>12.0	>15.0

Note: Source: HCM 7th Edition, Exhibit 15-6.

Appendix E: Collision Data

Primary Rd **HARVEY AVE** *Distance (ft)* **75.0** *Direction* **W** *Secondary Rd* **BOND ST** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **S/E** *Beat* *Type* **0** *CalTrans* *Badge* **P1748** *Collision Date* **20210522** *Time* **1837** *Day* **SAT**
Primary Collision Factor **PED VIOL** *Violation* **21954A** *Collision Type* **AUTO/PED** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **N** *Process Date* **20210531**
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* **DAYLIGHT** *Ped Action* **NOT IN X-** *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	PED	11	M	H			PROC ST	N	N	6000	-		-	3	N		-	-	-
2	DRVR	26	F	H	HNBD		PROC ST	W	A	0100	NISSA	2017	-	3	N		-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
PED	POSSIBL	11	M	9	-	-	-

Primary Rd **HARVEY AVE** *Distance (ft)* **354.** *Direction* **W** *Secondary Rd* **VILLA AVE (N)** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **SOUTH** *Beat* **00B** *Type* **0** *CalTrans* *Badge* **P1953** *Collision Date* **20210401** *Time* **0450** *Day* **THU**
Primary Collision Factor **STRTNG|BCKNG** *Violation* **22106** *Collision Type* **BROADSIDE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20210427**
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* **DUSK/DAWN** *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	F	W	HNBD		BACKING	W	J	4100	MERCE	2017	-	-	N		-	M	G
2	PRKD	998						E		2000	CADIL	2003			N				

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **HAYES AVE** *Distance (ft)* **0.00** *Direction* *Secondary Rd* **PALO ALTO AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NW FR** *Beat* **1343** *Type* **0** *CalTrans* *Badge* **P864** *Collision Date* **20210812** *Time* **1520** *Day* **THU**
Primary Collision Factor **UNKNOWN** *Violation* *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **N** *Process Date* **20210819**
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	38	F	B	HNBD		LFT TURN	N	A	0100	CHEVR	2018	-	3	N		-	M	G
2	DRVR	38	M	H	HNBD		RGT TURN	S	D	2200	CHEVR	2017	-	3	N		-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	POSSIBL	38	F	1	0	M	G

Primary Rd **HAYES AVENUE** *Distance (ft)* **450.** *Direction* **S** *Secondary Rd* **CLINTON AVENUE** *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* **015986** *Collision Date* **20211123** *Time* **1154** *Day* **TUE**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20211124**
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 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	41	M	H	HNBD		UNS TURN	S	A	0100	FORD	2019	-	3	N		-	L	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **HAZELWOOD BLVD** *Distance (ft)* **90.0** *Direction* **S** *Secondary Rd* **BRALY AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* *Beat* *Type* **0** *CalTrans* *Badge* **P1574** *Collision Date* **20210802** *Time* **0755** *Day* **MON**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **SIDESWIPE** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20210804**
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	20	F	H	HNBD		PROC ST	S	A	0100	TOYOT	2007	-	3	N		-	L	G
2	PRKD	998	-		HNBD		PARKED	S	A	0100	MERCU	2003	-	3	N		-	-	-

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	MINOR	20	F	1	0	L	G

This report is accepted subject to the Terms of Use. Due to collision records processing backlogs, SWITRS data is typically seven months behind. Data requested for dates seven months prior to the current date will be incomplete.

Primary Rd **HERNDON AVE** *Distance (ft)* **303.** *Direction* **W** *Secondary Rd* **HAYES AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NORTH** *Beat* **00A** *Type* **0** *CalTrans* *Badge* **P1753** *Collision Date* **20210124** *Time* **2100** *Day* **SUN**
Primary Collision Factor **R-O-W AUTO** *Violation* **21453B** *Collision Type* **OVERTURNED** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20210201**
Weather1 **RAINING** *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* **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
1	DRVR	50	F	W	HBD-UI		RAN OFF RD	W	A	0100	FORD	2017	-	-	A		-	L	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **HERNDON AVE** *Distance (ft)* **280.** *Direction* **W** *Secondary Rd* **HAYES AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NW** *Beat* **00A** *Type* **0** *CalTrans* *Badge* **P1477** *Collision Date* **20211007** *Time* **2045** *Day* **THU**
Primary Collision Factor **LANE CHANGE** *Violation* **21658A** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20211015**
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 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	40	M	H	HBD-UI		PROC ST	W	A	0100	ACURA	2018	-	-	A		-	L	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **HERNDON AVE** *Distance (ft)* **42.0** *Direction* **E** *Secondary Rd* **HAYES AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NW** *Beat* *Type* **0** *CalTrans* *Badge* **P1490** *Collision Date* **20211214** *Time* **1706** *Day* **TUE**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **REAR END** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20220117**
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* **DARK - ST** *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	17	M	W	HNBD		UNS TURN	W	A	0100	CHEVR	2001	-	3	N		-	-	G
2	DRVR	18	M	O	HNBD		STOPPED	W	A	0100	ACURA	2015	-	3	N		-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	POSSIBL	18	M	1	0	M	G

Primary Rd **HERNDON AVE** *Distance (ft)* **0.00** *Direction* *Secondary Rd* **INGRAM AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NW** *Beat* **00B** *Type* **0** *CalTrans* *Badge* **P1913** *Collision Date* **20210725** *Time* **1042** *Day* **SUN**
Primary Collision Factor **R-O-W AUTO** *Violation* **21800A** *Collision Type* **SIDESWIPE** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **N** *Process Date* **20210928**
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	72	F	H	HBD-NUI		RGT TURN	W	A	0100	HONDA	2001	-	-	N		-	L	G
2	DRVR	24	M	H	HBD-NUI		PROC ST	W	A	0100	FORD	2018	-	-	A		-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	MINOR	72	F	1	0	L	G

Primary Rd **HERNDON AVE** *Distance (ft)* **144.** *Direction* **W** *Secondary Rd* **MAPLE AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NORTH** *Beat* **00B** *Type* **0** *CalTrans* *Badge* **P1402** *Collision Date* **20210819** *Time* **1048** *Day* **THU**
Primary Collision Factor **R-O-W AUTO** *Violation* **21453B** *Collision Type* **SIDESWIPE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20210826**
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	48	F	O	HNBD		RGT TURN	W	A	0100	TOYOT	2005	-	3	N		-	M	G
2	DRVR	19	F	W	HNBD		PROC ST	W	A	0100	HYUND	2017	-	3	N		-	M	G
3	DRVR	28	F	H	HNBD		PROC ST	W	A	0100	CHEVR	2013	-	3	N		-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

This report is accepted subject to the Terms of Use. Due to collision records processing backlogs, SWITRS data is typically seven months behind. Data requested for dates seven months prior to the current date will be incomplete.

Primary Rd **HERNDON AVE** *Distance (ft)* **189.** *Direction* **E** *Secondary Rd* **FRUIT AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NORTH** *Beat* **00B** *Type* **0** *CalTrans* *Badge* **P2135** *Collision Date* **20221201** *Time* **2249** *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* **20221213**
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* **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	29	M	H	HBD-UI		RAN OFF RD	W	A	0100	MAZDA	2016	-	3	A	-	M -

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **HERNDON AVE** *Distance (ft)* **0.00** *Direction* *Secondary Rd* **FRWY 41** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NORTH** *Beat* **00B** *Type* **0** *CalTrans* *Badge* **P1451** *Collision Date* **20220806** *Time* **1230** *Day* **SAT**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **REAR END** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **N** *Process Date* **20220811**
Weather1 **CLEAR** *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* *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	PROC ST	W	A	0100	HONDA		-	3	A	-	- -
2	DRVR	23	F	H			PROC PED	W	A	0100	KIA	201	-		N		M G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	POSSIBL	23	F	1	0	M	G

Primary Rd **HERNDON AVE** *Distance (ft)* **0.00** *Direction* *Secondary Rd* **HAYES AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NW** *Beat* **00A** *Type* **0** *CalTrans* *Badge* **P2018** *Collision Date* **20220126** *Time* **0008** *Day* **WED**
Primary Collision Factor **DRVR ALC|DRG** *Violation* **23152A** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20220223**
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 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	42	M	O		DRUG	LFT TURN	W	A	0100	FORD	2013	-	-	N	-	L -

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **HERNDON AVE** *Distance (ft)* **622.** *Direction* **W** *Secondary Rd* **HAYES AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NORTH** *Beat* *Type* **0** *CalTrans* *Badge* **S194** *Collision Date* **20220524** *Time* **1350** *Day* **TUE**
Primary Collision Factor **LANE CHANGE** *Violation* **21658A** *Collision Type* **SIDESWIPE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20220603**
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	37	F	H	HNBD		CHANG LN	W	I	1900	GILLI	2012	-	-	N	-	L G
2	DRVR	28	M	H	HNBD		PROC ST	W	A	0100	FORD	2002	-	-	A	-	M G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **HERNDON AVE** *Distance (ft)* **1229** *Direction* **W** *Secondary Rd* **HAYES AVE** *NCIC* **1005** *State Hwy?* **Y** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NW** *Beat* **00A** *Type* **0** *CalTrans* *Badge* **P1920** *Collision Date* **20221111** *Time* **0226** *Day* **FRI**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20221216**
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* **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	46	F	W			PROC ST	W	A	0100	HONDA	2008	-	3	A	-	L G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

This report is accepted subject to the Terms of Use. Due to collision records processing backlogs, SWITRS data is typically seven months behind. Data requested for dates seven months prior to the current date will be incomplete.

Primary Rd **HAWES AVE** *Distance (ft)* **200.** *Direction* **E** *Secondary Rd* **TEILMAN AVE** *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* **P1976** *Collision Date* **20201220** *Time* **0230** *Day* **SUN**
Primary Collision Factor **UNKNOWN** *Violation* *Collision Type* **SIDESWIPE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20210111**
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* *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	998	F		IMP UNK	IMP UNK	PROC ST	E	A	0100	CHEVR	2016	-	-	F		M - -
2	PRKD	998	-				PARKED	E	D	7500	DODGE	1998	-	3	N		- - -

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **HAYES AVE** *Distance (ft)* **90.0** *Direction* **N** *Secondary Rd* **HERNDON AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NW** *Beat* **00A** *Type* **0** *CalTrans* *Badge* **P1278** *Collision Date* **20200524** *Time* **0130** *Day* **SUN**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20210408**
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 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	28	F	H	HBD-UI		PROC ST	S	A	0100	KIA	2016	-	3	A		- M G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **MAPLE AVE** *Distance (ft)* **75.0** *Direction* **S** *Secondary Rd* **MCKENZIE 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* **018823** *Collision Date* **20200722** *Time* **0740** *Day* **WED**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **OTHER** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **Y** *Process Date* **20200729**
Weather1 **CLEAR** *Weather2* *Rdwy Surface* **DRY** *Rdwy Cond1* **NO UNUSL CND** *Rdwy Cond2* *Spec Cond* **0**
Hit and Run *Motor Vehicle Involved With* **TRAIN** *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	39	F	H	HNBD		PROC ST	S	A	0100	DODG	2018	-	3	N		- L G
2	OTHR	44	M	H	HNBD		OTHER	W	M	9595	JTP	1993	-	3	N		- - -

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	POSSIBL	39	F	1	0	L	G

Primary Rd **HAYES AVE** *Distance (ft)* **10.0** *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* **010** *Type* **3** *CalTrans* *Badge* **019926** *Collision Date* **20200303** *Time* **1510** *Day* **TUE**
Primary Collision Factor **R-O-W AUTO** *Violation* **21802A** *Collision Type* **BROADSIDE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20200310**
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	53	M	H	HNBD		LFT TURN	S	G	2531	FREI	2012	-	3	N		- M G
2	DRVR	29	M	H	HNBD		PROC ST	W	A	0100	FORD	2008	-	3	N		- M G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **HAYES AVE** *Distance (ft)* **8.00** *Direction* **N** *Secondary Rd* **SANTA ANA AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NW** *Beat* **00C** *Type* **0** *CalTrans* *Badge* **P1005** *Collision Date* **20200927** *Time* **0130** *Day* **SUN**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20201007**
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 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	PROC ST	N	A	0100	PONTI	2007	-	3	N		- M -

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

This report is accepted subject to the Terms of Use. Due to collision records processing backlogs, SWITRS data is typically seven months behind. Data requested for dates seven months prior to the current date will be incomplete.

Primary Rd **HERNDON AVE** *Distance (ft)* **632.** *Direction* **W** *Secondary Rd* **GOLDEN STATE** *NCIC* **1005** *State Hwy?* **Y** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NW** *Beat* **00C** *Type* **0** *CalTrans* *Badge* **P1911** *Collision Date* **20201120** *Time* **0511** *Day* **FRI**
Primary Collision Factor **STOP SGN|SIG** *Violation* **21453A** *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **N** *Process Date* **20201130**
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	B			PROC ST	E	A	0100	TOYOT	1997	-	3	N	-	M	G								
2	DRVR	38	M	O			LFT TURN	W	A	0700	LEXUS	2019	-	3	N	-	M	G	DRVR	POSSIBL	38	M	1	0	M	G

Primary Rd **HERNDON AVE** *Distance (ft)* **668.** *Direction* **W** *Secondary Rd* **GOLDEN STATE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **FRESN** *Beat* **1341** *Type* **0** *CalTrans* *Badge* **P864** *Collision Date* **20201203** *Time* **1650** *Day* **THU**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **REAR END** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **N** *Process Date* **20201209**
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	42	M	W	HNBD		PROC ST	E	D	2200	DODGE	2008	-	3	N	-	M	G								
2	DRVR	43	F	W	HNBD		STOPPED	E	A	0100	HYUND	2018	-	3	N	-	M	G	DRVR	POSSIBL	43	F	1	0	M	G

Primary Rd **HERNDON AVE** *Distance (ft)* **367.** *Direction* **E** *Secondary Rd* **GOLDEN STATE** *NCIC* **1005** *State Hwy?* **Y** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NORTH** *Beat* **00A** *Type* **0** *CalTrans* *Badge* **P1911** *Collision Date* **20201203** *Time* **2240** *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* **20201229**
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	21	M	O	HBD-UI		LFT TURN	E	A	0100	SAAB	2005	-	3	N	-	M	G								

Primary Rd **HERNDON AVE** *Distance (ft)* **0.00** *Direction* *Secondary Rd* **HARRISON** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NORTH** *Beat* *Type* **0** *CalTrans* *Badge* **P1239** *Collision Date* **20200131** *Time* **1948** *Day* **FRI**
Primary Collision Factor **NOT STATED** *Violation* *Collision Type* **OTHER** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20200330**
Weather1 *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
1	DRVR	998	-		IMP UNK	IMP UNK	CHANG LN	W	F	2600	TOYOT		-	-	A	-	-	-								
2	DRVR	58	F	W	HNBD		LFT TURN	W	F	1600	NISSA	2002	-	3	N	-	M	G								

Primary Rd **HERNDON AVE** *Distance (ft)* **0.00** *Direction* *Secondary Rd* **HAYES AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **NW** *Beat* **00A** *Type* **0** *CalTrans* *Badge* **P1117** *Collision Date* **20200415** *Time* **1244** *Day* **WED**
Primary Collision Factor **STOP SGN|SIG** *Violation* **21453A** *Collision Type* **BROADSIDE** *Severity* **INJURY** *#Killed* **0** *#Injured* **1** *Tow Away?* **N** *Process Date* **20200420**
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* **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	17	F	W	HNBD		PROC ST	N	L	0400	-		-	3	N	-	-	-	BICY	MINOR	17	F	9	1	-	-
2	DRVR	19	F	H	HNBD		PROC ST	W	C	0200	INFIN	2003	-	3	N	-	-	G								

This report is accepted subject to the Terms of Use. Due to collision records processing backlogs, SWITRS data is typically seven months behind. Data requested for dates seven months prior to the current date will be incomplete.

Primary Rd **VENTURA ST** *Distance (ft)* **0.00** *Direction* *Secondary Rd* **SIXTH ST** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **SE** *Beat* *Type* **0** *CalTrans* *Badge* **P1066** *Collision Date* **20200618** *Time* **0823** *Day* **THU**
Primary Collision Factor **IMPROP TURN** *Violation* **22107** *Collision Type* **SIDESWIPE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20200619**
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* **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	CHANG LN	E	E	2335	GMC	1997	-	-	A		-	-	-
2	DRVR	23	M	W	HNBD		PROC ST	E	D	2200	FORD	2017	-	3	N		-	M	G
3	DRVR	44	M	H	HNBD		PROC ST	W	D	2200	CHEVR	2013	-	3	N		-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **VENTURA ST** *Distance (ft)* **0.00** *Direction* *Secondary Rd* **TENTH ST (E)** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* **SOUTH** *Beat* **00E** *Type* **0** *CalTrans* *Badge* **P1689** *Collision Date* **20200811** *Time* **1640** *Day* **TUE**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **REAR END** *Severity* **INJURY** *#Killed* **0** *#Injured* **3** *Tow Away?* **N** *Process Date* **20200813**
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	66	M	H	HNBD		PROC ST	E	A	0100	CHEVR	2010	-	-	N		-	M	G
2	DRVR	54	M	H	HNBD		STOPPED	E	A	0100	NISSA	2013	-	-	N		-	M	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	POSSIBL	54	M	1	0	M	G
PASS	POSSIBL	51	F	3	0	M	G
PASS	POSSIBL	12	F	6	0	M	G

Primary Rd **VENTURA ST** *Distance (ft)* **55.0** *Direction* **E** *Secondary Rd* **THIRD ST** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* *Beat* *Type* **0** *CalTrans* *Badge* **P1975** *Collision Date* **20200916** *Time* **0322** *Day* **WED**
Primary Collision Factor **OTHER IMPROP DRV** *Violation* *Collision Type* **HEAD-ON** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **N** *Process Date* **20200918**
Weather1 *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 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	39	M	H	HNBD		RAN OFF RD	W	A	0100	CHRYS	2016	-	3	A		-	-	G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **VETERANS BLVD** *Distance (ft)* **0.00** *Direction* *Secondary Rd* **HAYES AVE** *NCIC* **1005** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **Fresno** *County* **Fresno** *Population* **7** *Rpt Dist* *Beat* *Type* **0** *CalTrans* *Badge* **P1674** *Collision Date* **20200829** *Time* **0013** *Day* **SAT**
Primary Collision Factor **UNSAFE SPEED** *Violation* **22350** *Collision Type* **HIT OBJECT** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20200831**
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 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	-	A	0100	NISSA	2015	-	3	N		-	-	-

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd **VIAO AVENUE** *Distance (ft)* **721.** *Direction* **N** *Secondary Rd* **BELMONT** *NCIC* **9405** *State Hwy?* **N** *Route* *Postmile Prefix* *Postmile* *Side of Hwy*
City **UNINCORP.** *County* **Fresno** *Population* **9** *Rpt Dist* *Beat* **025** *Type* **3** *CalTrans* *Badge* **020942** *Collision Date* **20200122** *Time* **1600** *Day* **WED**
Primary Collision Factor **STRTNG|BCKNG** *Violation* **22106** *Collision Type* **BROADSIDE** *Severity* **PDO** *#Killed* **0** *#Injured* **0** *Tow Away?* **Y** *Process Date* **20200131**
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	32	F	H	HNBD		BACKING	E	D	2200	NISSA	2000	-	3	N		-	M	G
2	DRVR	36	M	W	HNBD		PROC ST	S	D	2200	FORD	2019	-	3	N		-	M	G
3	PRKD	998	-		HNBD		PARKED	S	A	0100	HYUND	2010	-	3	N		-	-	-

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

This report is accepted subject to the Terms of Use. Due to collision records processing backlogs, SWITRS data is typically seven months behind. Data requested for dates seven months prior to the current date will be incomplete.

Appendix F: Existing Traffic Conditions

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	40	643	25	1	28	556	12	25	51	7	12	138
Future Volume (veh/h)	40	643	25	1	28	556	12	25	51	7	12	138
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
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
Adj Flow Rate, veh/h	43	684	27		30	591	13	27	54	7	13	147
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
Percent Heavy Veh, %	3	3	3		3	3	3	3	3	3	3	3
Cap, veh/h	246	1087	485		185	1473	457	170	670	299	89	587
Arrive On Green	0.07	0.31	0.31		0.05	0.29	0.29	0.05	0.19	0.19	0.03	0.17
Sat Flow, veh/h	3428	3526	1572		3428	5066	1571	3428	3526	1572	3428	3526
Grp Volume(v), veh/h	43	684	27		30	591	13	27	54	7	13	147
Grp Sat Flow(s),veh/h/ln	1714	1763	1572		1714	1689	1571	1714	1763	1572	1714	1763
Q Serve(g_s), s	0.5	7.7	0.6		0.4	4.3	0.3	0.3	0.6	0.2	0.2	1.7
Cycle Q Clear(g_c), s	0.5	7.7	0.6		0.4	4.3	0.3	0.3	0.6	0.2	0.2	1.7
Prop In Lane	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	246	1087	485		185	1473	457	170	670	299	89	587
V/C Ratio(X)	0.17	0.63	0.06		0.16	0.40	0.03	0.16	0.08	0.02	0.15	0.25
Avail Cap(c_a), veh/h	581	2812	1254		581	4041	1253	581	2935	1309	581	2988
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
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
Uniform Delay (d), s/veh	20.1	13.7	11.2		20.8	13.1	11.7	20.9	15.3	15.2	21.9	16.7
Incr Delay (d2), s/veh	0.3	0.6	0.0		0.4	0.2	0.0	0.4	0.1	0.0	0.7	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
%ile BackOfQ(50%),veh/ln	0.2	2.2	0.1		0.1	1.2	0.1	0.1	0.2	0.0	0.1	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.4	14.3	11.2		21.2	13.3	11.7	21.4	15.4	15.2	22.7	16.9
LnGrp LOS	C	B	B		C	B	B	C	B	B	C	B
Approach Vol, veh/h		754				634			88			254
Approach Delay, s/veh		14.5				13.6			17.2			17.5
Approach LOS		B				B			B			B

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	14.0	6.7	19.9	6.5	13.0	7.5	19.1
Change Period (Y+Rc), s	4.2	5.3	4.2	5.7	4.2	* 5.3	4.2	5.7
Max Green Setting (Gmax), s	7.8	38.3	7.8	36.7	7.8	* 39	7.8	36.7
Max Q Clear Time (g_c+I1), s	2.2	2.6	2.4	9.7	2.3	4.4	2.5	6.3
Green Ext Time (p_c), s	0.0	0.3	0.0	4.4	0.0	1.2	0.0	3.8

Intersection Summary	
HCM 7th Control Delay, s/veh	14.8
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	88
Future Volume (veh/h)	88
Initial Q (Qb), veh	0
Lane Width Adj.	1.00
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1856
Adj Flow Rate, veh/h	94
Peak Hour Factor	0.94
Percent Heavy Veh, %	3
Cap, veh/h	262
Arrive On Green	0.17
Sat Flow, veh/h	1572
Grp Volume(v), veh/h	94
Grp Sat Flow(s),veh/h/ln	1572
Q Serve(g_s), s	2.4
Cycle Q Clear(g_c), s	2.4
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	262
V/C Ratio(X)	0.36
Avail Cap(c_a), veh/h	1333
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	17.0
Incr Delay (d2), s/veh	0.8
Initial Q Delay(d3), s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.7
Unsig. Movement Delay, s/veh	
LnGrp Delay(d), s/veh	17.8
LnGrp LOS	B
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection	
Intersection Delay, s/veh	16.3
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	63	118	315	46	44	246
Future Vol, veh/h	63	118	315	46	44	246
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	74	139	371	54	52	289
Number of Lanes	2	0	1	2	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	3	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	3
HCM Control Delay, s/veh	11.1	19.5	15.6
HCM LOS	B	C	C

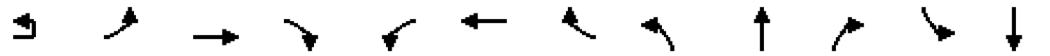
Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3
Vol Left, %	15%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	15%	0%	100%	100%
Vol Right, %	85%	0%	85%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	290	42	139	315	23	23
LT Vol	44	0	0	315	0	0
Through Vol	0	42	21	0	23	23
RT Vol	246	0	118	0	0	0
Lane Flow Rate	341	49	164	371	27	27
Geometry Grp	5	6	6	5	5	5
Degree of Util (X)	0.552	0.094	0.283	0.666	0.045	0.031
Departure Headway (Hd)	5.827	6.831	6.224	6.467	5.959	4.18
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	618	523	576	560	600	853
Service Time	3.577	4.595	3.987	4.21	3.702	1.922
HCM Lane V/C Ratio	0.552	0.094	0.285	0.663	0.045	0.032
HCM Control Delay, s/veh	15.6	10.3	11.4	21.2	9	7.1
HCM Lane LOS	C	B	B	C	A	A
HCM 95th-tile Q	3.4	0.3	1.2	4.9	0.1	0.1

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	124	204	37	235	692	546	137
Future Volume (veh/h)	124	204	37	235	692	546	137
Initial Q (Qb), veh	0	0		0	0	0	0
Lane Width Adj.	1.00	1.00		1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00			1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach	No				No	No	
Adj Sat Flow, veh/h/ln	1856	1856		1856	1856	1856	1856
Adj Flow Rate, veh/h	146	240		276	814	642	161
Peak Hour Factor	0.85	0.85		0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3		3	3	3	3
Cap, veh/h	336	527		661	2874	1371	426
Arrive On Green	0.19	0.19		0.19	0.57	0.27	0.27
Sat Flow, veh/h	1767	2768		3428	5233	5233	1572
Grp Volume(v), veh/h	146	240		276	814	642	161
Grp Sat Flow(s),veh/h/ln	1767	1384		1714	1689	1689	1572
Q Serve(g_s), s	2.9	3.1		2.9	3.4	4.3	3.4
Cycle Q Clear(g_c), s	2.9	3.1		2.9	3.4	4.3	3.4
Prop In Lane	1.00	1.00		1.00			1.00
Lane Grp Cap(c), veh/h	336	527		661	2874	1371	426
V/C Ratio(X)	0.43	0.46		0.42	0.28	0.47	0.38
Avail Cap(c_a), veh/h	1748	2737		746	5035	3407	1057
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	14.5	14.5		14.3	4.5	12.3	12.0
Incr Delay (d2), s/veh	0.9	0.6		0.4	0.1	0.2	0.6
Initial Q Delay(d3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0		0.9	0.5	1.2	0.9
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	15.3	15.1		14.8	4.6	12.6	12.5
LnGrp LOS	B	B		B	A	B	B
Approach Vol, veh/h	386				1090	803	
Approach Delay, s/veh	15.2				7.1	12.6	
Approach LOS	B				A	B	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		27.8		12.6	12.0	15.8	
Change Period (Y+Rc), s		4.9		4.9	4.2	4.9	
Max Green Setting (Gmax), s		40.2		40.0	8.8	27.2	
Max Q Clear Time (g_c+I1), s		5.4		5.1	4.9	6.3	
Green Ext Time (p_c), s		6.1		1.4	0.3	4.7	

Intersection Summary		
HCM 7th Control Delay, s/veh	10.4	
HCM 7th LOS	B	

Notes
User approved ignoring U-Turning movement.



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	4	66	666	5	7	702	16	10	87	3	12	41
Future Volume (veh/h)	4	66	666	5	7	702	16	10	87	3	12	41
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)		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
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
Adj Flow Rate, veh/h		70	709	5	7	747	17	11	93	3	13	44
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
Percent Heavy Veh, %		3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h		344	1317	588	50	1458	451	76	575	257	89	588
Arrive On Green		0.10	0.37	0.37	0.01	0.29	0.29	0.02	0.16	0.16	0.03	0.17
Sat Flow, veh/h		3428	3526	1572	3428	5066	1566	3428	3526	1572	3428	3526
Grp Volume(v), veh/h		70	709	5	7	747	17	11	93	3	13	44
Grp Sat Flow(s),veh/h/ln		1714	1763	1572	1714	1689	1566	1714	1763	1572	1714	1763
Q Serve(g_s), s		0.9	7.2	0.1	0.1	5.7	0.4	0.1	1.0	0.1	0.2	0.5
Cycle Q Clear(g_c), s		0.9	7.2	0.1	0.1	5.7	0.4	0.1	1.0	0.1	0.2	0.5
Prop In Lane		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		344	1317	588	50	1458	451	76	575	257	89	588
V/C Ratio(X)		0.20	0.54	0.01	0.14	0.51	0.04	0.14	0.16	0.01	0.15	0.07
Avail Cap(c_a), veh/h		583	2819	1257	583	4050	1252	583	2942	1312	583	2996
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
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
Uniform Delay (d), s/veh		19.0	11.3	9.0	22.3	13.7	11.8	22.0	16.5	16.1	21.9	16.1
Incr Delay (d2), s/veh		0.3	0.3	0.0	1.3	0.3	0.0	0.9	0.1	0.0	0.7	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
%ile BackOfQ(50%),veh/ln		0.3	1.9	0.0	0.0	1.6	0.1	0.1	0.4	0.0	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh		19.3	11.6	9.0	23.6	13.9	11.8	22.9	16.6	16.1	22.6	16.2
LnGrp LOS		B	B	A	C	B	B	C	B	B	C	B
Approach Vol, veh/h			784			771			107			100
Approach Delay, s/veh			12.3			14.0			17.3			17.2
Approach LOS			B			B			B			B

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	12.8	4.9	22.9	5.2	13.0	8.8	18.9
Change Period (Y+Rc), s	4.2	5.3	4.2	5.7	4.2	* 5.3	4.2	5.7
Max Green Setting (Gmax), s	7.8	38.3	7.8	36.7	7.8	* 39	7.8	36.7
Max Q Clear Time (g_c+I1), s	2.2	3.0	2.1	9.2	2.1	3.1	2.9	7.7
Green Ext Time (p_c), s	0.0	0.5	0.0	4.6	0.0	0.4	0.1	5.0

Intersection Summary	
HCM 7th Control Delay, s/veh	13.6
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	40
Future Volume (veh/h)	40
Initial Q (Qb), veh	0
Lane Width Adj.	1.00
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1856
Adj Flow Rate, veh/h	43
Peak Hour Factor	0.94
Percent Heavy Veh, %	3
Cap, veh/h	262
Arrive On Green	0.17
Sat Flow, veh/h	1567
Grp Volume(v), veh/h	43
Grp Sat Flow(s),veh/h/ln	1567
Q Serve(g_s), s	1.1
Cycle Q Clear(g_c), s	1.1
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	262
V/C Ratio(X)	0.16
Avail Cap(c_a), veh/h	1331
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	16.4
Incr Delay (d2), s/veh	0.3
Initial Q Delay(d3), s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.3
Unsig. Movement Delay, s/veh	
LnGrp Delay(d), s/veh	16.7
LnGrp LOS	B
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	31	21	96	72	21	74
Future Vol, veh/h	31	21	96	72	21	74
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	36	24	112	84	24	86
Number of Lanes	2	0	1	2	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	3	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	3
HCM Control Delay, s/veh	7.9	8.2	8.2
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3
Vol Left, %	22%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	33%	0%	100%	100%
Vol Right, %	78%	0%	67%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	95	21	31	96	36	36
LT Vol	21	0	0	96	0	0
Through Vol	0	21	10	0	36	36
RT Vol	74	0	21	0	0	0
Lane Flow Rate	110	24	36	112	42	42
Geometry Grp	5	6	6	5	5	5
Degree of Util (X)	0.144	0.035	0.048	0.167	0.057	0.036
Departure Headway (Hd)	4.705	5.232	4.761	5.382	4.88	3.135
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	764	686	754	669	736	1149
Service Time	2.418	2.951	2.479	3.094	2.592	0.835
HCM Lane V/C Ratio	0.144	0.035	0.048	0.167	0.057	0.037
HCM Control Delay, s/veh	8.2	8.1	7.7	9.2	7.9	6
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.5	0.1	0.2	0.6	0.2	0.1

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	49	63	18	125	683	699	47
Future Volume (veh/h)	49	63	18	125	683	699	47
Initial Q (Qb), veh	0	0		0	0	0	0
Lane Width Adj.	1.00	1.00		1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00			1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach	No				No	No	
Adj Sat Flow, veh/h/ln	1856	1856		1856	1856	1856	1856
Adj Flow Rate, veh/h	53	68		136	742	760	51
Peak Hour Factor	0.92	0.92		0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3		3	3	3	3
Cap, veh/h	257	402		677	3073	1533	476
Arrive On Green	0.15	0.15		0.20	0.61	0.30	0.30
Sat Flow, veh/h	1767	2768		3428	5233	5233	1572
Grp Volume(v), veh/h	53	68		136	742	760	51
Grp Sat Flow(s),veh/h/ln	1767	1384		1714	1689	1689	1572
Q Serve(g_s), s	1.0	0.9		1.3	2.7	4.9	0.9
Cycle Q Clear(g_c), s	1.0	0.9		1.3	2.7	4.9	0.9
Prop In Lane	1.00	1.00		1.00			1.00
Lane Grp Cap(c), veh/h	257	402		677	3073	1533	476
V/C Ratio(X)	0.21	0.17		0.20	0.24	0.50	0.11
Avail Cap(c_a), veh/h	1791	2804		764	5158	3490	1083
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	14.9	14.8		13.2	3.6	11.3	9.9
Incr Delay (d2), s/veh	0.4	0.2		0.1	0.0	0.2	0.1
Initial Q Delay(d3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.7		0.4	0.3	1.3	0.2
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	15.3	15.0		13.4	3.6	11.5	10.0
LnGrp LOS	B	B		B	A	B	B
Approach Vol, veh/h	121				878	811	
Approach Delay, s/veh	15.1				5.1	11.4	
Approach LOS	B				A	B	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		28.8		10.6	12.0	16.8	
Change Period (Y+Rc), s		4.9		4.9	4.2	4.9	
Max Green Setting (Gmax), s		40.2		40.0	8.8	27.2	
Max Q Clear Time (g_c+I1), s		4.7		3.0	3.3	6.9	
Green Ext Time (p_c), s		5.5		0.4	0.2	5.1	

Intersection Summary	
HCM 7th Control Delay, s/veh	8.6
HCM 7th LOS	A

Notes

User approved ignoring U-Turning movement.

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	R	UL	L	T	T	T	R	L
Maximum Queue (ft)	64	45	192	182	19	25	45	125	139	146	12	50
Average Queue (ft)	24	6	89	77	4	4	18	60	63	27	1	20
95th Queue (ft)	44	29	152	144	15	20	38	108	110	83	6	46
Link Distance (ft)			2418	2418	2418			3368	3368	3368		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250	250				250	250				150	140
Storage Blk Time (%)										0		
Queuing Penalty (veh)										0		

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	NB	NB	NB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R
Maximum Queue (ft)	72	51	27	26	74	87	63
Average Queue (ft)	24	2	5	10	22	39	29
95th Queue (ft)	57	17	22	30	53	78	54
Link Distance (ft)	337	337			249	249	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			180	100			80
Storage Blk Time (%)						0	0
Queuing Penalty (veh)						0	0

Intersection: 5: Palo Alto Avenue & Hayes Avenue

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (ft)	48	111	99	56	31	112
Average Queue (ft)	21	55	62	21	8	65
95th Queue (ft)	45	89	92	50	31	103
Link Distance (ft)	617	617		454	454	1264
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			150			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Veterans Boulevard & Hayes Avenue

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	R	UL	L	T	T	T	T	T	T	R
Maximum Queue (ft)	91	87	61	286	286	267	256	120	155	155	72	74
Average Queue (ft)	46	29	25	126	51	73	72	31	94	66	14	35
95th Queue (ft)	77	55	51	220	172	168	157	82	137	122	48	61
Link Distance (ft)	454	454				1592	1592	1592	1778	1778	1778	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			170	260	260							100
Storage Blk Time (%)				3	0	0						
Queuing Penalty (veh)				6	1	0						

Network Summary

Network wide Queuing Penalty: 8

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	R	UL	L	T	T	T	R	L
Maximum Queue (ft)	60	56	173	162	14	22	18	148	128	114	15	31
Average Queue (ft)	25	9	72	62	1	2	1	68	67	32	4	12
95th Queue (ft)	49	38	142	127	6	12	8	124	120	79	12	34
Link Distance (ft)			2418	2418	2418			3368	3368	3368		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250	250				250	250				150	140
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	NB	NB	NB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R
Maximum Queue (ft)	133	56	27	48	44	46	44
Average Queue (ft)	56	3	2	13	5	16	11
95th Queue (ft)	102	25	12	35	22	40	31
Link Distance (ft)	337	337			249	249	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			180	100			80
Storage Blk Time (%)	0						
Queuing Penalty (veh)	0						

Intersection: 5: Palo Alto Avenue & Hayes Avenue

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (ft)	31	52	79	58	32	56
Average Queue (ft)	10	21	36	33	15	32
95th Queue (ft)	32	48	65	49	41	56
Link Distance (ft)	617	617		454	454	1264
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			150			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Veterans Boulevard & Hayes Avenue

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	R	UL	L	T	T	T	T	T	T	R
Maximum Queue (ft)	46	44	41	144	77	138	120	53	163	146	130	53
Average Queue (ft)	24	15	10	60	24	49	37	10	98	71	34	22
95th Queue (ft)	49	33	27	107	55	125	98	38	155	136	99	46
Link Distance (ft)	454	454				1592	1592	1592	1778	1778	1778	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			170	260	260							100
Storage Blk Time (%)											0	
Queuing Penalty (veh)											0	

Network Summary

Network wide Queuing Penalty: 0

Appendix G: Existing plus Project Traffic Conditions

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	40	643	38	1	42	556	12	40	62	39	12	150
Future Volume (veh/h)	40	643	38	1	42	556	12	40	62	39	12	150
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
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
Adj Flow Rate, veh/h	43	684	40		45	591	13	43	66	41	13	160
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
Percent Heavy Veh, %	3	3	3		3	3	3	3	3	3	3	3
Cap, veh/h	242	1064	475		250	1542	478	242	716	319	89	558
Arrive On Green	0.07	0.30	0.30		0.07	0.30	0.30	0.07	0.20	0.20	0.03	0.16
Sat Flow, veh/h	3428	3526	1572		3428	5066	1571	3428	3526	1572	3428	3526
Grp Volume(v), veh/h	43	684	40		45	591	13	43	66	41	13	160
Grp Sat Flow(s),veh/h/ln	1714	1763	1572		1714	1689	1571	1714	1763	1572	1714	1763
Q Serve(g_s), s	0.6	8.2	0.9		0.6	4.5	0.3	0.6	0.7	1.0	0.2	2.0
Cycle Q Clear(g_c), s	0.6	8.2	0.9		0.6	4.5	0.3	0.6	0.7	1.0	0.2	2.0
Prop In Lane	1.00		1.00		1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	242	1064	475		250	1542	478	242	716	319	89	558
V/C Ratio(X)	0.18	0.64	0.08		0.18	0.38	0.03	0.18	0.09	0.13	0.15	0.29
Avail Cap(c_a), veh/h	546	2643	1179		546	3797	1178	546	2758	1230	546	2808
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
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
Uniform Delay (d), s/veh	21.4	14.8	12.2		21.3	13.4	11.9	21.4	15.8	16.0	23.3	18.2
Incr Delay (d2), s/veh	0.3	0.7	0.1		0.3	0.2	0.0	0.3	0.1	0.2	0.8	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
%ile BackOfQ(50%),veh/ln	0.2	2.5	0.2		0.2	1.3	0.1	0.2	0.3	0.3	0.1	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.8	15.5	12.3		21.7	13.6	12.0	21.8	15.9	16.1	24.1	18.4
LnGrp LOS	C	B	B		C	B	B	C	B	B	C	B
Approach Vol, veh/h		767				649			150			267
Approach Delay, s/veh		15.6				14.1			17.6			19.1
Approach LOS		B				B			B			B

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.5	15.2	7.8	20.5	7.7	13.1	7.7	20.6
Change Period (Y+Rc), s	4.2	5.3	4.2	5.7	4.2	* 5.3	4.2	5.7
Max Green Setting (Gmax), s	7.8	38.3	7.8	36.7	7.8	* 39	7.8	36.7
Max Q Clear Time (g_c+I1), s	2.2	3.0	2.6	10.2	2.6	4.6	2.6	6.5
Green Ext Time (p_c), s	0.0	0.5	0.0	4.5	0.0	1.3	0.0	3.8

Intersection Summary	
HCM 7th Control Delay, s/veh	15.8
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	88
Future Volume (veh/h)	88
Initial Q (Qb), veh	0
Lane Width Adj.	1.00
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1856
Adj Flow Rate, veh/h	94
Peak Hour Factor	0.94
Percent Heavy Veh, %	3
Cap, veh/h	249
Arrive On Green	0.16
Sat Flow, veh/h	1572
Grp Volume(v), veh/h	94
Grp Sat Flow(s),veh/h/ln	1572
Q Serve(g_s), s	2.6
Cycle Q Clear(g_c), s	2.6
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	249
V/C Ratio(X)	0.38
Avail Cap(c_a), veh/h	1253
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	18.4
Incr Delay (d2), s/veh	0.9
Initial Q Delay(d3), s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.8
Unsig. Movement Delay, s/veh	
LnGrp Delay(d), s/veh	19.4
LnGrp LOS	B
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	74	13	152	39	37	193
Future Vol, veh/h	74	13	152	39	37	193
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	-	-	-	60	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	84	15	173	44	42	219

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	389	109	0	0	217	0
Stage 1	195	-	-	-	-	-
Stage 2	194	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	585	921	-	-	1343	-
Stage 1	816	-	-	-	-	-
Stage 2	817	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	567	921	-	-	1343	-
Mov Cap-2 Maneuver	567	-	-	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	791	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	12.16	0	1.25
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	601	1343	-
HCM Lane V/C Ratio	-	-	0.164	0.031	-
HCM Ctrl Dly (s/v)	-	-	12.2	7.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	21	8	0	267	183	0
Future Vol, veh/h	21	8	0	267	183	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	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	24	9	0	303	208	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	360	104	-	0	-	0
Stage 1	208	-	-	-	-	-
Stage 2	152	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	-	-
Pot Cap-1 Maneuver	610	927	0	-	-	0
Stage 1	804	-	0	-	-	0
Stage 2	857	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	610	927	-	-	-	-
Mov Cap-2 Maneuver	656	-	-	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	857	-	-	-	-	-

Approach	WB	SE	NW
HCM Ctrl Dly, s/v	10.29	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWTWBLn1	SET
Capacity (veh/h)	- 713	-
HCM Lane V/C Ratio	- 0.046	-
HCM Ctrl Dly (s/v)	- 10.3	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.1	-

Intersection	
Intersection Delay, s/veh	20.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	143	132	315	134	33	51	2	249	58	28	5
Future Vol, veh/h	3	143	132	315	134	33	51	2	249	58	28	5
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	168	155	371	158	39	60	2	293	68	33	6
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay, s/veh	13.6	24.3	23	13.8
HCM LOS	B	C	C	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	17%	100%	0%	0%	100%	0%	0%	64%
Vol Thru, %	1%	0%	100%	27%	0%	100%	58%	31%
Vol Right, %	82%	0%	0%	73%	0%	0%	42%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	302	3	95	180	315	89	78	91
LT Vol	51	3	0	0	315	0	0	58
Through Vol	2	0	95	48	0	89	45	28
RT Vol	249	0	0	132	0	0	33	5
Lane Flow Rate	355	4	112	211	371	105	91	107
Geometry Grp	5	5	5	5	5	5	5	5
Degree of Util (X)	0.678	0.008	0.232	0.405	0.771	0.204	0.169	0.248
Departure Headway (Hd)	6.872	7.951	7.433	6.901	7.488	6.973	6.666	8.323
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	526	449	482	520	482	514	537	430
Service Time	4.623	5.715	5.197	4.664	5.243	4.728	4.421	6.093
HCM Lane V/C Ratio	0.675	0.009	0.232	0.406	0.77	0.204	0.169	0.249
HCM Control Delay, s/veh	23	10.8	12.4	14.3	31.3	11.5	10.8	13.8
HCM Lane LOS	C	B	B	B	D	B	B	B
HCM 95th-tile Q	5.1	0	0.9	1.9	6.8	0.8	0.6	1

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	167	302	37	307	692	546	186
Future Volume (veh/h)	167	302	37	307	692	546	186
Initial Q (Qb), veh	0	0		0	0	0	0
Lane Width Adj.	1.00	1.00		1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00			1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach	No				No	No	
Adj Sat Flow, veh/h/ln	1856	1856		1856	1856	1856	1856
Adj Flow Rate, veh/h	196	355		361	814	642	219
Peak Hour Factor	0.85	0.85		0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3		3	3	3	3
Cap, veh/h	372	582		628	2834	1406	436
Arrive On Green	0.21	0.21		0.18	0.56	0.28	0.28
Sat Flow, veh/h	1767	2768		3428	5233	5233	1572
Grp Volume(v), veh/h	196	355		361	814	642	219
Grp Sat Flow(s),veh/h/ln	1767	1384		1714	1689	1689	1572
Q Serve(g_s), s	4.2	4.9		4.1	3.6	4.5	5.0
Cycle Q Clear(g_c), s	4.2	4.9		4.1	3.6	4.5	5.0
Prop In Lane	1.00	1.00		1.00			1.00
Lane Grp Cap(c), veh/h	372	582		628	2834	1406	436
V/C Ratio(X)	0.53	0.61		0.57	0.29	0.46	0.50
Avail Cap(c_a), veh/h	1661	2601		1111	5379	3237	1005
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	14.9	15.2		15.9	4.9	12.7	12.9
Incr Delay (d2), s/veh	1.2	1.0		0.8	0.1	0.2	0.9
Initial Q Delay(d3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.8		1.3	0.6	1.3	1.4
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	16.1	16.3		16.7	5.0	13.0	13.8
LnGrp LOS	B	B		B	A	B	B
Approach Vol, veh/h	551				1175	861	
Approach Delay, s/veh	16.2				8.6	13.2	
Approach LOS	B				A	B	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	28.7	13.9	12.0	16.7
Change Period (Y+Rc), s	4.9	4.9	4.2	4.9
Max Green Setting (Gmax), s	45.2	40.0	13.8	27.2
Max Q Clear Time (g_c+I1), s	5.6	6.9	6.1	7.0
Green Ext Time (p_c), s	6.2	2.0	0.8	4.8

Intersection Summary	
HCM 7th Control Delay, s/veh	11.7
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	4	66	666	23	21	702	16	25	99	37	12	53
Future Volume (veh/h)	4	66	666	23	21	702	16	25	99	37	12	53
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)		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
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
Adj Flow Rate, veh/h		70	709	24	22	747	17	27	105	39	13	56
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
Percent Heavy Veh, %		3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h		338	1196	533	142	1428	441	168	667	298	89	585
Arrive On Green		0.10	0.34	0.34	0.04	0.28	0.28	0.05	0.19	0.19	0.03	0.17
Sat Flow, veh/h		3428	3526	1572	3428	5066	1566	3428	3526	1572	3428	3526
Grp Volume(v), veh/h		70	709	24	22	747	17	27	105	39	13	56
Grp Sat Flow(s),veh/h/ln		1714	1763	1572	1714	1689	1566	1714	1763	1572	1714	1763
Q Serve(g_s), s		0.9	8.0	0.5	0.3	6.0	0.4	0.4	1.2	1.0	0.2	0.6
Cycle Q Clear(g_c), s		0.9	8.0	0.5	0.3	6.0	0.4	0.4	1.2	1.0	0.2	0.6
Prop In Lane		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		338	1196	533	142	1428	441	168	667	298	89	585
V/C Ratio(X)		0.21	0.59	0.04	0.16	0.52	0.04	0.16	0.16	0.13	0.15	0.10
Avail Cap(c_a), veh/h		557	2696	1203	557	3874	1198	557	2814	1255	557	2865
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
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
Uniform Delay (d), s/veh		19.9	13.1	10.6	22.2	14.5	12.5	21.9	16.3	16.2	22.9	17.0
Incr Delay (d2), s/veh		0.3	0.5	0.0	0.5	0.3	0.0	0.4	0.1	0.2	0.8	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
%ile BackOfQ(50%),veh/ln		0.3	2.3	0.1	0.1	1.7	0.1	0.1	0.4	0.3	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh		20.2	13.6	10.7	22.7	14.8	12.5	22.3	16.4	16.4	23.6	17.0
LnGrp LOS		C	B	B	C	B	B	C	B	B	C	B
Approach Vol, veh/h			803			786			171			112
Approach Delay, s/veh			14.1			15.0			17.3			18.0
Approach LOS			B			B			B			B

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	14.4	6.2	22.0	6.6	13.3	8.9	19.2
Change Period (Y+Rc), s	4.2	5.3	4.2	5.7	4.2	* 5.3	4.2	5.7
Max Green Setting (Gmax), s	7.8	38.3	7.8	36.7	7.8	* 39	7.8	36.7
Max Q Clear Time (g_c+I1), s	2.2	3.2	2.3	10.0	2.4	3.1	2.9	8.0
Green Ext Time (p_c), s	0.0	0.7	0.0	4.6	0.0	0.4	0.1	5.0

Intersection Summary	
HCM 7th Control Delay, s/veh	15.0
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	40
Future Volume (veh/h)	40
Initial Q (Qb), veh	0
Lane Width Adj.	1.00
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1856
Adj Flow Rate, veh/h	43
Peak Hour Factor	0.94
Percent Heavy Veh, %	3
Cap, veh/h	260
Arrive On Green	0.17
Sat Flow, veh/h	1567
Grp Volume(v), veh/h	43
Grp Sat Flow(s),veh/h/ln	1567
Q Serve(g_s), s	1.1
Cycle Q Clear(g_c), s	1.1
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	260
V/C Ratio(X)	0.17
Avail Cap(c_a), veh/h	1273
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	17.2
Incr Delay (d2), s/veh	0.3
Initial Q Delay(d3), s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.3
Unsig. Movement Delay, s/veh	
LnGrp Delay(d), s/veh	17.5
LnGrp LOS	B
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	80	14	155	55	38	59
Future Vol, veh/h	80	14	155	55	38	59
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	-	-	-	60	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	91	16	176	63	43	67

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	327	119	0	0	239	0
Stage 1	207	-	-	-	-	-
Stage 2	120	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	639	907	-	-	1318	-
Stage 1	804	-	-	-	-	-
Stage 2	889	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	618	907	-	-	1318	-
Mov Cap-2 Maneuver	618	-	-	-	-	-
Stage 1	804	-	-	-	-	-
Stage 2	860	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	11.64	0	3.06
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	649	1318	-
HCM Lane V/C Ratio	-	-	0.165	0.033	-
HCM Ctrl Dly (s/v)	-	-	11.6	7.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	13	7	0	139	203	0
Future Vol, veh/h	13	7	0	139	203	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	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	8	0	158	231	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	310	115	-	0	-	0
Stage 1	231	-	-	-	-	-
Stage 2	79	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	-	-
Pot Cap-1 Maneuver	655	912	0	-	-	0
Stage 1	783	-	0	-	-	0
Stage 2	932	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	655	912	-	-	-	-
Mov Cap-2 Maneuver	678	-	-	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	932	-	-	-	-	-

Approach	WB	SE	NW
HCM Ctrl Dly, s/v	9.99	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NWTWBLn1	SET
Capacity (veh/h)	- 745	-
HCM Lane V/C Ratio	- 0.031	-
HCM Ctrl Dly (s/v)	- 10	-
HCM Lane LOS	- A	-
HCM 95th %tile Q(veh)	- 0.1	-

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	107	30	96	165	107	28	6	74	46	6	3
Future Vol, veh/h	14	107	30	96	165	107	28	6	74	46	6	3
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
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	124	35	112	192	124	33	7	86	53	7	3
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay, s/veh	9	9.4	9.8	10
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	26%	100%	0%	0%	100%	0%	0%	84%
Vol Thru, %	6%	0%	100%	54%	0%	100%	34%	11%
Vol Right, %	69%	0%	0%	46%	0%	0%	66%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	108	14	71	66	96	110	162	55
LT Vol	28	14	0	0	96	0	0	46
Through Vol	6	0	71	36	0	110	55	6
RT Vol	74	0	0	30	0	0	107	3
Lane Flow Rate	126	16	83	76	112	128	188	64
Geometry Grp	5	5	5	5	5	5	5	5
Degree of Util (X)	0.196	0.027	0.128	0.111	0.18	0.188	0.252	0.114
Departure Headway (Hd)	5.605	6.054	5.549	5.226	5.796	5.292	4.825	6.414
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	634	587	640	679	615	674	738	554
Service Time	3.392	3.84	3.335	3.012	3.566	3.061	2.595	4.212
HCM Lane V/C Ratio	0.199	0.027	0.13	0.112	0.182	0.19	0.255	0.116
HCM Control Delay, s/veh	9.8	9	9.2	8.7	9.8	9.3	9.2	10
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.7	0.1	0.4	0.4	0.7	0.7	1	0.4

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	86	148	18	247	683	699	125
Future Volume (veh/h)	86	148	18	247	683	699	125
Initial Q (Qb), veh	0	0		0	0	0	0
Lane Width Adj.	1.00	1.00		1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00			1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach	No				No	No	
Adj Sat Flow, veh/h/ln	1856	1856		1856	1856	1856	1856
Adj Flow Rate, veh/h	93	161		268	742	760	136
Peak Hour Factor	0.92	0.92		0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3		3	3	3	3
Cap, veh/h	313	490		641	2978	1520	472
Arrive On Green	0.18	0.18		0.19	0.59	0.30	0.30
Sat Flow, veh/h	1767	2768		3428	5233	5233	1572
Grp Volume(v), veh/h	93	161		268	742	760	136
Grp Sat Flow(s),veh/h/ln	1767	1384		1714	1689	1689	1572
Q Serve(g_s), s	1.9	2.1		2.9	2.9	5.2	2.8
Cycle Q Clear(g_c), s	1.9	2.1		2.9	2.9	5.2	2.8
Prop In Lane	1.00	1.00		1.00			1.00
Lane Grp Cap(c), veh/h	313	490		641	2978	1520	472
V/C Ratio(X)	0.30	0.33		0.42	0.25	0.50	0.29
Avail Cap(c_a), veh/h	1695	2655		723	4883	3304	1026
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	14.9	15.0		15.0	4.2	12.0	11.2
Incr Delay (d2), s/veh	0.5	0.4		0.4	0.0	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0		0.9	0.4	1.5	0.8
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	15.4	15.4		15.4	4.2	12.3	11.5
LnGrp LOS	B	B		B	A	B	B
Approach Vol, veh/h	254				1010	896	
Approach Delay, s/veh	15.4				7.2	12.2	
Approach LOS	B				A	B	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	29.4	12.3	12.0	17.4
Change Period (Y+Rc), s	4.9	4.9	4.2	4.9
Max Green Setting (Gmax), s	40.2	40.0	8.8	27.2
Max Q Clear Time (g_c+I1), s	4.9	4.1	4.9	7.2
Green Ext Time (p_c), s	5.5	0.9	0.3	5.4

Intersection Summary	
HCM 7th Control Delay, s/veh	10.2
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	R	UL	L	T	T	T	R	L
Maximum Queue (ft)	47	43	191	196	19	62	45	145	151	131	15	50
Average Queue (ft)	19	3	89	72	5	15	12	52	56	19	2	7
95th Queue (ft)	43	20	159	147	17	38	30	101	112	62	8	29
Link Distance (ft)			2418	2418	2418			3368	3368	3368		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250	250				250	250				150	140
Storage Blk Time (%)										0		
Queuing Penalty (veh)										0		

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	T	T	R
Maximum Queue (ft)	73	74	47	30	26	47	90	77
Average Queue (ft)	27	34	2	11	8	27	40	31
95th Queue (ft)	58	74	16	32	26	56	77	58
Link Distance (ft)		385	385			249	249	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	140			180	100			80
Storage Blk Time (%)							1	0
Queuing Penalty (veh)							1	0

Intersection: 3: Hayes Avenue & Southern Commerical Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	96	30
Average Queue (ft)	36	3
95th Queue (ft)	68	17
Link Distance (ft)	180	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		60
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Hayes Avenue & Northern Residential Driveway

Movement	WB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	18
95th Queue (ft)	42
Link Distance (ft)	220
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Palo Alto Avenue/Residential Driveway & Hayes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	31	55	99	126	94	92	164	71
Average Queue (ft)	3	27	58	83	31	37	71	36
95th Queue (ft)	17	49	90	119	59	68	113	60
Link Distance (ft)		298	298		447	447	1263	270
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150			150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 6: Veterans Boulevard & Hayes Avenue

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	R	UL	L	T	T	T	T	T	T	R
Maximum Queue (ft)	167	84	104	247	208	187	146	120	161	159	109	76
Average Queue (ft)	72	26	32	122	77	86	62	35	109	91	37	47
95th Queue (ft)	136	55	67	203	155	148	116	84	156	145	100	71
Link Distance (ft)	447	447				1592	1592	1592	571	571	571	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			170	260	260							100
Storage Blk Time (%)				0							0	
Queuing Penalty (veh)				0							0	

Network Summary

Network wide Queuing Penalty: 1

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	R	UL	L	T	T	T	R	L
Maximum Queue (ft)	113	56	204	204	38	42	45	130	150	149	15	52
Average Queue (ft)	41	11	83	74	6	13	6	74	74	37	2	20
95th Queue (ft)	78	46	153	148	22	32	25	127	125	95	10	48
Link Distance (ft)			2418	2418	2418			3368	3368	3368		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250	250				250	250				150	140
Storage Blk Time (%)										0		
Queuing Penalty (veh)										0		

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	R	L	L	T	T	R
Maximum Queue (ft)	95	48	72	24	26	47	46	42
Average Queue (ft)	43	2	22	1	7	14	10	12
95th Queue (ft)	86	16	54	8	25	39	30	29
Link Distance (ft)	384	384				249	249	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			180	100	100			80
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 3: Hayes Avenue & Southern Commerical Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	101	53
Average Queue (ft)	33	7
95th Queue (ft)	66	29
Link Distance (ft)	180	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		60
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Intersection: 4: Hayes Avenue & Northern Residential Driveway

Movement	WB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	14
95th Queue (ft)	39
Link Distance (ft)	282
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Palo Alto Avenue/Residential Driveway & Hayes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	31	31	98	74	88	80	56	52
Average Queue (ft)	9	21	34	35	38	46	36	23
95th Queue (ft)	31	44	62	64	61	70	56	46
Link Distance (ft)		310	310		447	447	1263	270
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150			150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

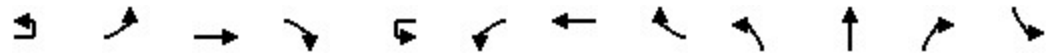
Intersection: 6: Veterans Boulevard & Hayes Avenue

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	R	UL	L	T	T	T	T	T	T	R
Maximum Queue (ft)	90	83	70	141	130	156	135	117	184	167	134	117
Average Queue (ft)	34	26	16	71	74	63	55	19	112	95	44	41
95th Queue (ft)	68	61	40	117	118	127	115	61	177	163	118	78
Link Distance (ft)	447	447				1592	1592	1592	571	571	571	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			170	260	260							100
Storage Blk Time (%)											0	1
Queuing Penalty (veh)											0	1

Network Summary

Network wide Queuing Penalty: 2

Appendix H: Near Term plus Project Traffic Conditions



Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	28	47	798	43	1	118	647	12	47	64	39	12
Future Volume (veh/h)	28	47	798	43	1	118	647	12	47	64	39	12
Initial Q (Qb), veh		0	0	0		0	0	0	0	0	0	0
Lane Width Adj.		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)		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
Work Zone On Approach			No				No			No		
Adj Sat Flow, veh/h/ln		1856	1856	1856		1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h		50	849	46		126	688	13	50	68	41	13
Peak Hour Factor		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
Cap, veh/h		255	1201	535		400	1940	602	255	645	288	87
Arrive On Green		0.07	0.34	0.34		0.12	0.38	0.38	0.07	0.18	0.18	0.03
Sat Flow, veh/h		3428	3526	1572		3428	5066	1571	3428	3526	1572	3428
Grp Volume(v), veh/h		50	849	46		126	688	13	50	68	41	13
Grp Sat Flow(s),veh/h/ln		1714	1763	1572		1714	1689	1571	1714	1763	1572	1714
Q Serve(g_s), s		0.8	12.1	1.2		2.0	5.6	0.3	0.8	0.9	1.3	0.2
Cycle Q Clear(g_c), s		0.8	12.1	1.2		2.0	5.6	0.3	0.8	0.9	1.3	0.2
Prop In Lane		1.00		1.00		1.00		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h		255	1201	535		400	1940	602	255	645	288	87
V/C Ratio(X)		0.20	0.71	0.09		0.31	0.35	0.02	0.20	0.11	0.14	0.15
Avail Cap(c_a), veh/h		461	2229	994		461	3203	993	461	2326	1038	461
HCM Platoon Ratio		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
Uniform Delay (d), s/veh		25.2	16.6	13.0		23.5	12.8	11.1	25.2	19.7	19.9	27.7
Incr Delay (d2), s/veh		0.4	0.8	0.1		0.4	0.1	0.0	0.4	0.1	0.2	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
%ile BackOfQ(50%),veh/ln		0.3	4.0	0.3		0.7	1.7	0.1	0.3	0.3	0.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh		25.6	17.4	13.1		24.0	12.9	11.2	25.6	19.8	20.1	28.5
LnGrp LOS		C	B	B		C	B	B	C	B	C	C
Approach Vol, veh/h			945				827			159		
Approach Delay, s/veh			17.6				14.6			21.7		
Approach LOS			B				B			C		

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.7	15.9	11.0	25.5	8.5	13.1	8.5	27.9
Change Period (Y+Rc), s	4.2	5.3	4.2	5.7	4.2	* 5.3	4.2	5.7
Max Green Setting (Gmax), s	7.8	38.3	7.8	36.7	7.8	* 39	7.8	36.7
Max Q Clear Time (g_c+I1), s	2.2	3.3	4.0	14.1	2.8	5.3	2.8	7.6
Green Ext Time (p_c), s	0.0	0.5	0.1	5.6	0.0	1.4	0.0	4.5

Intersection Summary	
HCM 7th Control Delay, s/veh	17.6
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	162	92
Future Volume (veh/h)	162	92
Initial Q (Qb), veh	0	0
Lane Width Adj.	1.00	1.00
Ped-Bike Adj(A_pbT)		1.00
Parking Bus, Adj	1.00	1.00
Work Zone On Approach	No	
Adj Sat Flow, veh/h/ln	1856	1856
Adj Flow Rate, veh/h	172	98
Peak Hour Factor	0.94	0.94
Percent Heavy Veh, %	3	3
Cap, veh/h	473	211
Arrive On Green	0.13	0.13
Sat Flow, veh/h	3526	1572
Grp Volume(v), veh/h	172	98
Grp Sat Flow(s),veh/h/ln	1763	1572
Q Serve(g_s), s	2.6	3.3
Cycle Q Clear(g_c), s	2.6	3.3
Prop In Lane		1.00
Lane Grp Cap(c), veh/h	473	211
V/C Ratio(X)	0.36	0.46
Avail Cap(c_a), veh/h	2369	1057
HCM Platoon Ratio	1.00	1.00
Upstream Filter(I)	1.00	1.00
Uniform Delay (d), s/veh	22.9	23.2
Incr Delay (d2), s/veh	0.5	1.6
Initial Q Delay(d3), s/veh	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.2
Unsig. Movement Delay, s/veh		
LnGrp Delay(d), s/veh	23.3	24.8
LnGrp LOS	C	C
Approach Vol, veh/h	283	
Approach Delay, s/veh	24.1	
Approach LOS	C	
Timer - Assigned Phs		

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	149	127	174	241	82
Future Vol, veh/h	0	149	127	174	241	82
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	55	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	169	144	198	274	93

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	184	367	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	4.16	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	0	824	1181	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	824	1181	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.49	3.57	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1181	-	824	-	-
HCM Lane V/C Ratio	0.122	-	0.205	-	-
HCM Ctrl Dly (s/v)	8.5	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.8	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	74	13	288	39	37	353
Future Vol, veh/h	74	13	288	39	37	353
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	-	-	-	55	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	84	15	327	44	42	401

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	634	186	0	0	372	0
Stage 1	349	-	-	-	-	-
Stage 2	285	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	409	822	-	-	1176	-
Stage 1	682	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	394	822	-	-	1176	-
Mov Cap-2 Maneuver	394	-	-	-	-	-
Stage 1	682	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.93	0	0.78
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	428	1176	-
HCM Lane V/C Ratio	-	-	0.231	0.036	-
HCM Ctrl Dly (s/v)	-	-	15.9	8.2	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	21	8	0	427	319	0
Future Vol, veh/h	21	8	0	427	319	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	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	24	9	0	485	363	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	605	181	-	0	-	0
Stage 1	363	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	-	-
Pot Cap-1 Maneuver	427	827	0	-	-	0
Stage 1	672	-	0	-	-	0
Stage 2	772	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	427	827	-	-	-	-
Mov Cap-2 Maneuver	520	-	-	-	-	-
Stage 1	672	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	WB	SE	NW
HCM Ctrl Dly, s/v	11.58	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWTWBLn1	SET
Capacity (veh/h)	- 580	-
HCM Lane V/C Ratio	- 0.057	-
HCM Ctrl Dly (s/v)	- 11.6	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.2	-

Intersection	
Intersection Delay, s/veh	26.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	294	141	316	267	33	54	2	253	58	28	5
Future Vol, veh/h	3	294	141	316	267	33	54	2	253	58	28	5
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	346	166	372	314	39	64	2	298	68	33	6
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay, s/veh	19.9	28.8	32.7	15.8
HCM LOS	C	D	D	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	17%	100%	0%	0%	100%	0%	0%	64%
Vol Thru, %	1%	0%	100%	41%	0%	100%	73%	31%
Vol Right, %	82%	0%	0%	59%	0%	0%	27%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	309	3	196	239	316	178	122	91
LT Vol	54	3	0	0	316	0	0	58
Through Vol	2	0	196	98	0	178	89	28
RT Vol	253	0	0	141	0	0	33	5
Lane Flow Rate	364	4	231	281	372	209	144	107
Geometry Grp	5	5	5	5	5	5	5	5
Degree of Util (X)	0.777	0.008	0.511	0.59	0.842	0.444	0.297	0.281
Departure Headway (Hd)	7.699	8.501	7.98	7.55	8.155	7.636	7.439	9.442
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	469	419	450	475	442	469	481	383
Service Time	5.482	6.297	5.776	5.345	5.947	5.427	5.23	7.142
HCM Lane V/C Ratio	0.776	0.01	0.513	0.592	0.842	0.446	0.299	0.279
HCM Control Delay, s/veh	32.7	11.4	18.9	20.8	41.6	16.5	13.4	15.8
HCM Lane LOS	D	B	C	C	E	C	B	C
HCM 95th-tile Q	6.8	0	2.8	3.7	8.2	2.2	1.2	1.1

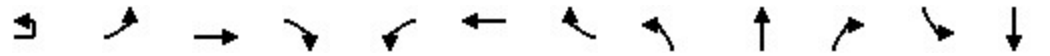
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	171	453	37	440	808	645	187
Future Volume (veh/h)	171	453	37	440	808	645	187
Initial Q (Qb), veh	0	0		0	0	0	0
Lane Width Adj.	1.00	1.00		1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00			1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach	No				No	No	
Adj Sat Flow, veh/h/ln	1856	1856		1856	1856	1856	1856
Adj Flow Rate, veh/h	201	533		518	951	759	220
Peak Hour Factor	0.85	0.85		0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3		3	3	3	3
Cap, veh/h	472	739		674	2771	1372	426
Arrive On Green	0.27	0.27		0.20	0.55	0.27	0.27
Sat Flow, veh/h	1767	2768		3428	5233	5233	1572
Grp Volume(v), veh/h	201	533		518	951	759	220
Grp Sat Flow(s),veh/h/ln	1767	1384		1714	1689	1689	1572
Q Serve(g_s), s	5.0	9.2		7.5	5.5	6.8	6.2
Cycle Q Clear(g_c), s	5.0	9.2		7.5	5.5	6.8	6.2
Prop In Lane	1.00	1.00		1.00			1.00
Lane Grp Cap(c), veh/h	472	739		674	2771	1372	426
V/C Ratio(X)	0.43	0.72		0.77	0.34	0.55	0.52
Avail Cap(c_a), veh/h	1342	2101		898	4346	2615	812
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	16.0	17.5		20.0	6.7	16.5	16.3
Incr Delay (d2), s/veh	0.6	1.4		2.9	0.1	0.4	1.0
Initial Q Delay(d3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	6.9		2.8	1.3	2.2	2.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	16.6	18.9		22.9	6.7	16.8	17.3
LnGrp LOS	B	B		C	A	B	B
Approach Vol, veh/h	734				1469	979	
Approach Delay, s/veh	18.3				12.4	16.9	
Approach LOS	B				B	B	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	33.7	19.0	14.6	19.2
Change Period (Y+Rc), s	4.9	4.9	4.2	4.9
Max Green Setting (Gmax), s	45.2	40.0	13.8	27.2
Max Q Clear Time (g_c+I1), s	7.5	11.2	9.5	8.8
Green Ext Time (p_c), s	7.5	2.8	0.8	5.5

Intersection Summary	
HCM 7th Control Delay, s/veh	15.2
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	14	78	931	42	81	814	16	43	110	37	12	60
Future Volume (veh/h)	14	78	931	42	81	814	16	43	110	37	12	60
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)		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
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
Adj Flow Rate, veh/h		83	990	45	86	866	17	46	117	39	13	64
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
Percent Heavy Veh, %		3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h		330	1344	599	336	1939	600	237	631	281	87	476
Arrive On Green		0.10	0.38	0.38	0.10	0.38	0.38	0.07	0.18	0.18	0.03	0.14
Sat Flow, veh/h		3428	3526	1572	3428	5066	1568	3428	3526	1572	3428	3526
Grp Volume(v), veh/h		83	990	45	86	866	17	46	117	39	13	64
Grp Sat Flow(s),veh/h/ln		1714	1763	1572	1714	1689	1568	1714	1763	1572	1714	1763
Q Serve(g_s), s		1.4	14.8	1.1	1.4	7.8	0.4	0.8	1.7	1.3	0.2	1.0
Cycle Q Clear(g_c), s		1.4	14.8	1.1	1.4	7.8	0.4	0.8	1.7	1.3	0.2	1.0
Prop In Lane		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		330	1344	599	336	1939	600	237	631	281	87	476
V/C Ratio(X)		0.25	0.74	0.08	0.26	0.45	0.03	0.19	0.19	0.14	0.15	0.13
Avail Cap(c_a), veh/h		437	2113	942	437	3036	939	437	2205	983	437	2245
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
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
Uniform Delay (d), s/veh		25.6	16.3	12.1	25.6	14.1	11.8	26.9	21.4	21.2	29.2	23.3
Incr Delay (d2), s/veh		0.4	0.8	0.1	0.4	0.2	0.0	0.4	0.1	0.2	0.8	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
%ile BackOfQ(50%),veh/ln		0.5	4.8	0.3	0.5	2.4	0.1	0.3	0.7	0.4	0.1	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh		26.0	17.1	12.1	26.0	14.2	11.8	27.3	21.5	21.4	30.0	23.5
LnGrp LOS		C	B	B	C	B	B	C	C	C	C	C
Approach Vol, veh/h			1118			969			202			125
Approach Delay, s/veh			17.6			15.2			22.8			24.4
Approach LOS			B			B			C			C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.7	16.3	10.2	29.0	8.4	13.6	10.1	29.1
Change Period (Y+Rc), s	4.2	5.3	4.2	5.7	4.2	* 5.3	4.2	5.7
Max Green Setting (Gmax), s	7.8	38.3	7.8	36.7	7.8	* 39	7.8	36.7
Max Q Clear Time (g_c+I1), s	2.2	3.7	3.4	16.8	2.8	3.7	3.4	9.8
Green Ext Time (p_c), s	0.0	0.8	0.1	6.4	0.0	0.5	0.1	5.8

Intersection Summary	
HCM 7th Control Delay, s/veh	17.4
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	45
Future Volume (veh/h)	45
Initial Q (Qb), veh	0
Lane Width Adj.	1.00
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1856
Adj Flow Rate, veh/h	48
Peak Hour Factor	0.94
Percent Heavy Veh, %	3
Cap, veh/h	211
Arrive On Green	0.14
Sat Flow, veh/h	1566
Grp Volume(v), veh/h	48
Grp Sat Flow(s),veh/h/ln	1566
Q Serve(g_s), s	1.7
Cycle Q Clear(g_c), s	1.7
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	211
V/C Ratio(X)	0.23
Avail Cap(c_a), veh/h	997
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	23.6
Incr Delay (d2), s/veh	0.5
Initial Q Delay(d3), s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.6
Unsig. Movement Delay, s/veh	
LnGrp Delay(d), s/veh	24.2
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	149	115	198	121	62
Future Vol, veh/h	0	149	115	198	121	62
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	55	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	169	131	225	138	70

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	104	208	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	4.16	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	0	927	1353	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	927	1353	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.75	2.92	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1353	-	927	-	-
HCM Lane V/C Ratio	0.097	-	0.183	-	-
HCM Ctrl Dly (s/v)	7.9	-	9.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.3	-	0.7	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	80	14	299	55	38	232
Future Vol, veh/h	80	14	299	55	38	232
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	-	-	-	55	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	91	16	340	63	43	264

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	589	201	0	0	402	0
Stage 1	371	-	-	-	-	-
Stage 2	218	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	437	803	-	-	1146	-
Stage 1	665	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	420	803	-	-	1146	-
Mov Cap-2 Maneuver	420	-	-	-	-	-
Stage 1	665	-	-	-	-	-
Stage 2	764	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.4	0	1.16
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	453	1146	-
HCM Lane V/C Ratio	-	-	0.236	0.038	-
HCM Ctrl Dly (s/v)	-	-	15.4	8.3	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	13	7	0	312	347	0
Future Vol, veh/h	13	7	0	312	347	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	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	8	0	355	394	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	572	197	-	0	-	0
Stage 1	394	-	-	-	-	-
Stage 2	177	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	-	-
Pot Cap-1 Maneuver	448	808	0	-	-	0
Stage 1	647	-	0	-	-	0
Stage 2	833	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	448	808	-	-	-	-
Mov Cap-2 Maneuver	529	-	-	-	-	-
Stage 1	647	-	-	-	-	-
Stage 2	833	-	-	-	-	-

Approach	WB	SE	NW
HCM Ctrl Dly, s/v	11.22	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWTWBLn1	SET
Capacity (veh/h)	- 602	-
HCM Lane V/C Ratio	- 0.038	-
HCM Ctrl Dly (s/v)	- 11.2	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.1	-

Intersection	
Intersection Delay, s/veh	11.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	277	33	98	307	107	30	6	75	46	6	3
Future Vol, veh/h	14	277	33	98	307	107	30	6	75	46	6	3
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
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	322	38	114	357	124	35	7	87	53	7	3
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay, s/veh	11.2	11.3	11.3	11.3
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	27%	100%	0%	0%	100%	0%	0%	84%
Vol Thru, %	5%	0%	100%	74%	0%	100%	49%	11%
Vol Right, %	68%	0%	0%	26%	0%	0%	51%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	111	14	185	125	98	205	209	55
LT Vol	30	14	0	0	98	0	0	46
Through Vol	6	0	185	92	0	205	102	6
RT Vol	75	0	0	33	0	0	107	3
Lane Flow Rate	129	16	215	146	114	238	243	64
Geometry Grp	5	5	5	5	5	5	5	5
Degree of Util (X)	0.234	0.029	0.356	0.234	0.197	0.379	0.363	0.131
Departure Headway (Hd)	6.525	6.478	5.971	5.785	6.233	5.726	5.364	7.389
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	550	553	601	621	577	628	672	485
Service Time	4.272	4.217	3.71	3.523	3.965	3.459	3.096	5.142
HCM Lane V/C Ratio	0.235	0.029	0.358	0.235	0.198	0.379	0.362	0.132
HCM Control Delay, s/veh	11.3	9.4	12	10.3	10.5	11.9	11.1	11.3
HCM Lane LOS	B	A	B	B	B	B	B	B
HCM 95th-tile Q	0.9	0.1	1.6	0.9	0.7	1.8	1.7	0.4

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	87	318	18	389	847	867	127
Future Volume (veh/h)	87	318	18	389	847	867	127
Initial Q (Qb), veh	0	0		0	0	0	0
Lane Width Adj.	1.00	1.00		1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00			1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach	No				No	No	
Adj Sat Flow, veh/h/ln	1856	1856		1856	1856	1856	1856
Adj Flow Rate, veh/h	95	346		423	921	942	138
Peak Hour Factor	0.92	0.92		0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3		3	3	3	3
Cap, veh/h	342	536		578	3011	1696	526
Arrive On Green	0.19	0.19		0.17	0.59	0.33	0.33
Sat Flow, veh/h	1767	2768		3428	5233	5233	1572
Grp Volume(v), veh/h	95	346		423	921	942	138
Grp Sat Flow(s),veh/h/ln	1767	1384		1714	1689	1689	1572
Q Serve(g_s), s	2.1	5.3		5.4	4.2	7.0	3.0
Cycle Q Clear(g_c), s	2.1	5.3		5.4	4.2	7.0	3.0
Prop In Lane	1.00	1.00		1.00			1.00
Lane Grp Cap(c), veh/h	342	536		578	3011	1696	526
V/C Ratio(X)	0.28	0.65		0.73	0.31	0.56	0.26
Avail Cap(c_a), veh/h	1529	2395		653	4405	2981	925
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	15.9	17.2		18.2	4.6	12.6	11.2
Incr Delay (d2), s/veh	0.4	1.3		3.7	0.1	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.1		2.1	0.7	2.0	0.8
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	16.3	18.5		21.9	4.7	12.9	11.5
LnGrp LOS	B	B		C	A	B	B
Approach Vol, veh/h	441				1344	1080	
Approach Delay, s/veh	18.0				10.1	12.7	
Approach LOS	B				B	B	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	32.4	13.9	12.0	20.4
Change Period (Y+Rc), s	4.9	4.9	4.2	4.9
Max Green Setting (Gmax), s	40.2	40.0	8.8	27.2
Max Q Clear Time (g_c+I1), s	6.2	7.3	7.4	9.0
Green Ext Time (p_c), s	7.1	1.7	0.2	6.4

Intersection Summary	
HCM 7th Control Delay, s/veh	12.3
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	R	UL	L	T	T	T	R	L
Maximum Queue (ft)	91	56	238	240	14	128	137	155	133	128	17	30
Average Queue (ft)	45	13	116	136	6	25	58	58	60	51	3	3
95th Queue (ft)	83	51	206	219	16	68	103	121	110	106	12	16
Link Distance (ft)			2418	2418	2418			3369	3369	3369		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250	250				250	250				150	140
Storage Blk Time (%)			0									
Queuing Penalty (veh)			0									

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	L	T	T	R
Maximum Queue (ft)	52	87	47	45	28	26	102	128	66
Average Queue (ft)	27	32	2	15	1	5	34	58	24
95th Queue (ft)	50	71	15	38	10	20	78	96	47
Link Distance (ft)		286	286				249	249	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	140			180	100	100			80
Storage Blk Time (%)							1	2	0
Queuing Penalty (veh)							0	2	0

Intersection: 2: Hayes Avenue & Western Driveway

Movement	EB	NB	SB
Directions Served	R	L	TR
Maximum Queue (ft)	76	68	22
Average Queue (ft)	41	24	1
95th Queue (ft)	65	55	7
Link Distance (ft)	190		286
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		55	
Storage Blk Time (%)		1	
Queuing Penalty (veh)		0	

Intersection: 3: Hayes Avenue & Southern Commerical Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	66	31
Average Queue (ft)	35	9
95th Queue (ft)	53	32
Link Distance (ft)	114	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		55
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Hayes Avenue & Northern Residential Driveway

Movement	WB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	21
95th Queue (ft)	43
Link Distance (ft)	195
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Palo Alto Avenue/Residential Driveway & Hayes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	26	158	196	143	119	78	156	97
Average Queue (ft)	1	36	83	88	51	42	81	38
95th Queue (ft)	9	81	149	130	88	65	129	69
Link Distance (ft)		286	286		447	447	1263	270
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150			150				
Storage Blk Time (%)		0		0				
Queuing Penalty (veh)		0		0				

Intersection: 6: Veterans Boulevard & Hayes Avenue

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	R	UL	L	T	T	T	T	T	T	R
Maximum Queue (ft)	132	132	126	340	420	1644	1607	1605	158	158	141	121
Average Queue (ft)	76	50	58	332	406	1116	1058	493	106	93	89	59
95th Queue (ft)	140	90	97	379	488	1930	1884	1527	152	138	141	100
Link Distance (ft)	447	447				1592	1592	1592	571	571	571	
Upstream Blk Time (%)						29	5	0				
Queuing Penalty (veh)						0	0	0				
Storage Bay Dist (ft)			170	260	260							100
Storage Blk Time (%)				86	80	0					4	1
Queuing Penalty (veh)				230	216	0					7	2

Network Summary

Network wide Queuing Penalty: 457

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	R	UL	L	T	T	T	R	L
Maximum Queue (ft)	157	283	315	347	41	48	87	149	163	168	17	30
Average Queue (ft)	72	39	156	170	9	19	40	82	89	77	3	6
95th Queue (ft)	139	136	256	283	24	43	77	132	139	146	14	25
Link Distance (ft)			2418	2418	2418			3369	3369	3369		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250	250				250	250				150	140
Storage Blk Time (%)			2							1		
Queuing Penalty (veh)			2							0		

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	T	T	R
Maximum Queue (ft)	52	108	50	49	26	25	67	46
Average Queue (ft)	25	54	2	16	10	6	25	19
95th Queue (ft)	52	95	16	40	29	23	58	40
Link Distance (ft)		286	286			249	249	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	140			180	100			80
Storage Blk Time (%)							0	
Queuing Penalty (veh)							0	

Intersection: 2: Hayes Avenue & Western Driveway

Movement	EB	NB
Directions Served	R	L
Maximum Queue (ft)	52	31
Average Queue (ft)	32	13
95th Queue (ft)	50	37
Link Distance (ft)	190	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		55
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Hayes Avenue & Southern Commerical Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	102	31
Average Queue (ft)	40	6
95th Queue (ft)	68	27
Link Distance (ft)	114	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		55
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Hayes Avenue & Northern Residential Driveway

Movement	WB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	17
95th Queue (ft)	41
Link Distance (ft)	216
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Palo Alto Avenue/Residential Driveway & Hayes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	28	28	88	73	111	81	92	52
Average Queue (ft)	11	23	42	41	60	53	43	26
95th Queue (ft)	33	39	68	61	94	77	72	47
Link Distance (ft)		286	286		447	447	1263	270
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150			150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 6: Veterans Boulevard & Hayes Avenue

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	R	UL	L	T	T	T	T	T	T	R
Maximum Queue (ft)	67	80	69	340	419	614	465	139	164	181	187	74
Average Queue (ft)	37	31	36	255	266	153	80	55	93	101	86	33
95th Queue (ft)	69	56	62	423	497	430	208	116	149	156	157	58
Link Distance (ft)	447	447				1592	1592	1592	571	571	571	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			170	260	260							100
Storage Blk Time (%)				34	43	1					3	
Queuing Penalty (veh)				97	120	4					4	

Network Summary

Network wide Queuing Penalty: 226

Appendix I: Cumulative Year 2046 plus Project Traffic Conditions

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	28	47	798	45	1	118	730	19	65	127	39	12
Future Volume (veh/h)	28	47	798	45	1	118	730	19	65	127	39	12
Initial Q (Qb), veh		0	0	0		0	0	0	0	0	0	0
Lane Width Adj.		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)		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
Work Zone On Approach			No				No			No		
Adj Sat Flow, veh/h/ln		1856	1856	1856		1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h		50	849	48		126	777	20	69	135	41	13
Peak Hour Factor		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
Cap, veh/h		253	1192	532		394	1921	596	306	688	307	87
Arrive On Green		0.07	0.34	0.34		0.11	0.38	0.38	0.09	0.20	0.20	0.03
Sat Flow, veh/h		3428	3526	1572		3428	5066	1571	3428	3526	1572	3428
Grp Volume(v), veh/h		50	849	48		126	777	20	69	135	41	13
Grp Sat Flow(s),veh/h/ln		1714	1763	1572		1714	1689	1571	1714	1763	1572	1714
Q Serve(g_s), s		0.8	12.5	1.2		2.0	6.7	0.5	1.1	1.9	1.3	0.2
Cycle Q Clear(g_c), s		0.8	12.5	1.2		2.0	6.7	0.5	1.1	1.9	1.3	0.2
Prop In Lane		1.00		1.00		1.00		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h		253	1192	532		394	1921	596	306	688	307	87
V/C Ratio(X)		0.20	0.71	0.09		0.32	0.40	0.03	0.23	0.20	0.13	0.15
Avail Cap(c_a), veh/h		450	2178	972		450	3130	971	450	2273	1014	450
HCM Platoon Ratio		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
Uniform Delay (d), s/veh		25.9	17.1	13.4		24.2	13.5	11.6	25.1	20.0	19.8	28.3
Incr Delay (d2), s/veh		0.4	0.8	0.1		0.5	0.1	0.0	0.4	0.1	0.2	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
%ile BackOfQ(50%),veh/ln		0.3	4.1	0.4		0.7	2.0	0.1	0.4	0.7	0.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh		26.2	17.9	13.5		24.6	13.7	11.6	25.5	20.1	19.9	29.1
LnGrp LOS		C	B	B		C	B	B	C	C	B	C
Approach Vol, veh/h			947				923			245		
Approach Delay, s/veh			18.2				15.1			21.6		
Approach LOS			B				B			C		

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.7	16.9	11.0	25.8	9.5	13.1	8.6	28.2
Change Period (Y+Rc), s	4.2	5.3	4.2	5.7	4.2	* 5.3	4.2	5.7
Max Green Setting (Gmax), s	7.8	38.3	7.8	36.7	7.8	* 39	7.8	36.7
Max Q Clear Time (g_c+I1), s	2.2	3.9	4.0	14.5	3.1	5.4	2.8	8.7
Green Ext Time (p_c), s	0.0	0.9	0.1	5.5	0.1	1.6	0.0	5.2

Intersection Summary	
HCM 7th Control Delay, s/veh	18.2
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	190	92
Future Volume (veh/h)	190	92
Initial Q (Qb), veh	0	0
Lane Width Adj.	1.00	1.00
Ped-Bike Adj(A_pbT)		1.00
Parking Bus, Adj	1.00	1.00
Work Zone On Approach	No	
Adj Sat Flow, veh/h/ln	1856	1856
Adj Flow Rate, veh/h	202	98
Peak Hour Factor	0.94	0.94
Percent Heavy Veh, %	3	3
Cap, veh/h	463	206
Arrive On Green	0.13	0.13
Sat Flow, veh/h	3526	1572
Grp Volume(v), veh/h	202	98
Grp Sat Flow(s),veh/h/ln	1763	1572
Q Serve(g_s), s	3.1	3.4
Cycle Q Clear(g_c), s	3.1	3.4
Prop In Lane		1.00
Lane Grp Cap(c), veh/h	463	206
V/C Ratio(X)	0.44	0.47
Avail Cap(c_a), veh/h	2315	1032
HCM Platoon Ratio	1.00	1.00
Upstream Filter(I)	1.00	1.00
Uniform Delay (d), s/veh	23.8	23.9
Incr Delay (d2), s/veh	0.6	1.7
Initial Q Delay(d3), s/veh	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.2
Unsig. Movement Delay, s/veh		
LnGrp Delay(d), s/veh	24.4	25.6
LnGrp LOS	C	C
Approach Vol, veh/h	313	
Approach Delay, s/veh	25.0	
Approach LOS	C	
Timer - Assigned Phs		

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	149	127	174	241	82
Future Vol, veh/h	0	149	127	174	241	82
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	55	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	169	144	198	274	93

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	184	367	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	4.16	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	0	824	1181	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	824	1181	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.49	3.57	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1181	-	824	-	-
HCM Lane V/C Ratio	0.122	-	0.205	-	-
HCM Ctrl Dly (s/v)	8.5	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.8	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	74	13	288	39	37	353
Future Vol, veh/h	74	13	288	39	37	353
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	-	-	-	55	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	84	15	327	44	42	401

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	634	186	0	0	372	0
Stage 1	349	-	-	-	-	-
Stage 2	285	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	409	822	-	-	1176	-
Stage 1	682	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	394	822	-	-	1176	-
Mov Cap-2 Maneuver	394	-	-	-	-	-
Stage 1	682	-	-	-	-	-
Stage 2	709	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.93	0	0.78
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	428	1176	-
HCM Lane V/C Ratio	-	-	0.231	0.036	-
HCM Ctrl Dly (s/v)	-	-	15.9	8.2	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	21	8	0	427	319	0
Future Vol, veh/h	21	8	0	427	319	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	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	24	9	0	485	363	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	605	181	-	0	-	0
Stage 1	363	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	-	-
Pot Cap-1 Maneuver	427	827	0	-	-	0
Stage 1	672	-	0	-	-	0
Stage 2	772	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	427	827	-	-	-	-
Mov Cap-2 Maneuver	520	-	-	-	-	-
Stage 1	672	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	WB	SE	NW
HCM Ctrl Dly, s/v	11.58	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWTWBLn1	SET
Capacity (veh/h)	580	-
HCM Lane V/C Ratio	0.057	-
HCM Ctrl Dly (s/v)	11.6	-
HCM Lane LOS	B	-
HCM 95th %tile Q(veh)	0.2	-

Intersection	
Intersection Delay, s/veh	29.9
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	294	141	354	267	33	54	2	253	58	28	5
Future Vol, veh/h	3	294	141	354	267	33	54	2	253	58	28	5
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
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	342	164	412	310	38	63	2	294	67	33	6
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay, s/veh	19.9	37.3	32.7	15.9
HCM LOS	C	E	D	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	17%	100%	0%	0%	100%	0%	0%	64%
Vol Thru, %	1%	0%	100%	41%	0%	100%	73%	31%
Vol Right, %	82%	0%	0%	59%	0%	0%	27%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	309	3	196	239	354	178	122	91
LT Vol	54	3	0	0	354	0	0	58
Through Vol	2	0	196	98	0	178	89	28
RT Vol	253	0	0	141	0	0	33	5
Lane Flow Rate	359	3	228	278	412	207	142	106
Geometry Grp	5	5	5	5	5	5	5	5
Degree of Util (X)	0.775	0.008	0.509	0.587	0.931	0.438	0.293	0.28
Departure Headway (Hd)	7.767	8.656	8.035	7.605	8.142	7.623	7.426	9.52
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	463	416	447	472	445	470	481	380
Service Time	5.551	6.356	5.834	5.404	5.937	5.417	5.22	7.22
HCM Lane V/C Ratio	0.775	0.007	0.51	0.589	0.926	0.44	0.295	0.279
HCM Control Delay, s/veh	32.7	11.4	19	20.8	56.2	16.3	13.3	15.9
HCM Lane LOS	D	B	C	C	F	C	B	C
HCM 95th-tile Q	6.8	0	2.8	3.7	10.6	2.2	1.2	1.1

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	171	453	37	440	1287	656	190
Future Volume (veh/h)	171	453	37	440	1287	656	190
Initial Q (Qb), veh	0	0		0	0	0	0
Lane Width Adj.	1.00	1.00		1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00			1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach	No				No	No	
Adj Sat Flow, veh/h/ln	1856	1856		1856	1856	1856	1856
Adj Flow Rate, veh/h	186	492		478	1399	713	207
Peak Hour Factor	0.92	0.92		0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3		3	3	3	3
Cap, veh/h	449	704		674	2774	1348	418
Arrive On Green	0.25	0.25		0.20	0.55	0.27	0.27
Sat Flow, veh/h	1767	2768		3428	5233	5233	1572
Grp Volume(v), veh/h	186	492		478	1399	713	207
Grp Sat Flow(s),veh/h/ln	1767	1384		1714	1689	1689	1572
Q Serve(g_s), s	4.3	8.0		6.4	8.5	5.9	5.5
Cycle Q Clear(g_c), s	4.3	8.0		6.4	8.5	5.9	5.5
Prop In Lane	1.00	1.00		1.00			1.00
Lane Grp Cap(c), veh/h	449	704		674	2774	1348	418
V/C Ratio(X)	0.41	0.70		0.71	0.50	0.53	0.49
Avail Cap(c_a), veh/h	1429	2237		1303	5139	2785	864
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	15.4	16.7		18.6	7.0	15.5	15.3
Incr Delay (d2), s/veh	0.6	1.3		1.4	0.1	0.3	0.9
Initial Q Delay(d3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	6.0		2.3	1.9	1.9	1.7
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	16.0	18.0		19.9	7.1	15.8	16.3
LnGrp LOS	B	B		B	A	B	B
Approach Vol, veh/h	678				1877	920	
Approach Delay, s/veh	17.4				10.4	15.9	
Approach LOS	B				B	B	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	32.0	17.5	13.9	18.1
Change Period (Y+Rc), s	4.9	4.9	4.2	4.9
Max Green Setting (Gmax), s	50.2	40.0	18.8	27.2
Max Q Clear Time (g_c+I1), s	10.5	10.0	8.4	7.9
Green Ext Time (p_c), s	12.9	2.6	1.3	5.2

Intersection Summary	
HCM 7th Control Delay, s/veh	13.2
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	14	78	931	46	81	814	16	43	110	37	13	144
Future Volume (veh/h)	14	78	931	46	81	814	16	43	110	37	13	144
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)		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
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
Adj Flow Rate, veh/h		83	990	49	86	866	17	46	117	39	14	153
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
Percent Heavy Veh, %		3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h		330	1344	599	335	1938	600	237	627	280	93	478
Arrive On Green		0.10	0.38	0.38	0.10	0.38	0.38	0.07	0.18	0.18	0.03	0.14
Sat Flow, veh/h		3428	3526	1572	3428	5066	1568	3428	3526	1572	3428	3526
Grp Volume(v), veh/h		83	990	49	86	866	17	46	117	39	14	153
Grp Sat Flow(s),veh/h/ln		1714	1763	1572	1714	1689	1568	1714	1763	1572	1714	1763
Q Serve(g_s), s		1.4	14.8	1.2	1.4	7.8	0.4	0.8	1.7	1.3	0.2	2.4
Cycle Q Clear(g_c), s		1.4	14.8	1.2	1.4	7.8	0.4	0.8	1.7	1.3	0.2	2.4
Prop In Lane		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		330	1344	599	335	1938	600	237	627	280	93	478
V/C Ratio(X)		0.25	0.74	0.08	0.26	0.45	0.03	0.19	0.19	0.14	0.15	0.32
Avail Cap(c_a), veh/h		436	2109	941	436	3031	938	436	2201	982	436	2242
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
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
Uniform Delay (d), s/veh		25.7	16.3	12.1	25.6	14.1	11.8	26.9	21.4	21.3	29.2	23.9
Incr Delay (d2), s/veh		0.4	0.8	0.1	0.4	0.2	0.0	0.4	0.1	0.2	0.7	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
%ile BackOfQ(50%),veh/ln		0.5	4.8	0.3	0.5	2.4	0.1	0.3	0.7	0.4	0.1	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh		26.1	17.1	12.2	26.0	14.3	11.8	27.3	21.6	21.5	29.9	24.3
LnGrp LOS		C	B	B	C	B	B	C	C	C	C	C
Approach Vol, veh/h			1122			969			202			215
Approach Delay, s/veh			17.6			15.3			22.9			24.7
Approach LOS			B			B			C			C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	16.2	10.2	29.1	8.4	13.6	10.1	29.2
Change Period (Y+Rc), s	4.2	5.3	4.2	5.7	4.2	* 5.3	4.2	5.7
Max Green Setting (Gmax), s	7.8	38.3	7.8	36.7	7.8	* 39	7.8	36.7
Max Q Clear Time (g_c+I1), s	2.2	3.7	3.4	16.8	2.8	4.4	3.4	9.8
Green Ext Time (p_c), s	0.0	0.8	0.1	6.4	0.0	1.1	0.1	5.8

Intersection Summary	
HCM 7th Control Delay, s/veh	17.7
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	45
Future Volume (veh/h)	45
Initial Q (Qb), veh	0
Lane Width Adj.	1.00
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1856
Adj Flow Rate, veh/h	48
Peak Hour Factor	0.94
Percent Heavy Veh, %	3
Cap, veh/h	212
Arrive On Green	0.14
Sat Flow, veh/h	1566
Grp Volume(v), veh/h	48
Grp Sat Flow(s),veh/h/ln	1566
Q Serve(g_s), s	1.7
Cycle Q Clear(g_c), s	1.7
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	212
V/C Ratio(X)	0.23
Avail Cap(c_a), veh/h	995
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	23.6
Incr Delay (d2), s/veh	0.5
Initial Q Delay(d3), s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.6
Unsig. Movement Delay, s/veh	
LnGrp Delay(d), s/veh	24.2
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	149	115	198	121	62
Future Vol, veh/h	0	149	115	198	121	62
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	55	-	-	-
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	166	128	220	134	69

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	102	203	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	4.16	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	0	931	1358	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	931	1358	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	9.7	2.91	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1358	-	931	-	-
HCM Lane V/C Ratio	0.094	-	0.178	-	-
HCM Ctrl Dly (s/v)	7.9	-	9.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.3	-	0.6	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	80	14	299	55	38	232
Future Vol, veh/h	80	14	299	55	38	232
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	-	-	-	55	-
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	89	16	332	61	42	258

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	576	197	0	0	393	0
Stage 1	363	-	-	-	-	-
Stage 2	213	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	445	808	-	-	1155	-
Stage 1	671	-	-	-	-	-
Stage 2	799	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	429	808	-	-	1155	-
Mov Cap-2 Maneuver	429	-	-	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	769	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.07	0	1.16
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	461	1155	-
HCM Lane V/C Ratio	-	-	0.226	0.037	-
HCM Ctrl Dly (s/v)	-	-	15.1	8.2	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	13	7	0	312	347	0
Future Vol, veh/h	13	7	0	312	347	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	14	8	0	347	386	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	559	193	-	0	-	0
Stage 1	386	-	-	-	-	-
Stage 2	173	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	-	-
Pot Cap-1 Maneuver	457	813	0	-	-	0
Stage 1	654	-	0	-	-	0
Stage 2	836	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	457	813	-	-	-	-
Mov Cap-2 Maneuver	535	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	836	-	-	-	-	-

Approach	WB	SE	NW
HCM Ctrl Dly, s/v	11.15	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWTWBLn1	SET
Capacity (veh/h)	- 608	-
HCM Lane V/C Ratio	- 0.037	-
HCM Ctrl Dly (s/v)	- 11.1	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.1	-

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	277	37	98	307	107	30	6	109	46	6	3
Future Vol, veh/h	14	277	37	98	307	107	30	6	109	46	6	3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	308	41	109	341	119	33	7	121	51	7	3
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay, s/veh	11.3	11.3	11.7	11.2
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	21%	100%	0%	0%	100%	0%	0%	84%
Vol Thru, %	4%	0%	100%	71%	0%	100%	49%	11%
Vol Right, %	75%	0%	0%	29%	0%	0%	51%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	145	14	185	129	98	205	209	55
LT Vol	30	14	0	0	98	0	0	46
Through Vol	6	0	185	92	0	205	102	6
RT Vol	109	0	0	37	0	0	107	3
Lane Flow Rate	161	16	205	144	109	227	233	61
Geometry Grp	5	5	5	5	5	5	5	5
Degree of Util (X)	0.286	0.028	0.345	0.233	0.191	0.367	0.352	0.126
Departure Headway (Hd)	6.384	6.559	6.051	5.848	6.322	5.815	5.453	7.41
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	562	545	593	614	567	619	658	483
Service Time	4.133	4.304	3.796	3.593	4.062	3.555	3.192	5.167
HCM Lane V/C Ratio	0.286	0.029	0.346	0.235	0.192	0.367	0.354	0.126
HCM Control Delay, s/veh	11.7	9.5	12	10.4	10.6	11.9	11.1	11.2
HCM Lane LOS	B	A	B	B	B	B	B	B
HCM 95th-tile Q	1.2	0.1	1.5	0.9	0.7	1.7	1.6	0.4

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	87	318	18	389	847	1208	127
Future Volume (veh/h)	87	318	18	389	847	1208	127
Initial Q (Qb), veh	0	0		0	0	0	0
Lane Width Adj.	1.00	1.00		1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00			1.00
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00
Work Zone On Approach	No				No	No	
Adj Sat Flow, veh/h/ln	1856	1856		1856	1856	1856	1856
Adj Flow Rate, veh/h	95	346		423	921	1313	138
Peak Hour Factor	0.92	0.92		0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3		3	3	3	3
Cap, veh/h	327	512		541	3197	1998	620
Arrive On Green	0.18	0.18		0.16	0.63	0.39	0.39
Sat Flow, veh/h	1767	2768		3428	5233	5233	1572
Grp Volume(v), veh/h	95	346		423	921	1313	138
Grp Sat Flow(s),veh/h/ln	1767	1384		1714	1689	1689	1572
Q Serve(g_s), s	2.5	6.2		6.3	4.4	11.3	3.1
Cycle Q Clear(g_c), s	2.5	6.2		6.3	4.4	11.3	3.1
Prop In Lane	1.00	1.00		1.00			1.00
Lane Grp Cap(c), veh/h	327	512		541	3197	1998	620
V/C Ratio(X)	0.29	0.68		0.78	0.29	0.66	0.22
Avail Cap(c_a), veh/h	1328	2079		567	3825	2588	803
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	18.7	20.2		21.5	4.4	13.2	10.7
Incr Delay (d2), s/veh	0.5	1.6		6.7	0.0	0.4	0.2
Initial Q Delay(d3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.1		2.7	0.8	3.4	0.9
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	19.2	21.8		28.3	4.5	13.6	10.9
LnGrp LOS	B	C		C	A	B	B
Approach Vol, veh/h	441				1344	1451	
Approach Delay, s/veh	21.2				12.0	13.3	
Approach LOS	C				B	B	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	38.5	14.7	12.6	25.9
Change Period (Y+Rc), s	4.9	4.9	4.2	4.9
Max Green Setting (Gmax), s	40.2	40.0	8.8	27.2
Max Q Clear Time (g_c+I1), s	6.4	8.2	8.3	13.3
Green Ext Time (p_c), s	7.1	1.7	0.1	7.7

Intersection Summary	
HCM 7th Control Delay, s/veh	13.8
HCM 7th LOS	B

Notes

User approved ignoring U-Turning movement.

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	R	UL	L	T	T	T	R	L
Maximum Queue (ft)	104	56	220	276	39	65	128	140	149	144	36	77
Average Queue (ft)	49	10	133	155	9	26	48	78	84	69	6	9
95th Queue (ft)	86	42	213	245	23	56	87	130	132	122	21	37
Link Distance (ft)			2418	2418	2418			3369	3369	3369		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250	250				250	250				150	140
Storage Blk Time (%)										1		
Queuing Penalty (veh)										0		

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	T	T	R
Maximum Queue (ft)	93	155	50	72	44	96	126	45
Average Queue (ft)	37	69	5	20	13	32	48	25
95th Queue (ft)	71	125	28	47	34	71	100	41
Link Distance (ft)		286	286			249	249	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	140			180	100			80
Storage Blk Time (%)		1				0	3	
Queuing Penalty (veh)		0				0	3	

Intersection: 2: Hayes Avenue & Western Driveway

Movement	EB	NB	SB
Directions Served	R	L	TR
Maximum Queue (ft)	74	88	22
Average Queue (ft)	39	24	1
95th Queue (ft)	65	64	7
Link Distance (ft)	190		286
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		55	
Storage Blk Time (%)		1	
Queuing Penalty (veh)		1	

Intersection: 3: Hayes Avenue & Southern Commerical Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	100	31
Average Queue (ft)	43	8
95th Queue (ft)	85	30
Link Distance (ft)	114	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		55
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Hayes Avenue & Northern Residential Driveway

Movement	WB
Directions Served	LR
Maximum Queue (ft)	50
Average Queue (ft)	21
95th Queue (ft)	45
Link Distance (ft)	254
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Palo Alto Avenue/Residential Driveway & Hayes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	29	136	232	184	192	121	222	117
Average Queue (ft)	5	41	96	122	65	50	93	44
95th Queue (ft)	23	96	181	176	121	90	159	76
Link Distance (ft)		286	286		447	447	1263	270
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150			150				
Storage Blk Time (%)		0		2	1			
Queuing Penalty (veh)		0		3	2			

Intersection: 6: Veterans Boulevard & Hayes Avenue

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	R	UL	L	T	T	T	T	T	T	R
Maximum Queue (ft)	146	84	82	340	380	378	342	220	159	154	124	110
Average Queue (ft)	75	38	50	243	207	135	110	107	102	108	93	50
95th Queue (ft)	135	67	78	352	367	293	218	186	143	143	131	87
Link Distance (ft)	447	447				1592	1592	1592	571	571	571	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			170	260	260							100
Storage Blk Time (%)				12	12	1					4	1
Queuing Penalty (veh)				50	52	7					7	1

Network Summary

Network wide Queuing Penalty: 126

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	R	UL	L	T	T	T	R	L
Maximum Queue (ft)	107	113	266	302	18	47	66	128	131	146	17	30
Average Queue (ft)	59	27	127	135	9	19	36	81	88	79	4	5
95th Queue (ft)	99	75	204	214	20	45	68	120	133	142	15	23
Link Distance (ft)			2418	2418	2418			3369	3369	3369		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250	250				250	250				150	140
Storage Blk Time (%)			0							0		
Queuing Penalty (veh)			0							0		

Intersection: 1: Hayes Avenue & Herndon Avenue

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	L	L	T	T	R
Maximum Queue (ft)	52	143	50	51	28	48	73	131	44
Average Queue (ft)	29	58	2	16	1	12	34	41	15
95th Queue (ft)	57	104	17	39	9	34	67	90	35
Link Distance (ft)		286	286				249	249	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	140			180	100	100			80
Storage Blk Time (%)		0						2	
Queuing Penalty (veh)		0						1	

Intersection: 2: Hayes Avenue & Western Driveway

Movement	EB	NB	SB
Directions Served	R	L	TR
Maximum Queue (ft)	75	51	45
Average Queue (ft)	35	11	1
95th Queue (ft)	57	38	15
Link Distance (ft)	190		286
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		55	
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 3: Hayes Avenue & Southern Commerical Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	129	55
Average Queue (ft)	45	8
95th Queue (ft)	84	34
Link Distance (ft)	114	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		55
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Intersection: 4: Hayes Avenue & Northern Residential Driveway

Movement	WB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	14
95th Queue (ft)	38
Link Distance (ft)	231
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Palo Alto Avenue/Residential Driveway & Hayes Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (ft)	29	53	90	73	96	86	140	50
Average Queue (ft)	5	26	41	40	60	56	53	27
95th Queue (ft)	23	44	67	70	88	83	94	46
Link Distance (ft)		284	284		447	447	1263	270
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150			150				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 6: Veterans Boulevard & Hayes Avenue

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	R	UL	L	T	T	T	T	T	T	R
Maximum Queue (ft)	86	83	84	260	273	278	153	138	242	221	243	240
Average Queue (ft)	36	36	42	152	135	60	60	55	130	138	126	48
95th Queue (ft)	68	64	79	244	245	140	112	115	206	222	215	115
Link Distance (ft)	447	447				1592	1592	1592	571	571	571	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			170	260	260							100
Storage Blk Time (%)				0	0	0					13	0
Queuing Penalty (veh)				0	0	0					16	1

Network Summary

Network wide Queuing Penalty: 19

Appendix J: Traffic 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 04/09/24
CALC AD DATE 06/06/24
CHK MA DATE 06/06/24

Major St: **Hayes Ave** Critical Approach Speed 40 MPH
Minor St: **Palo Alto Ave** Critical Approach Speed 40 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 **SATISFIED** YES ☐ NO ☑
(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) U (1)	R (1)	U (2 or More)	R (2 or More)	7:00 AM	8:00 AM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	Hour
Both Approaches	500	350	600	420	514	208	168	291	201	225	198	135	
Major Street	(400)	(280)	(480)	(336)	514	208	168	291	201	225	198	135	
Highest Approach	150	105	200	140	301	66	53	245	108	133	77	39	
Minor Street	(120)	(84)	(160)	(112)	301	66	53	245	108	133	77	39	

Condition B - Interruption of Continuous Traffic **100% SATISFIED** YES ☐ NO ☑
80 % SATISFIED YES ☐ NO ☑

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) U (1)	R (1)	U (2 or More)	R (2 or More)	7:00 AM	8:00 AM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	Hour
Both Approaches	750	525	900	630	514	208	168	291	201	225	198	135	
Major Street	(600)	(420)	(720)	(504)	514	208	168	291	201	225	198	135	
Highest Approach	75	53	100	70	301	66	53	245	108	133	77	39	
Minor Street	(60)	(42)	(80)	(56)	301	66	53	245	108	133	77	39	

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 ☑

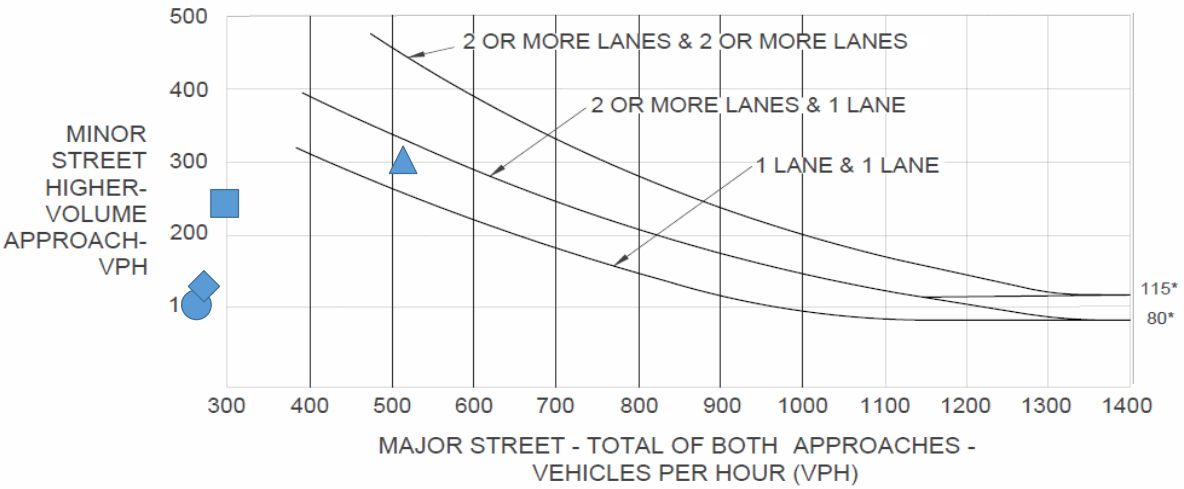
REQUIREMENT	WARRANT		FULFILLED
TWO WARRANTS SATISFIED 80%	1. MINIMUM VEHICULAR VOLUME		Yes ☐ No ☑
	2. INTERRUPTION OF CONTINUOUS TRAFFIC		

JLB TRAFFIC ENGINEERING, INC.
www.JLBtraffic.com
info@JLBtraffic.com
516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
(559) 570 - 8991

Warrant 2: Four-Hour Vehicular Volume (Urban)

Existing Traffic Conditions

5. Hayes Ave / Palo Alto Ave



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 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	■ 2:00 PM Volume	● 3:00 PM Volume	◆ 4:00 PM Volume
Major Street (Total of Both Approaches)	☐	☑	☐	514	291	201	225
Minor Street (Higher Volume Approach)				301	245	108	133

Satisfied: ☐ **Yes** ☑ **No**

Calculated By: AD Date: 06/06/24

Checked By: MA Date: 06/06/24

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

JLB TRAFFIC ENGINEERING, INC.

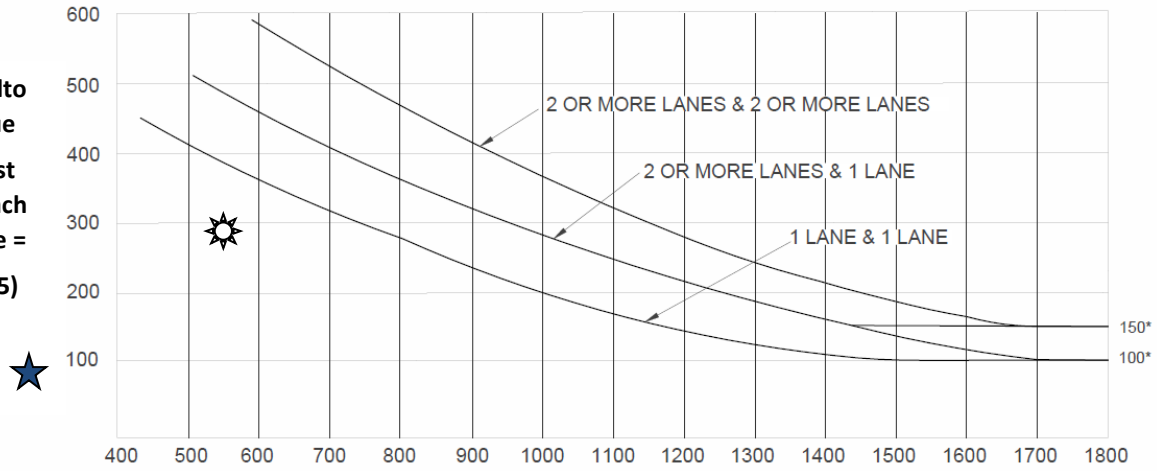
www.JLBTraffic.com
info@JLBTraffic.com

516 W Shaw Ave., Ste 103
Fresno, CA 93704
(559) 570-8991

Warrant 3: Peak Hour (Urban)

Existing Traffic Conditions
5. Palo Alto Avenue / Hayes Avenue
AM (PM) Peak Hour

Palo Alto Avenue Highest Approach Volume = 290 (95) VPH



Hayes Avenue Total of Both Approaches = 542 (220) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 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

JLB TRAFFIC ENGINEERING, INC.

www.JLBtraffic.com
info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
(559) 570-8991

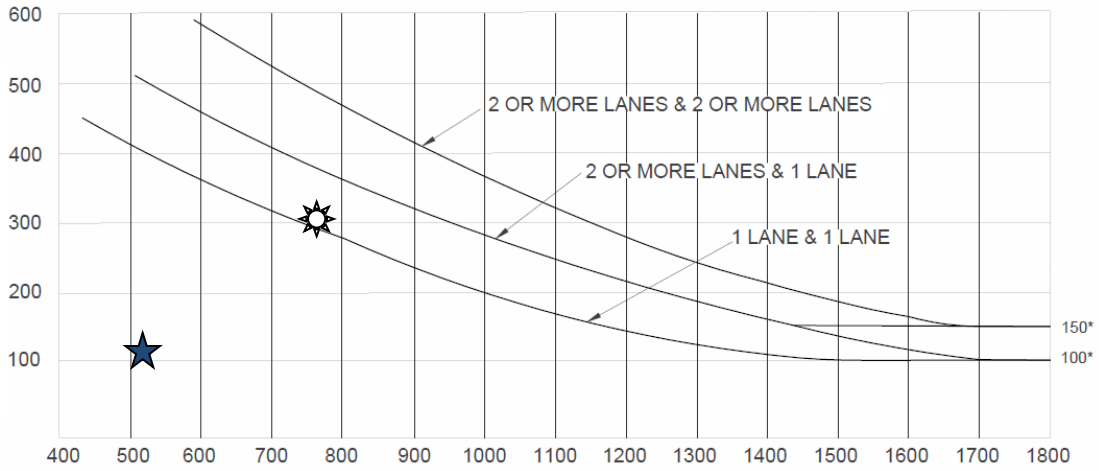
Warrant 3: Peak Hour (Urban)

Existing plus Project Traffic Conditions
5. Palo Alto Avenue / Hayes Avenue
AM (PM) Peak Hour

Palo Alto Avenue

Highest Approach Volume =

302 (108) VPH



Hayes Avenue Total of Both Approaches =

760 (519) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 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

JLB TRAFFIC ENGINEERING, INC.

www.JLBtraffic.com

info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103

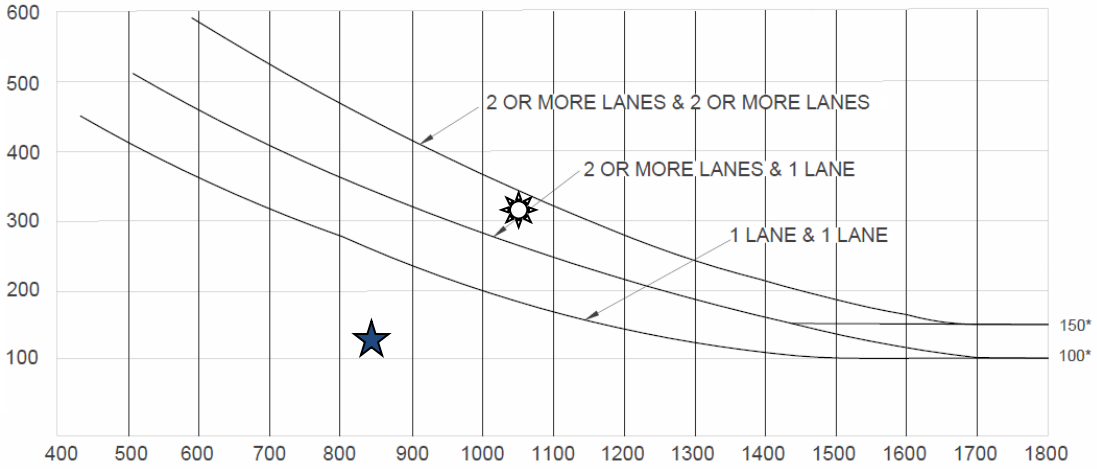
Fresno, CA 93704

(559) 570-8991

Warrant 3: Peak Hour (Urban)

Near Term plus Project Traffic Conditions
5. Palo Alto Avenue / Hayes Avenue
AM (PM) Peak Hour

Palo Alto Avenue Highest Approach Volume = 309 (111) VPH



Hayes Avenue Total of Both Approaches = 1054 (836) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 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

JLB TRAFFIC ENGINEERING, INC.

www.JLBtraffic.com

info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103

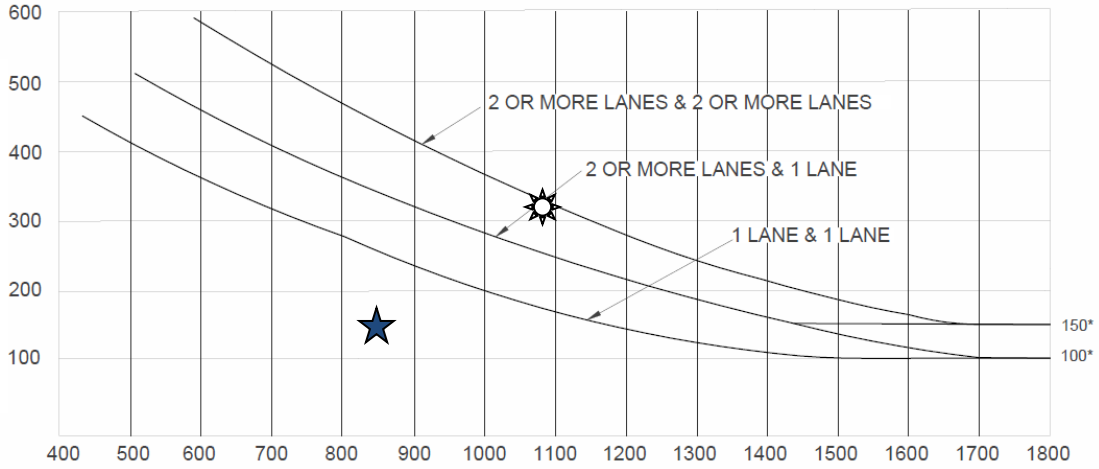
Fresno, CA 93704

(559) 570-8991

Warrant 3: Peak Hour (Urban)

Cumulative Year 2046 plus Project Traffic Conditions
5. Palo Alto Avenue / Hayes Avenue
AM (PM) Peak Hour

Palo Alto Avenue Highest Approach Volume = 309 (145) VPH



Hayes Avenue Total of Both Approaches = 1092 (840) VPH

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 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

JLB TRAFFIC ENGINEERING, INC.

www.JLBtraffic.com
info@JLBtraffic.com

516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
(559) 570-8991