



County of Fresno

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

DATE: September 14, 2026

TO: Department of Public Works and Planning, Attn: Steven E. White, Director
Department of Public Works and Planning, Attn: Bernard Jimenez,
Planning and Resource Management Officer
Development Services and Capital Projects, Attn: William M. Kettler,
Deputy Director
Development Services and Capital Projects, Attn: Chris W. Motta, Division Manager
Development Services and Capital Projects, Attn: James Anders,
Principal Planner
Development Services and Capital Projects, Current Planning,
Attn: Ober Ramirez, Senior Planner
Development Services and Capital Projects, Zoning & Permit Review,
Attn: Daniel Gutierrez, Senior Planner
Development Services and Capital Projects, Development Engineering,
Attn: Laurie Kennedy, Office Assistant III
Water and Natural Resources Division, Attn: Augustine Ramirez, Division
Manager
Water and Natural Resources Division, Transportation Planning, Attn:
Hector Luna, Principal Planner/Brody Hines/ Domonique Advincula
Water and Natural Resources Division, Community Development, Attn:
Yvette Quiroga, Principal Planner
Design Division, Attn: Joseph P. Harrell, Division Manager;
Erin Haagenson, Principal Staff Analyst
Resources Division, Attn: Daniel Amann, Division Manager
Resources Division, Special Districts, Attn: Christopher Bump, Principal
Staff Analyst,
Road Maintenance and Operations Division, Attn: Mohamoud Mohammed,
Senior Engineer
Department of Public Health, Environmental Health Division, Attn: Deep
Sidhu, Supervising Environmental Health Specialist; Kevin Tsuda,
Environmental Health Specialist;
Fresno County Fire Protection District, Attn: fkp.prevention-planning@fire.ca.gov
Fresno Metropolitan Flood Control District, Attn:
developmentreview@fresnofloodcontrol.org
Fresno Irrigation District, Attn: Engr-Review@fresnoirrigation.com
North Kings GSA, Attn: Kassy D. Chauhan, P.E., Executive Officer
San Joaquin Valley Air Pollution Control District, Attn: ceqa@valleyair.org
Sheriff's Office, Attn: Assistant Sheriff, Ryan Hushaw, Adam Esmay
CA Highway Patrol (CHP), Attn: Captain Ian Holguin
City of Clovis, City Manager, Attn: Andrew Hausler
City of Clovis Public Utilities, Attn: Scott Redelfs, P.E.
City of Clovis Planning and Development Services Department, Attn: Renee Mathis,
Director
Clovis Unified School District, Attn: Corrine Folmer, Ed. D., Superintendent, Michael
Johnston, Associate Superintendent, Administrative Services
Pacific Gas and Electric, Centralized Review Team, Attn: PGEPlanReview@pge.com
CALTRANS, Attn: David Padilla, Division Chief/Nicholas Isla, Transportation Planner

California Department of Fish and Wildlife, Attn: R4CEQA@wildlife.ca.gov
United States Fish and Wildlife Service, Attn: Patricia Cole, Matthew Nelson.

FROM: Jeremy Shaw, Planner
Development Services and Capital Projects Division

SUBJECT: Amendment Application No. 3880, General Plan Amendment Application No. 584,
Unclassified Conditional Use Permit Application No. CUP 3826, Tentative Tract Map
Application No. 6539 and Initial Study No. 8728 - **REVISION**

APPLICANT: Yellowfin Holdings, LP

DUE DATE: **September 24, 2026**

The Department of Public Works and Planning, Development Services and Capital Projects Division is reviewing a revision to the subject applications proposing to amend the Sierra North Regional Plan land use element changing the land use designation of two parcels totaling approximately 119.73-acres from Eastside Rangeland to Foothill Rural Residential, rezone the two subject parcels from the AE-40 (Exclusive Agricultural, 40-acre minimum parcel size) Zone District to the R-R (Rural Residential, two-acre minimum parcel size) Zone District, and allow an Unclassified Conditional Use Permit and Tentative Tract Map for a planned residential development (subdivision) consisting of 44 single-family lots ranging in size from 2.0-acres to 3.5-acres.

The applicant has proposed revisions to the Tentative Tract Map, modifying the proposed point of access to the proposed subdivision, and including a proposed 60-foot-wide easement providing access to the project from State Route 168 (Tollhouse Road).

The changes to the Tentative Map include clarification of the lot boundaries depicting gross and net acreages, and relocation of the primary ingress/egress further north (approximately 470 feet) from the SR 168 (Tollhouse Road) right-of-way.

The subject parcels are located on the North Side of State Route 168 (Tollhouse Road) between the Friant Kern Canal and E. Shepard Avenue (APNs. 150-061-51, 150-061-53) (11000 Tollhouse Road) (Sup. Dist. 5).

The Department is also reviewing environmental effects, as mandated by the California Environmental Quality Act (CEQA) and for conformity with plans and policies of the County.

Based upon this review, a determination will be made regarding conditions to be imposed on the project, including necessary on-site and off-site improvements.

The following technical studies are included with this routing:

- Preliminary Sewage Feasibility Evaluation and Exploratory Borings, Sample Ranch Development
- Biological Resource Evaluation, Sample Project, Fresno County, California
- Archaeological Resources Inventory Report for the Sample Ranch Project
- Phase 1 Environmental Site Assessment, Sample Property, 11000 Tollhouse Road, Clovis CA 93619
- Sample Ranch Residential Development ,Air Quality and Greenhouse Gas Impact Assessment, April 21, 2025
- Sample Ranch Residential Development, Noise Study Report, April 2025
- Sample Ranch Residential Development, Traffic Impact Study, June 5, 2026; **Updated September 1, 2026**
- Groundwater Supply Report for WCP Sample Ranch Project

- Riparian Water Rights Analysis for the Sample Ranch, September 24, 2025

We must have your comments by September 23, 2026. Any comments received after this date may not be used.

If you do not have comments, please provide a “NO COMMENT” response to our office by the above deadline (e-mail is also acceptable; see email address below).

Please address any correspondence or questions related to environmental and/or policy/design issues to me, Jeremy Shaw, Planner, Development Services and Capital Projects Division, Fresno County Department of Public Works and Planning, 2220 Tulare Street, Sixth Floor, Fresno, CA 93721, or call (559) 600-4207, or email jshaw@fresnocountyca.gov

JS

G:\4360Devs&PIn\PROJSEC\PROJDOCS\AA\3800-3899\3880 - See GPA 584, CUP 3826, TT 6539\Routing\Routing REV\AA 3880 REV Routing Ltr.doc

Activity Code (Internal Review): 2369,2361,2384



Fresno County Department of Public Works and Planning

Date Received:

(Application No.)

MAILING ADDRESS:

Department of Public Works and Planning
Development Services Division
2220 Tulare St., 6th Floor
Fresno, Ca. 93721

LOCATION:

Southwest corner of Tulare & "M" Streets, Suite A
Street Level
Fresno Phone: (559) 600-4497
Toll Free: 1-800-742-1011 Ext. 0-4497

APPLICATION FOR:

- ☐ Pre-Application (Type) _____
- ☒ Amendment Application AA 3880 ☐ Director Review and Approval
- ☐ Amendment to Text ☐ for 2nd Residence
- ☒ Conditional Use Permit CUP 3826 ☐ Determination of Merger
- ☐ Variance (Class)/Minor Variance ☐ Agreements
- ☐ Site Plan Review/Occupancy Permit ☐ ALCC/RLCC
- ☐ No Shoot/Dog Leash Law Boundary ☐ Other TTM 6539
- ☒ General Plan Amendment/Specific Plan/SP Amendment) GPA583
- ☐ Time Extension for _____

DESCRIPTION OF PROPOSED USE OR REQUEST:

General Plan Amendment, Amendment Application, and Conditional Use Permit, to allow rezoning and change in Land Use designation of three parcels, totaling approx. 119.73 acres, from AE-40 to RR (Rural Residential), to allow for development consisting of approx. 44 two to three and a half acre single-family residential lots, located within the AE40

CEQA DOCUMENTATION: ☒ Initial Study ☐ PER ☐ N/A IS 8728

PLEASE USE FILL-IN FORM OR PRINT IN BLACK INK. Answer all questions completely. Attach required site plans, forms, statements, and deeds as specified on the Pre-Application Review. **Attach Copy of Deed, including Legal Description.**

LOCATION OF PROPERTY: NORTH side of State Route 168 (Tollhouse Road)
between Friant Kern Canal and E. Shepard Avenue
Street address: 11000 Tollhouse Road, Clovis, CA 93619

APN: 150-061-51 and Parcel size: Approx. 119.73 Section(s)-Twp/Rg: S 21 - T 12 S/R 22 E

ADDITIONAL APN(s): 150-061-53 and 150-061-48

I, Austin (signature), declare that I am the owner, or authorized representative of the owner, of the above described property and that the application and attached documents are in all respects true and correct to the best of my knowledge. The foregoing declaration is made under penalty of perjury.

Yellowfin Holdings, LP	2505 Alluvial Avenue	Clovis	93611	(559)432-8181
Owner (Print or Type)	Address	City	Zip	Phone
Yellowfin Holdings, LP	2505 Alluvial Avenue	Clovis	93611	(559)432-8181
Applicant (Print or Type)	Address	City	Zip	Phone
Ewell Group	695 W Cromwell Ave #102	Fresno	93711	(559)437-1990
Representative (Print or Type)	Address	City	Zip	Phone

CONTACT EMAIL: austin@ewellgroup.com

OFFICE USE ONLY (PRINT FORM ON GREEN PAPER)

Application Type / No.:	Fee: \$
Application Type / No.:	Fee: \$
Application Type / No.:	Fee: \$
Application Type / No.:	Fee: \$
PER/Initial Study No.:	Fee: \$
Ag Department Review:	Fee: \$
Health Department Review:	Fee: \$
Received By: _____	Invoice No.: _____
TOTAL: \$	

UTILITIES AVAILABLE:

WATER: Yes ☐ / No ☐
Agency: _____

SEWER: Yes ☐ / No ☐
Agency: _____

STAFF DETERMINATION: This permit is sought under Ordinance Section:

Related Application(s): _____

Zone District: _____

Parcel Size: _____

Sect-Twp/Rg: _____ - T _____ S /R _____ E

APN # _____ - _____ - _____

APN # _____ - _____ - _____

APN # _____ - _____ - _____

APN # _____ - _____ - _____



County of Fresno

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

INITIAL STUDY APPLICATION

INSTRUCTIONS

Answer all questions completely. An incomplete form may delay processing of your application. Use additional paper if necessary and attach any supplemental information to this form. Attach an operational statement if appropriate. This application will be distributed to several agencies and persons to determine the potential environmental effects of your proposal. Please complete the form in a legible and reproducible manner (i.e., USE BLACK INK OR TYPE).

OFFICE USE ONLY

IS No. _____

Project
No(s). _____

Application Rec'd.:

GENERAL INFORMATION

1. **Property Owner :** Yellowfin Holdings, LP **Phone/Fax** (559)431-8181

Mailing Address: 2505 ALLUVIAL AVENUE, CLOVIS, CA 93611-9505
Street City State/Zip

2. **Applicant :** Yellowfin Holdings, LP **Phone/Fax:** (559)431-8181

Mailing Address: 2505 ALLUVIAL AVENUE, CLOVIS, CA 93611-9505
Street City State/Zip

3. **Representative:** Ewell Group **Phone/Fax:** (559)437-1990

Mailing Address: 695 W Cromwell Avenue #102 Fresno 93711
Street City State/Zip

4. **Proposed Project:** General Plan Amendment, Amendment Application, CUP and TTM 6539

to allow the rezoning and change in land use designation of three parcels, totaling approximately 119.73 acres, from

AE-40 to RR (Rural Residential) to allow for a development consisting of approx. 44 two to three and one-half acre single family residential lots, located within the AE-40 (Exclusive Agricultural, 40 acre minimum parcel) Zone District.

5. **Project Location:** The subject parcels are located on the north side of State Route 168 (Tollhouse Road) approx. 0.8 mile west of its intersection with E. Shepard Avenue; easterly adjacent to the Friant-Kern Canal, and approx. 1.75 miles east of Clovis city limits.

6. **Project Address:** 11000 Tollhouse Road

20 12 22; and

7. **Section/Township/Range:** 21 / 12 / 22 8. **Parcel Size:** Total combined approx. 119.73 acres

9. **Assessor's Parcel No.** 150-061-48 and 150-061-51 and 150-061-53

OVER.....

Yes- Irrevocable Notice of Non-Renewal
Land Conservation Contract delivered to County of Fresno
on 9/4/2024

10. **Land Conservation Contract No. (If applicable):** _____
11. **What other agencies will you need to get permits or authorization from:**
- | | | |
|--|--------------|--|
| _____ LAFCo (annexation or extension of services) | <u> X </u> | SJVUAPCD (Air Pollution Control District) |
| _____ CALTRANS | _____ | Reclamation Board |
| _____ Division of Aeronautics | _____ | Department of Energy |
| _____ Water Quality Control Board | _____ | Airport Land Use Commission |
| _____ Other _____ | | |
12. **Will the project utilize Federal funds or require other Federal authorization subject to the provisions of the National Environmental Policy Act (NEPA) of 1969?** _____ Yes X No
- If so, please provide a copy of all related grant and/or funding documents, related information and environmental review requirements.*
13. **Existing Zone District¹:** _____ AE-40
14. **Existing General Plan Land Use Designation¹:** _____ Agricultural Land Use

ENVIRONMENTAL INFORMATION

15. **Present land use:** _____ Grazing land
- Describe existing physical improvements including buildings, water (wells) and sewage facilities, roads, and lighting. Include a site plan or map showing these improvements:**
- _____
- Project site currently includes one residential dwelling; four irrigation wells and one septic tank.
- Describe the major vegetative cover:** _____
- Any perennial or intermittent water courses? If so, show on map:** _____ Big Dry Creek to the North
- Is property in a flood-prone area? Describe:**
- _____
- _____
16. **Describe surrounding land uses (e.g., commercial, agricultural, residential, school, etc.):**
- North:** _____ Agricultural and Big Dry Creek
- South:** _____ Residential
- East:** _____ Agricultural and Dog Creek
- West:** _____ Agricultural and Friant-Kern Canal

17. ***What land use(s) in the area may be impacted by your Project?:*** Little to no impact on Agricultural and Residential Use

18. *What land use(s) in the area may impact your project?:* No impact

19. Transportation:

NOTE: The information below will be used in determining traffic impacts from this project. The data may also show the need for a Traffic Impact Study (TIS) for the project.

A. Will additional driveways from the proposed project site be necessary to access public roads?
 X Yes No

B. Daily traffic generation:

I. Residential - Number of Units _____
Lot Size _____
Single Family _____
Apartments 0

II. Commercial - Number of Employees	<u>0</u>
Number of Salesmen	<u>0</u>
Number of Delivery Trucks	<u>0</u>
Total Square Footage of Building	<u>0</u>

III. Describe and quantify other traffic generation activities: _____

Single-Family Residential traffic

20. *Describe any source(s) of noise from your project that may affect the surrounding area:* Additional noise
from one-time home construction as homes and community are being built.

21. Describe any source(s) of noise in the area that may affect your project: None

Initial construction and ongoing Single Family Residential activity

23. *Proposed source of water:*
 (X) private well
 () community system³--name: _____ OVER.....

24. *Anticipated volume of water to be used (gallons per day)*²: Approx. 29,500 gallons per day (GPD) total for the 44 lots
25. *Proposed method of liquid waste disposal:*
 (X) *septic system/individual*
 () *community system*³-name _____
26. *Estimated volume of liquid waste (gallons per day)*²: The annual average daily flow for 44 lots will be 9,900 GPD
27. *Anticipated type(s) of liquid waste:* Domestic wastewater
28. *Anticipated type(s) of hazardous wastes*²: Household hazard waste (leftover paint, cleaning/landscaping chemicals, etc.)
29. *Anticipated volume of hazardous wastes*²: Less than 125 pounds per year of household hazardous waste
30. *Proposed method of hazardous waste disposal*²: To be disposed or recycled at the local HHW facility
31. *Anticipated type(s) of solid waste:* Typical residential solid waste
32. *Anticipated amount of solid waste (tons or cubic yards per day):* 0.27 tons/day
33. *Anticipated amount of waste that will be recycled (tons or cubic yards per day):* .09 tons/day
34. *Proposed method of solid waste disposal:* Containerized residential solid waste and recycling collection is provided by county-authorized waste handling firms.
35. *Fire protection district(s) serving this area:* Fresno County Fire Protection District
36. *Has a previous application been processed on this site? If so, list title and date:* No
37. *Do you have any underground storage tanks (except septic tanks)?* Yes _____ No X
38. *If yes, are they currently in use?* Yes _____ No X

TO THE BEST OF MY KNOWLEDGE, THE FOREGOING INFORMATION IS TRUE.


 SIGNATURE

8-31-26
 DATE

¹Refer to Development Services and Capital Projects Conference Checklist

²For assistance, contact Environmental Health System, (559) 600-3357

³For County Service Areas or Waterworks Districts, contact the Resources Division, (559) 600-4259

NOTICE AND ACKNOWLEDGMENT

INDEMNIFICATION AND DEFENSE

The Board of Supervisors has adopted a policy that applicants should be made aware that they may be responsible for participating in the defense of the County in the event a lawsuit is filed resulting from the County's action on your project. You may be required to enter into an agreement to indemnify and defend the County if it appears likely that litigation could result from the County's action. The agreement would require that you deposit an appropriate security upon notice that a lawsuit has been filed. In the event that you fail to comply with the provisions of the agreement, the County may rescind its approval of the project.

STATE FISH AND WILDLIFE FEE

State law requires that specified fees (effective January 1, 2019: \$3,271.00 for an EIR; \$2,354.75 for a Mitigated/Negative Declaration) be paid to the California Department of Fish and Wildlife (CDFW) for projects which must be reviewed for potential adverse effect on wildlife resources. The County is required to collect the fees on behalf of CDFW. A \$50.00 handling fee will also be charged, as provided for in the legislation, to defray a portion of the County's costs for collecting the fees.

The following projects are exempt from the fees:

- 1. All projects statutorily exempt from the provisions of CEQA (California Environmental Quality Act).*
- 2. All projects categorically exempt by regulations of the Secretary of Resources (State of California) from the requirement to prepare environmental documents.*

A fee exemption may be issued by CDFW for eligible projects determined by that agency to have "no effect on wildlife." That determination must be provided in advance from CDFW to the County at the request of the applicant. You may wish to call the local office of CDFW at (559) 222-3761 if you need more information.

Upon completion of the Initial Study you will be notified of the applicable fee. Payment of the fee will be required before your project will be forwarded to the project analyst for scheduling of any required hearings and final processing. The fee will be refunded if the project should be denied by the County.



Applicant's Signature

8-31-26

Date

Sample Ranch

A Planned Residential Development
Tentative Tract Map No. 6539

Operational Statement

Submitted to:

Fresno County
Department of Public Works and Planning
2220 Tulare Street, 6th Floor
Fresno, CA 93721

Prepared For:

Yellowfin Holdings, LP
2505 Alluvial Avenue
Clovis, CA 93611
(559) 432-8181

Prepared by:

Ewell Group
695 W Cromwell Ave. Suite# 102
Fresno, CA 93711
(559) 437-1990

August 2026

Operational Statement

Project Description

This Operational Statement provides the design framework for the proposed rezoning and change in land use designation of approximately 119.73 acres from the AE-40 Zone District to the RR Zone District to allow development of a planned residential community consisting of 44 single-family residential lots ranging from approximately two acres to three and one-half acres in size, together with associated common areas and private infrastructure improvements, within the County of Fresno (Project). The Project is located adjacent to State Route 168 and the Friant-Kern Canal, and approximately 0.8 miles west of East Shepherd Avenue (11000 Tollhouse Road), more specifically referenced as Assessor Parcel Numbers 150-061-48 and 150-061-51 and 150-061-53. The site currently includes one residential dwelling and four irrigation wells.

The Project is comprised of approximately 44 single family lots with project-related uses in a gated area to be served by a private street system as shown on Tentative Tract Map No. 6539. The Project is envisioned as a private gated single-family neighborhood. A homeowner's association (HOA) will be established to monitor and maintain the integrity of the Project, including adherence to drought tolerant requirements, architectural parameters, private roadways, as needed, and gates provided for in the CC&Rs consistent with this Operational Statement.

The Project includes the following features:

- Drought Tolerant Irrigation - including refined front and back yards and drought tolerant landscaping.
- CC&Rs that require all lots to participate in regional groundwater recharge, as a county program. The project will utilize a surface water supply contract for the acquisition of CVP supplies in coordination with Fresno County and a Friant Contractor for regional recharge.
- A natural trail system and these facilities, along with the decorated entryways and perimeter fencing, common area gates, fences, and trail will be operated and maintained by the HOA.
- The water wells and septic sewer system will be privately owned and maintained by the individual lot owners on each lot.

Water Supply - Potable Domestic and Drought Tolerant Irrigation

Domestic Water Use: The Project's 44 residential lots ranging from approximately 2 – 3 ½ acre lots will be served by individual domestic wells that will utilize groundwater, that benefits from surface water recharge, and will be owned and operated by the individual lot owners within the Project site consistent with the CC&Rs. The common area facilities such as trails, entrances etc. will be served and operated by the HOA. The Project's groundwater supply has been subjected to

County approved testing parameters and a hydrogeology analysis. The Project/HOA, in coordination with Fresno County Resources Division, will also participate in regional recharge efforts utilizing contracted surface water supplies allowing for the acquisition, diversion, and direct recharge of water supplies to enhance groundwater conditions within the project area. The Project also holds riparian rights for diversion and use of surface water supplies for beneficial uses from the adjoining creek.

Outside Irrigation Use: The Project's residential lots will obtain irrigation water in conjunction with the usage of its individual wells, to each be permitted by Fresno County and installed at the time of development. The Project will incorporate a mandatory requirement that all landscape irrigation, including all front and back yards of residences, be drought tolerant. The residents will be required to use drought-tolerant landscaping for irrigation water efficiency. Any landscape of 500 ft. or more will be subject to the Model Water Efficient Landscape Ordinance (MELO), County and State standards consistent with the irrigation requirements of the City of Clovis.

Fire Protection

The Project will consist of either fire sprinklers (in buildings) or hydrants located on each residential lot and to be installed by the lot owner at the time of development. Residential lots shall conform to Fresno County Fire Protection District standards, which will generally consist of internal building fire sprinkler and pressurized (or draft-only type) fire hydrants serving each lot. Fire sprinklers will be a requirement of all residential units. Fire flow and storage requirements of the permitting agency will be met with the use of the private onsite well and/or a private water storage system. Where fire protection facilities are constructed for the common area facilities, each residential unit will pay a fee for the operation and maintenance of the common area fire-related facilities.

Open Space and Natural Trail System Plan

The Project may establish a HOA Open Space and Natural Trail System Plan, and each residential unit will pay a HOA fee as may be reasonably required. At the developer's option, such open space and trail areas may be reserved by covenant or easement through each lot in favor of the HOA.

Mitigation and Monitoring Matrix

The Project may be subject to a Mitigation and Monitoring Matrix as set forth by Fresno County in the conditions of approval.

Air Quality

An Air Quality Impact Analysis has been prepared by VRPA, a local air quality consultant, for the Project. The Project will be subject to certain impact fees as adopted by the Air District.

Neighborhood Character

The Sample Ranch neighborhood provides both privacy and convenience compatible with the site's natural setting and nearby communities. Homes will be designed with special attention given to creating a strong relationship with each other and will strive to capture views, maintain view corridors, and respect the terrain of the natural setting. The Project will require that each property owner review building and landscaping plans and obtain approval from the HOA regarding the building character, aesthetics, and building pad location to confirm Project consistency prior to construction. The Project will be served by current and future commercial in area.

All 44 lots have a gross minimum acreage of not smaller than two-acres unless otherwise indicated on the approved tract map. Where lots deviate from the minimum square footage it shall not be less than 10% below the area standard.

The following residential design guidelines will reinforce the traditional neighborhood qualities and the residents' ability to visually enjoy surrounding vistas and open space amenities.

Residential Design Guidelines

The Project will have:

- An emphasis on creating residences with strong indoor/outdoor relationships through the generous use of windows, doors, and appropriate drought tolerant landscaping.
- Setbacks may vary for maximum flexibility with the goal of creating a comfortable street edge for pedestrians.
- Building elevations and mass should be articulated to avoid monotony of a single architectural theme yet avoids mixing significantly different architectural styles. Each individual owner shall be required to submit an architectural building theme package to the HOA for approval prior to starting construction.
- The visual impact of garages shall be reduced by a variety of means, including, but not limited to, garages which are set back from non-garage façade or porch, units with forward garages which also include courtyards, arbors, arches, or other similar treatments to enhance the streetscape, or side-turned garages.
- Exterior wall materials should reflect the character of the region. Stone

accents are encouraged along the building base and columns.

- The use of lighter, subdued colors as the body color and brighter accent colors to accentuate architectural details are encouraged.
- Roofing material shall consist of concrete or clay tile and of a natural color depending on the medium. Where medium to dark gray colors and style are used they shall be selected to match the overall architectural theme of the home.
- Mechanical equipment (e.g., compressors, air conditioners, antennas, heat pumps, solar collectors, and satellite dishes) should not be visible to the public.

Planned Residential Development Standards

The Project will utilize the Planned Residential Development (PRD) process to allow for private roadways and flexible roadway widths, supporting orderly development while responding to existing terrain, trees, and other natural features.

Landscaping and Neighborhood Entries

Plant materials are a strong unifying element and should reflect the physical, functional, and aesthetic qualities of the site and architectural elements. Limited palettes of material in simple compositions are recommended to achieve the overall semi-rural theme. Areas which will be landscaped, by the HOA, include the entry points to the Project; accent or pocket landscape areas may be incorporated at specific locations of the internal local neighborhood streets, cul-de-sacs leading to open space corridors, neighborhood entries; such locations will be determined by the HOA

California State Route 168 and Friant-Kern Canal

CA 168 north of Tollhouse Road and east of Shepherd Avenue represents important edges for project identification and character due to the visibility of portions of the Project site from this roadway. Generally, landscape will be focused and installed at select locations, where existing or proposed terrains support such installations, but which are generally to be focused on entry points or segments near entries. The landscape plantings will be in character with the overall semi-rural theme of the area and relate strongly with the neighborhood entry treatments. All landscaped areas will be drought tolerant to sustain normal growth and capable of being maintained in good repair for long periods.

Neighborhood Entries

Neighborhood entry treatments will be located on the southerly side of the Project. In keeping with the semi-rural theme like the neighboring communities, signage will build upon low-

key neighborhood entry treatments that will be easily identifiable to vehicular traffic. Natural materials such as stone or boulder monoliths with signage plaques mounted or carved onto the surface will be used to identify neighborhood entries.

Local Street Trees

Street trees play an important role in the quality of the local neighborhood environment. Lot specific property owners will be required to properly plant trees of the correct species that will grow into a shade canopy over local streets. The use of canopy trees saves energy by cooling the area and increases property values by improving the neighborhood streetscape.

Fencing

A coordinated system of fencing styles, to be installed by each specific lot owner, established by HOA that responds to a variety of fencing conditions related to aesthetics, privacy, and the overall semi-rural theme of the adjacent neighborhoods.

The following standards are intended to ensure the coordination, quality, and proper design of all fencing materials within the development area. Unless otherwise specified, the following standards shall govern in addition to the fencing requirements of Section 80-4 of the Fresno County Standard Specifications. HOA CC&R's will contain details as to walls, fences, and gates to be developed by the Project and lots with enforcement by the HOA. Individual lots for security purposes may include fencing around the housing unit, however, the following types are prohibited: chain link, barbed wire, and other similar fencing materials. Where lot fencing is installed, it shall be installed by the lot owner, unless associated with the HOA maintained area.

Property owners, at a minimum, shall be required to install perimeter fencing (consistent with the standard herein) at the time of housing construction where such lots are located on the perimeter of the project limits. Where such perimeter fencing is associated with a HOA maintained facility, it shall be installed by the HOA.

Lighting

Simple efficient entry, pathway and landscape lighting may be provided at HOA maintained areas, such as entry points and select common areas. Lot owners installed architectural lighting effects are encouraged at lot entries or integrated with landscaping to promote nighttime identity and character. Excessive lighting and glare shall be avoided through careful selection and placement of lighting standards and illumination levels.

- All lighting which is installed within or adjacent to roadways, private or HOA, shall be similar or identical per the development standards and as approved by the HOA prior to

installation.

- Lighting fixtures should direct light downward and minimize area glare and light spillover including the avoidance of glaring streetlights.

Circulation

Tollhouse Road serves as the primary circulation route to the Project with required turnouts of the Project.

Local Streets

Local streets will be private, providing access and circulation to individual lots. The street sections are shown on Tentative Tract Map 6539. If required, the developer may enter into a traffic improvement agreement with the County to provide for the funding of the required traffic, signalization and transportation improvements.

Grading

The Project respects the physical character and environmental area and is sensitive to visual qualities, building types, and development efficiency.

The Project will be designed, and will implement through HOA development guidelines, grading and drainage standards that will (to the extent feasible) be compatible with the physical character and environmental qualities of the area to the north and south and the topography surrounding it.

The following general standards apply to the grading within the Project site, subsequent HOA development standards may supersede the information below are supplement the intent and design criteria intentions of the subdivision. The intent of these standards is to establish a balance in the overall approach to site development and the visual qualities of the prominent ridgeline and the site's "rolling" terrain.

Mass Grading Standards: Mass graded sites should be contoured and shaped to resemble, to the extent feasible, the natural topographic forms. It is intended by some grading will be enacted by the Project with secondary grading occurring by each respective lot owner at the time of housing construction. Pads shall drain to a public street or Storm Drainage System were feasible and consistent with the overall County drainage guidelines and requirements of the HOA development standards. The maximum vertical height of retaining walls between pads or benches may be no more than five vertical feet as measured from the base of wall to top of wall. Where additional height is required, walls shall be tiered with offsets not less than 10 horizontal feet between walls. The criteria above does not indicate that such standards are applicable to all construction, each lot

owner shall be required to obtain the recommendations of qualified geotechnical consultant for verification of all construction. All retaining walls to create building pads shall be constructed of reinforced materials. The exposed face of a foundation stem wall shall not exceed five feet in average height and shall be landscaped and/or screened with surface materials to disguise typical foundation building materials (concrete, etc.). Stockpile and borrow sites may be permitted within an area that is scheduled for future development. Such stockpiles must be knocked down to provide suitable access for fire management of regular discing or mowing.

Infrastructure

All permanent utilities in the subdivision will be underground. Temporary overhead facilities will be allowed during the construction phases of the Project. The privately owned septic systems, including septic tanks, will be installed on individual lots, where suitable, for the treatment and disposal of domestic wastewater. Each lot owner shall be responsible for the operation and maintenance of their respective septic system.

Potable water will be provided by individual on-site wells. Each lot owner shall be responsible for the installation, operation, and maintenance of their well. The Homeowners' Association (HOA) will be responsible for the maintenance of common areas.

The Project preliminarily identifies the following Developer infrastructure obligations:

- Construction of on-site improvements, roadways, entry features.
- Right-of-way dedication and construction of improvements as applicable on major street frontages.
- If required, extension of facilities from the proposed Project to the nearest improved point of connection if existing facilities are not adequate to serve the Project. This includes right-of-way dedication for streets, water and sewer lines, and construction of these facilities. Temporary facilities may be installed to serve the Project at the cost of the Project developer.
- At specific locations, dedication and improvement of drain ways, trail system and open space where applicable. Additional drainage ways and channels, with respect to or within some lots, may be constructed by individual property owners.
- Dedication of right-of-way for outside travel lanes and intersection improvements where applicable.

Number of Employees:

As a residential development there are no permanent employees that will be staffed on site. The HOA will implement the use of landscaping maintenance which will be part-time.

Service and Delivery Vehicles:

Third-party service facilities (vehicles, equipment, etc.) for the general maintenance of private residences and HOA common areas shall typically operate only during regular business hours. Service to the common landscape areas includes delivery of special fertilizers and maintenance supplies. It is projected that minimal trips per month will be necessary for supplies and materials.

Number of Parking Spaces for Employees, Customers, and Service/Delivery

Type of Surface on Parking Area: Parking spaces are generally not provided, either on the street or at the residential lots, but where such areas accommodate parking within the street it shall be limited to less than 24 hours of time. Overnight on-street parking will not be allowed unless specifically approved by the HOA.

Water and Energy Conservation and Fire Protection:

- All HOA areas and lots shall include the use of time-controlled irrigation facilities and metered devices.
- Landscape irrigation practices will be consistent with City of Clovis standards, for instance reduced during daylight hours in the months of May through October. This measure will reduce loss due to evapotranspiration. Property owners shall be required to follow the water schedules. Where excess watering or irrigation run-off occurs property owners shall be required to repair such occurrences and may pay HOA imposed fines.
- Yard landscape for each unit shall be designed by the homeowner using architectural guidelines. Each landscape plan shall be approved by the HOA based on an overall landscape approach of appropriate drought tolerant vegetation and square footage of area, understanding the limitation of water available for yard landscape irrigation. Water shall be applied by water efficient means and methods between the hours of 9 P.M. and 6 A.M.
- Energy Conservation: Building energy consumption shall be reduced through site planning and building development standards. The lot plans prepared by each property for each individual lot will include optimization of appropriate tree planting to provide

shading of paved areas. Additional measures for energy efficiency and conservation which describe the efforts toward achieving energy efficiency in site planning and building design may be implemented

- **Fire Protection:** Each residential unit in the subdivision will have a requirement for the installation of residential fire sprinklers and the minimum fire water storage (if required) in accordance with Fresno County Fire Protection District standards. Such facilities shall be the obligation of each property owner at the time of construction. As required by the Fresno County Fire Protection District, private lot owner water lines and fire hydrants (draft or pressurized) may be provided adjacent to structures.

Landscape Plan: The Project will be landscaped with drought tolerant plants, which will be irrigated with groundwater approved by the HOA.

Sale of Goods on Site: Not applicable.

Equipment to be Used: Landscaping equipment used for mowing and maintaining landscaping, and irrigation-related equipment.

Supplies and Materials: Only those minimal supplies required to maintain lots and common HOA area.

Does the Use Cause an Unsightly Appearance? Noise? Glare? Dust? Odor? If so, Explain How This Will be Reduced or Eliminated: The entire project will produce negligible amounts of dust, glare, and odor. Some additional noise will be generated by the normal operation of cars and service vehicles.

List Any Solid or Liquid Wastes to be Produced: Estimated Volume of Wastes: How and Where is it Stored? How is it Hauled and Where is it Disposed? How Often?: Single-family solid waste, contract with private waste management company.

Estimated Volume (Acre-feet) of Water to be Used: Source of Water:

The Groundwater Supply Report prepared by Kenneth D. Schmidt & Associates dated October 2025 evaluated groundwater supply conditions for the property associated with the project area, approximately a 144-acre area. The proposed residential development area consists of approximately 119.73 acres and includes 44 residential lots ranging from approximately two acres to three and one-half acres in size.

The hydrogeologic analysis evaluated groundwater recharge, storage capacity, groundwater inflow conditions, well production characteristics, and projected consumptive

groundwater use associated with the proposed 44-lot development. The report estimated project consumptive groundwater use at approximately 33 acre-feet per year, with approximately 40 acre-feet per year of recharge from average annual precipitation and onsite conditions, and additional localized groundwater inflow estimated at approximately 160 acre-feet per year within the project vicinity.

The Groundwater Supply Report concluded that groundwater available to the project area would **exceed** the projected consumptive use associated with the proposed residential development. The report further concluded that the proposed groundwater use would remain within the sustainable yield of the local aquifer and would not result in significant impacts to neighboring groundwater users.

In addition to available groundwater supplies, the Project possesses riparian water rights associated with Big Dry Creek for beneficial use subject to applicable laws and regulations. The Project will also participate in regional groundwater recharge programs utilizing contracted surface water supplies in coordination with the HOA, Fresno County, Friant Contractor, and applicable water agencies pursuant to surface water agreements and management agreements supporting groundwater recharge and long-term water sustainability objectives.

The Project will incorporate drought-tolerant landscaping, water conservation measures, onsite recharge opportunities, and compliance with applicable County and State groundwater sustainability requirements.

Describe Any Proposed Advertising, Including Size, Appearance, and Placement: No signage is involved in the project except as required by applicable health and safety standards.

Will Existing Buildings be Used or Will New Buildings be Constructed? Describe Type of Construction Materials, Height, Color, Etc. Provide Floor Plan and Elevations, if Appropriate: New residences will be constructed consistent with the standards described in this operational statement.

Will Any Outdoor Lighting or an Outdoor Sound Amplification System be Used? Describe and Indicate When Used: Landscaping lighting and street lighting as described in the Operational Statement.

Landscaping or Fencing Proposed? Describe Type and Location: Fencing requirements will be in accordance with the Operational Statement.

AP\CLW_3D_PROJECTS\2021\21-316 SURVEY AND MAPPING\MS\TEMP\MAP 21-316 TULANE 8/27/2026 4:34 PM

VESTING TENTATIVE SUBDIVISION MAP TRACT MAP NO. 6539

IN THE COUNTY OF FRESNO, STATE OF CALIFORNIA

KEYNOTES

- EASEMENT GRANTED TO COUNTY OF FRESNO FOR PUBLIC HIGHWAY, RECORDED JULY 9, 1890 IN BOOK R OF DEEDS, PAGE 484 AND 486.
- EASEMENT GRANTED TO STATE OF CALIFORNIA FOR THE PURPOSE OF OPERATING THE FRESNO COUNTY STREAM GROUP PROJECT OF FLOOD CONTROL PURPOSES ONLY, RECORDED OCTOBER 13, 1948 IN BOOK 2700 OF OFFICIAL RECORDS, PAGE 232 UNDER RECORDER'S SERIAL NUMBER 47271.
- TERMS AND PROVISIONS AS CONTAINED IN AN INSTRUMENT ENTITLED EASEMENT AGREEMENT, RECORDED APRIL 17, 1989 IN OFFICIAL RECORDS UNDER RECORDER'S SERIAL NUMBER 89040273.
- TERMS AND PROVISIONS AS CONTAINED IN AN INSTRUMENT ENTITLED EASEMENT AGREEMENT, RECORDED APRIL 17, 1989 IN OFFICIAL RECORDS UNDER RECORDER'S SERIAL NUMBER 89040273.
- NORTH LINE OF EASEMENT GRANTED TO STATE OF CALIFORNIA PER DOCUMENT RECORDED OCTOBER 13, 1948 IN BOOK 2700 OF OFFICIAL RECORDS, PAGE 232 UNDER RECORDER'S SERIAL NUMBER 47271.
- PROPOSED IRREVOCABLE OFFER OF DEDICATION 85' TOTAL, 55' ADDITIONAL TO THE EXISTING PUBLIC HIGHWAY EASEMENT.
- PROPOSED 60' PRIVATE ACCESS AND PUBLIC UTILITY EASEMENT TO BE GRANTED BY SEPARATE INSTRUMENT OVER APN 150-061-30.
- FUTURE DEDICATION 85' TOTAL, 55' ADDITIONAL TO THE EXISTING PUBLIC HIGHWAY EASEMENT.

SUBDIVIDER'S STATEMENT

TO: FRESNO COUNTY PLANNING COMMISSION
2220 TULARE STREET, 8th FLOOR
FRESNO, CALIFORNIA 93721

I HEREBY APPLY FOR APPROVAL OF THE ATTACHED TENTATIVE TRACT MAP.
THE ACREAGE OF THIS TRACT IS 119.73 ACRES. THERE WILL BE 44 LOTS IN THIS TRACT WITH A MINIMUM SIZE OF 2.00 ACRES.
THE EXISTING USE OF THIS PROPERTY IS AGRICULTURAL EXCLUSIVE - 40 ACRES.

THE PROPOSED USE OF THIS PROPERTY IS LOW DENSITY RESIDENTIAL.
THE EXISTING ZONING ON THIS PROPERTY IS AE40.

THE EXISTING STRUCTURE ON THIS PROPERTY IS A SINGLE FAMILY RESIDENCE WHICH WILL BE DEMOLISHED.

THE EXISTING EASEMENTS ON THIS PROPERTY INCLUDE:
1. A 30'-FOOT EASEMENT FOR ROAD PURPOSES ALONG TOLLHOUSE ROAD. (60' TOTAL, 30' WITHIN THE PROPERTY BOUNDARY).
2. A STATE FLOODING EASEMENT ALONG THE PROPOSED NORTH LINE OF THE PORTION OF PROPERTY TO BE SUBDIVIDED.

ALL IMPROVEMENTS WILL CONFORM TO COUNTY STANDARDS WITH THE FOLLOWING EXCEPTIONS:
1. THERE ARE NO EXCEPTIONS REQUESTED.

TYPE OF TREES TO BE PLANTED ARE TO BE PLANTED BY THE INDIVIDUAL LOT OWNERS.

THE PROPOSED DRAINAGE, FLOOD CONTROL MEASURES AND METHOD OF STORM WATER DISPOSAL IS A STORM WATER BASIN LOCATED IN THE SOUTHEAST CORNER OF THE PROPERTY.

THE PROPOSED FIRE PROTECTION SHALL BE APPROVED AND INSTALLED PER FRESNO COUNTY FIRE PROTECTION DISTRICT REQUIREMENTS PRIOR TO LOT DEVELOPMENT. NO COMMUNITY OR PUBLIC WATER SYSTEM IS PROPOSED. FIRE PROTECTION WATER SUPPLY WILL BE PROVIDED FROM STATIC (DRAFTING) SOURCES IN THE VOLUME, NUMBER AND LOCATION REQUIRED AND APPROVED BY THE FRESNO COUNTY FIRE PROTECTION DISTRICT.

THE PROPOSED SOURCE OF WATER SUPPLY WILL BE INDIVIDUAL PRIVATE WELL PER LOT.

THE PROPOSED METHOD OF SEWAGE DISPOSAL WILL BE INDIVIDUAL SEWER SEPTIC SYSTEM PER LOT.

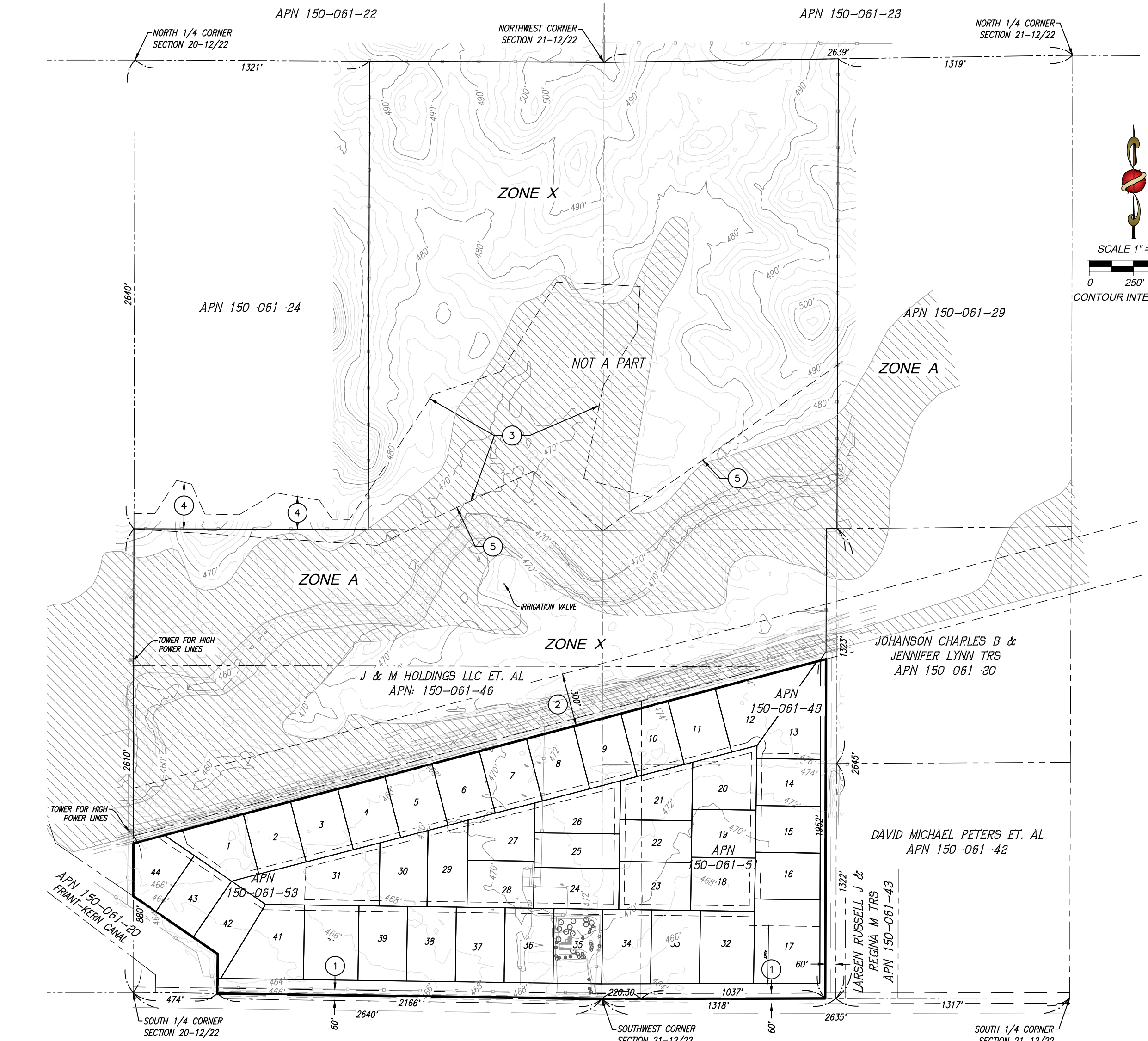
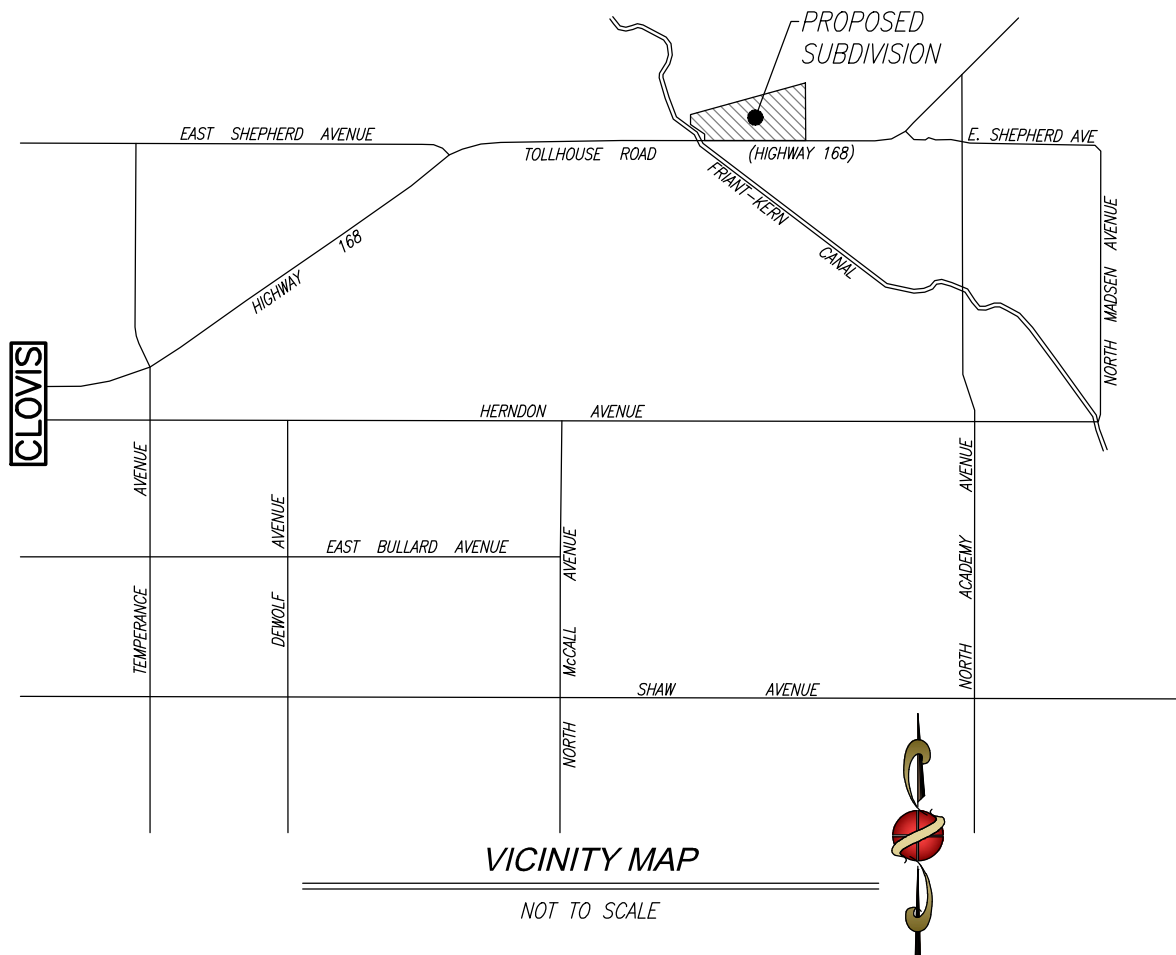
THE FOLLOWING UTILITIES ARE TO BE PROVIDED: ELECTRICAL AND TELEPHONE.
ARRANGEMENTS HAVE BEEN MADE WITH UTILITY COMPANIES SERVING THIS AREA.

SIGNATURE OF SUBDIVIDER
DATE: JOSHUA E. PETERSON
NAME: JOSHUA E. PETERSON
ADDRESS: 2505 ALLUMAL AVENUE
CITY: CLOVIS, CALIFORNIA 93611
PHONE: (559) 432-8181

SIGNATURE OF AGENT
DATE: AUSTIN EWELL, PRESIDENT - KAN VENTURES, INC.
NAME: AUSTIN EWELL, PRESIDENT - KAN VENTURES, INC.
ADDRESS: 685 W. CROMWELL AVENUE, SUITE 102
CITY: FRESNO, CALIFORNIA 93711
PHONE: (559) 437-1990

SIGNATURE OF OWNER
SEE OWNER'S STATEMENT, THIS SHEET, FOR SIGNATURES OF ALL RECORD OWNERS.
ADDRESS: C/O 2505 ALLUMAL AVENUE
CITY: CLOVIS, CALIFORNIA 93611
PHONE: (559) 432-8181

SIGNATURE OF ENGINEER
DATE: NAME: PRECISION CIVIL ENGINEERING, INC.
NAME: PRECISION CIVIL ENGINEERING, INC.
ADDRESS: 1234 O STREET
CITY: FRESNO, CALIFORNIA 93721
PHONE: (559) 449-4500



GENERAL NOTES:

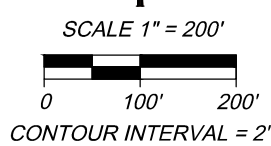
- 60' WIDE EASEMENT FOR ACCESS ROAD AND PUBLIC UTILITY EASEMENT AS SHOWN ON MAP. SOME PORTIONS EXTEND BEYOND THE 60' RIGHT OF WAY FOR SHARED COMMUNITY FACILITIES. (ROADS A, B, C, D, G, H AND I)
- FLOOD ZONE DESIGNATION: ZONE A, ZONE X AND ZONE X WITH A SPECIAL NOTE PER FLOOD INSURANCE RATE MAPS 06019C106SH AND 06019C106SH BOTH REVISED FEBRUARY 18, 2009. THE PORTION BEING SUBDIVIDED LIES WITHIN ZONE X WITH A SPECIAL NOTE. THIS AREA IS BEING SHOWN AS BEING PROTECTED FROM THE 1-PERCENT ANNUAL CHANCE OR GREATER FLOOD HAZARD BY A LEVEE SYSTEM THAT HAS BEEN PROVISIONALLY ACCREDITED.
- ALL EXISTING TREES AND STRUCTURES SHALL BE REMOVED.
- ALL EXISTING ABOVE-GROUND ELECTRICAL UTILITIES TO BE UNDERGROUND AND POLES TO BE REMOVED.
- ABANDON ALL WELL AND SEPTIC TANKS TO COUNTY STANDARDS UNLESS UPGRADED TO SUITABLE COUNTY OF FRESNO STANDARDS FOR PUBLIC USE.
- THE DESIGN OF THE PROPOSED SUBDIVISION PROVIDES, TO THE EXTENT FEASIBLE, FOR FUTURE PASSIVE OR NATURAL HEATING OR COOLING OPPORTUNITIES AND OTHER MEASURES THAT CONSERVE NON-RENEWABLE ENERGY RESOURCES.
- ALL PUBLIC UTILITIES (POLE, SER, COMCAST) SHALL BE INSTALLED.
- EACH LOT (1-44) WILL UTILIZE INDIVIDUAL PRIVATE WATER WELLS FOR WATER SUPPLY AND INDIVIDUAL SEPTIC TANK SYSTEMS FOR SEWAGE (NO COMMUNITY/PUBLIC SYSTEM IS PROPOSED).
- ALL IMPROVEMENTS PROPOSED WITHIN THE COUNTY RIGHT OF WAY (SEWER, WATER, STORM DRAIN, CURB, GUTTER, STREETLIGHTS, SIDEWALK AND PERMANENT PAVEMENT) SHALL BE CONSTRUCTED TO COUNTY STANDARDS.
- LOTS 41 AND 42 MAY BE RETAINED BY THE DEVELOPER TO BE UTILIZED FOR TEMPORARY COMMUNITY STORM DRAIN RETENTION PURPOSES.
- ALL DRAINAGE OR PRIVATE DITCHES PRESENT ON SITE.
- ROADS A, B, C, D, G, AND H ARE PRIVATE. ALL PRIVATE ROADS AND THE 60' ACCESS EASEMENT SHALL BE OWNED AND MAINTAINED BY A PROPERTY OWNERS' ASSOCIATION OR OTHER MAINTENANCE ENTITY ESTABLISHED BY RECORDED COVENANTS, CONDITIONS AND RESTRICTIONS PRIOR TO OR CONCURRENT WITH RECORDATION OF THE FINAL MAP. NO PRIVATE ROAD IS OFFERED FOR DEDICATION.
- NO COMMUNITY OR PUBLIC WATER SYSTEM IS PROPOSED. FIRE PROTECTION WATER SUPPLY SHALL BE PROVIDED FROM STATIC (DRAFTING) SOURCES CONFORMING TO FRESNO COUNTY FIRE PROTECTION DISTRICT REQUIREMENTS. REQUIRED STORAGE VOLUME, DRAFTING POINTS AND ACCESS THERETO SHALL BE APPROVED BY THE DISTRICT PRIOR TO RECORDATION OF THE FINAL MAP.

LEGEND

- WOOD AND WIRE FENCE
- SECTION LINE
- RIGHT-OF-WAY LINE
- EASEMENT LINE
- CENTERLINE
- EXISTING LOT LINE
- PROPOSED LOT LINE
- BOUNDARY OF PROPERTY BEING SUBDIVIDED

SITE INFORMATION

- GENERAL PLAN LAND USE DESIGNATION: MEDIUM LOW DENSITY RESIDENTIAL
MEDIUM DENSITY RESIDENTIAL
MEDIUM HIGH DENSITY RESIDENTIAL
HIGH DENSITY RESIDENTIAL
- EXISTING USE: OPEN SPACE/AG/RURAL RESIDENTIAL
- EXISTING ZONING: AE-40 (COUNTY)
- PROPOSED ZONING: R3/PD-4; RESIDENTIAL SINGLE FAMILY
- SITE ACREAGE: GROSS: ±119.38 AC
NET: ±106.87 AC
- TOTAL NUMBER OF LOTS: 44



LEGAL DESCRIPTION:

THE LAND REFERRED TO IS SITUATED IN THE UNINCORPORATED AREA OF THE COUNTY OF FRESNO, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

ADJUSTED PARCEL A OF PROPERTY LINE ADJUSTMENT NO. 24-11, AS EVIDENCED BY GRANT DEED RECORDED FEBRUARY 25, 2025 AS DOCUMENT NO. 2025-0020067, OFFICIAL RECORDS OF FRESNO COUNTY, DESCRIBED AS FOLLOWS:

THAT PORTION OF PARCEL A OF PLA NO. 20-27(A), AS EVIDENCED BY DOCUMENT ENTITLED "CERTIFICATE OF COMPLIANCE", RECORDED NOVEMBER 10, 2020, AS DOCUMENT NO. 2020-0160826, OFFICIAL RECORDS OF FRESNO COUNTY, DESCRIBED AS FOLLOWS:

THE SOUTHEAST QUARTER OF SECTION 20 AND THE WEST 220.3 FEET OF THE SOUTHWEST QUARTER OF SECTION 21, ALL IN TOWNSHIP 12 SOUTH, RANGE 22 EAST, MOUNT DIABLO BASE AND MERIDIAN.

EXCEPTING THEREFROM A PARCEL OF LAND IN SAID SOUTHEAST QUARTER OF SAID SECTION 20, CONTAINING AN AREA OF 4.17 ACRES, MORE OR LESS, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SAID SECTION 20 AND RUNNING THENCE ALONG THE WEST BOUNDARY OF THE SOUTHWEST QUARTER OF SAID SECTION 20, NORTH 0° 03' EAST, 540.9 FEET, THENCE LEAVING SAID WEST BOUNDARY AND RUNNING SOUTH 55° 44' EAST, 577.9 FEET, THENCE SOUTH 0° 51' WEST, 221.3 FEET TO A POINT ON THE SOUTH BOUNDARY OF SAID SECTION 20; THENCE ALONG SAID SOUTH BOUNDARY NORTH 89° 18' WEST, 478.8 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPTING THEREFROM THAT PORTION OF SAID SOUTHWEST QUARTER AND SAID WEST 220.3 FEET OF THE SOUTHWEST QUARTER OF SAID SECTION 21 LYING NORTH OF A LINE THAT IS PARALLEL WITH AND 40.00 FEET SOUTHERLY OF THE FOLLOWING DESCRIBED CENTERLINE OF AN EASEMENT FOR A LEVEE AS CONTAINED IN A DOCUMENT RECORDED OCTOBER 13, 1948 IN BOOK 2700, PAGE 232 OF OFFICIAL RECORDS OF FRESNO COUNTY AND QUILCLAIMED TO FRESNO METROPOLITAN FLOOD CONTROL DISTRICT IN QUILCLAIM DEED (PARCEL 11) RECORDED APRIL 20, 1989 AS DOCUMENT NO. 89042068, OFFICIAL RECORDS OF FRESNO COUNTY:

BEGINNING AT A POINT ON THE EAST BOUNDARY OF SECTION 21, TOWNSHIP 12 SOUTH, RANGE 22 EAST, MOUNT DIABLO BASE AND MERIDIAN, BEING 1530 FEET, MORE OR LESS, NORTHERLY OF THE SOUTHWEST CORNER OF SAID SECTION 21; THENCE NORTH 50° 52' WEST, 1785.0 FEET; THENCE SOUTH 74° 31' WEST, 4000 FEET, MORE OR LESS, TO A POINT ON THE WEST BOUNDARY OF SAID SECTION 21; SAID POINT BEING DISTANT NORTHERLY ALONG SAID WEST BOUNDARY 1620 FEET, MORE OR LESS, FROM THE SOUTHWEST CORNER OF SAID SECTION 21; THENCE ENTERING SECTION 20 OF SAID TOWNSHIP AND RANGE AND CONTINUING SOUTH 74° 31' WEST, 2800 FEET, MORE OR LESS, TO A POINT ON THE WEST BOUNDARY OF THE SOUTHWEST QUARTER OF SAID SECTION 20, DISTANT THEREON 880 FEET, MORE OR LESS, NORTHERLY FROM THE SOUTH QUARTER CORNER OF SAID SECTION 20.

CONTAINS: 77.27 ACRES, MORE OR LESS.

ADJUSTED PARCEL D OF SAID PROPERTY LINE ADJUSTMENT NO. 24-11, DESCRIBED AS FOLLOWS:

PARCEL C OF PLA NO. 10-08(C), AS EVIDENCED BY DOCUMENT ENTITLED "CERTIFICATE OF COMPLIANCE", RECORDED APRIL 28, 2011, AS DOCUMENT NO. 2011-0058302, OFFICIAL RECORDS OF FRESNO COUNTY, AND AMENDED BY THAT CERTAIN CERTIFICATE OF COMPLIANCE PLA NO. 10-08(C) RECORDED APRIL 4, 2019 AS DOCUMENT NO. 2019-0033706, OFFICIAL RECORDS OF FRESNO COUNTY, DESCRIBED AS FOLLOWS:

THE WEST HALF OF THE SOUTHWEST QUARTER OF SECTION 21, TOWNSHIP 12 SOUTH, RANGE 22 EAST, MOUNT DIABLO BASE AND MERIDIAN.

EXCEPTING THEREFROM THE WEST 220.3 FEET OF THE WEST HALF OF THE SOUTHWEST QUARTER OF SAID SECTION 21.

ALSO EXCEPTING THEREFROM THE EAST 60.00 FEET OF THE WEST HALF OF THE SOUTHWEST QUARTER OF SAID SECTION 21.

ALSO EXCEPTING THEREFROM THAT PORTION LYING NORTH OF A LINE THAT IS PARALLEL WITH AND 40.00 FEET SOUTHERLY OF THE FOLLOWING DESCRIBED CENTERLINE OF AN EASEMENT FOR A LEVEE AS CONTAINED IN A DOCUMENT RECORDED OCTOBER 13, 1948 IN BOOK 2700, PAGE 232 OF OFFICIAL RECORDS OF FRESNO COUNTY AND QUILCLAIMED TO FRESNO METROPOLITAN FLOOD CONTROL DISTRICT IN QUILCLAIM DEED (PARCEL 11) RECORDED APRIL 20, 1989 AS DOCUMENT NO. 89042068, OFFICIAL RECORDS OF FRESNO COUNTY:

BEGINNING AT A POINT ON THE EAST BOUNDARY OF SECTION 21, TOWNSHIP 12 SOUTH, RANGE 22 EAST, MOUNT DIABLO BASE AND MERIDIAN, BEING 1530 FEET, MORE OR LESS, NORTHERLY OF THE SOUTHWEST CORNER OF SAID SECTION 21; THENCE NORTH 50° 52' WEST, 1785.0 FEET; THENCE SOUTH 74° 31' WEST, 4000 FEET, MORE OR LESS, TO A POINT ON THE WEST BOUNDARY OF SAID SECTION 21; SAID POINT BEING DISTANT NORTHERLY ALONG SAID WEST BOUNDARY 1620 FEET, MORE OR LESS, FROM THE SOUTHWEST CORNER OF SAID SECTION 21; THENCE ENTERING SECTION 20 OF SAID TOWNSHIP AND RANGE AND CONTINUING SOUTH 74° 31' WEST, 2800 FEET, MORE OR LESS, TO A POINT ON THE WEST BOUNDARY OF THE SOUTHWEST QUARTER OF SAID SECTION 20, DISTANT THEREON 880 FEET, MORE OR LESS, NORTHERLY FROM THE SOUTH QUARTER CORNER OF SAID SECTION 20.

CONTAINS: 42.46 ACRES, MORE OR LESS.

CONTAINING IN THE AGGREGATE 119.73 ACRES, MORE OR LESS.

APN: (ASSESSOR'S REFERENCE ONLY - SEE NOTE)

NOTE - ASSESSOR'S PARCEL NUMBERS:

ASSESSOR'S PARCEL NUMBERS SHOWN HEREON ARE FOR ASSESSMENT REFERENCE ONLY AND DO NOT DESCRIBE THE FEE PARCELS. THE FEE PARCELS ARE AS DESCRIBED IN GRANT DEED RECORDED FEBRUARY 25, 2025 AS DOCUMENT NO. 2025-0020067, OFFICIAL RECORDS OF FRESNO COUNTY, PURSUANT TO PROPERTY LINE ADJUSTMENT NO. 24-11. THE ASSESSOR'S PARCEL CONFIGURATION SHOWN ON ASSESSOR'S MAP BOOK 150, PAGE 06 PREDAATES SAID PROPERTY LINE ADJUSTMENT AND DOES NOT CONFORM TO IT.

OWNER'S STATEMENT

WE, THE UNDERSIGNED, BEING ALL PARTIES HAVING ANY RECORD TITLE INTEREST IN THE REAL PROPERTY SHOWN ON THIS TENTATIVE MAP OF TRACT NO. 6539, HEREBY CERTIFY THAT WE ARE THE RECORD OWNERS OF SAID PROPERTY, THAT WE HAVE EXAMINED THIS MAP, AND THAT WE CONSENT TO ITS SUBMISSION TO THE FRESNO COUNTY PLANNING COMMISSION FOR CONSIDERATION.

RECORD TITLE IS VESTED AS FOLLOWS, PER PRELIMINARY REPORT OF OLD REPUBLIC TITLE COMPANY, ORDER NO. 1421004492-AM, DATED JUNE 20, 2025:

YELLOWFIN HOLDINGS, LP, A CALIFORNIA LIMITED PARTNERSHIP
CJ HOLDINGS, LP, A CALIFORNIA LIMITED PARTNERSHIP
J&M HOLDINGS, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY
AVILA GROUP HOLDINGS, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY
DAC HOLDINGS, LP, A CALIFORNIA LIMITED PARTNERSHIP

ADDRESS FOR ALL RECORD OWNERS: C/O 2505 ALLUMAL AVENUE, CLOVIS, CALIFORNIA 93611
PHONE: (559) 432-8181

YELLOWFIN HOLDINGS, LP, A CALIFORNIA LIMITED PARTNERSHIP
BY: SPYGLASS REAL ESTATE, INC., A CALIFORNIA CORPORATION
ITS: GENERAL PARTNER

DATE: JOSHUA E. PETERSON, PRESIDENT

CJ HOLDINGS, LP, A CALIFORNIA LIMITED PARTNERSHIP
BY: SPYGLASS REAL ESTATE, INC., A CALIFORNIA CORPORATION
ITS: GENERAL PARTNER

DATE: JOSHUA E. PETERSON, PRESIDENT

J&M HOLDINGS, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY

DATE: JASON HOLLRAH, MANAGER

AVILA GROUP HOLDINGS, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY

DATE: JARROD M. KYUNA, PRESIDENT

DAC HOLDINGS, LP, A CALIFORNIA LIMITED PARTNERSHIP
BY: SPYGLASS REAL ESTATE, INC., A CALIFORNIA CORPORATION
ITS: GENERAL PARTNER

DATE: JOSHUA E. PETERSON, PRESIDENT

PREPARED BY:
PRECISION
CIVIL ENGINEERING, INC.

1234 O STREET
FRESNO, CA 93721
(559) 449-4500 FAX: (559) 449-4500
PREPARED ON 8/27/2026
JOB NO. 21-316

(02)

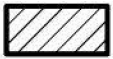
This map is for Assessment purposes only. It is not to be construed as portraying legal ownership or divisions of land for purposes of zoning or subdivision law.



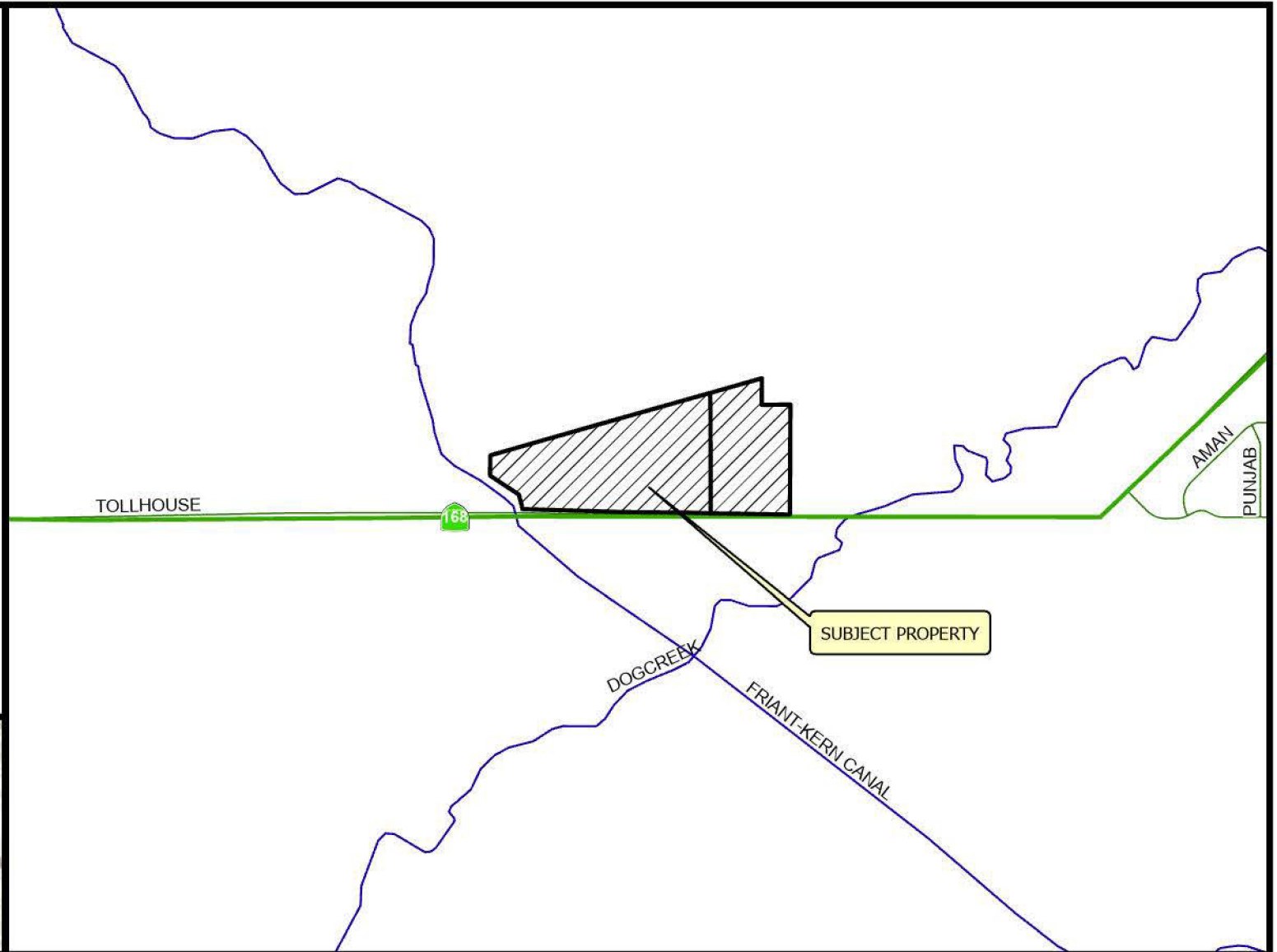
Assessor's Map Bk.150 - Pg.06
County of Fresno, Calif.



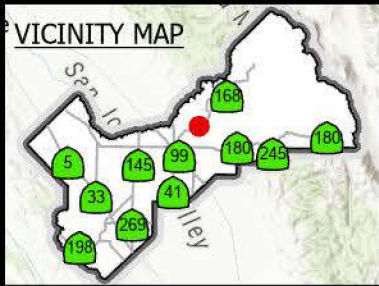
Legend



SubjectProperty



VICINITY MAP

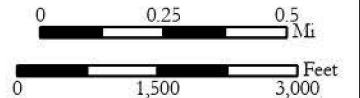


LOCATION MAP

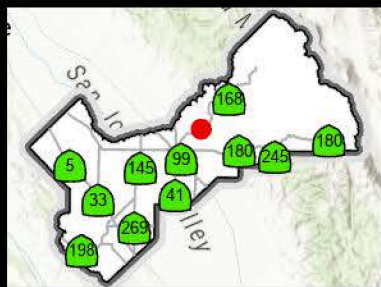
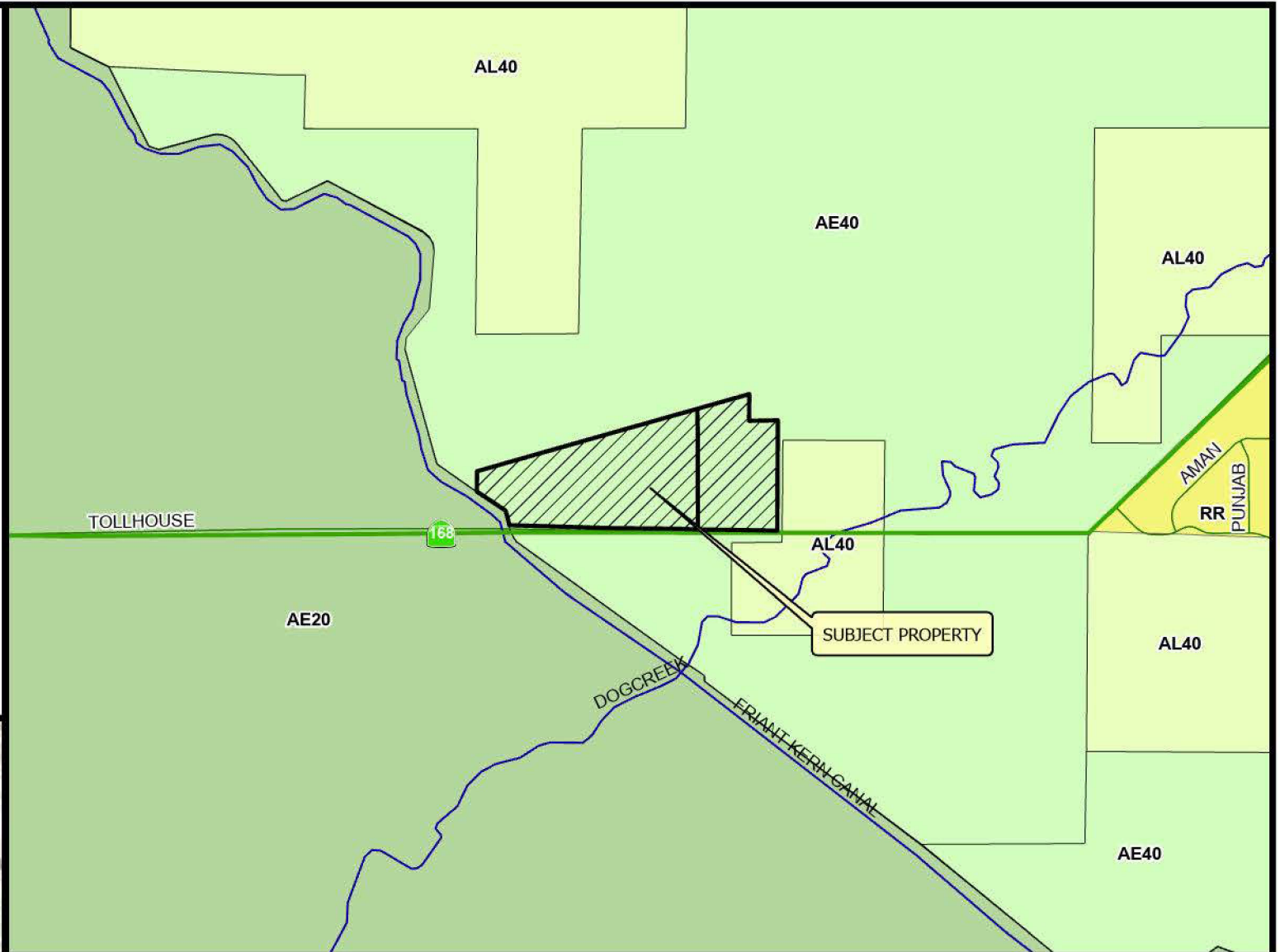
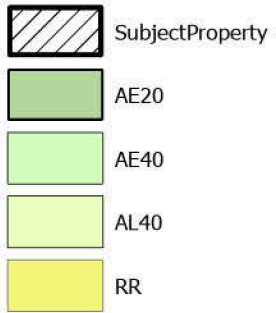
AA3880

2025

Prepared by : County of Fresno, Department of Public Works and Planning, Development Services Division
 Person Prepared by : mdo
 On Date : 11/4/2025



Legend



Existing Zoning Map

AA3880

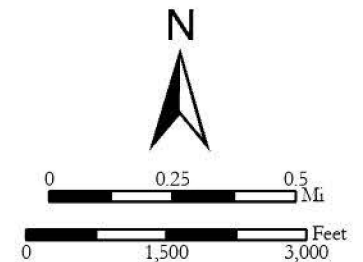
STR 20,21 - 12S / 22E

2025

Prepared by : County of Fresno, Department of Public Works and Planning, Development Services Division

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On Date : 11/4/2025



LEGEND:

-  Subject Property
-  Ag Contract Land

LEGEND

ORC - ORCHARD

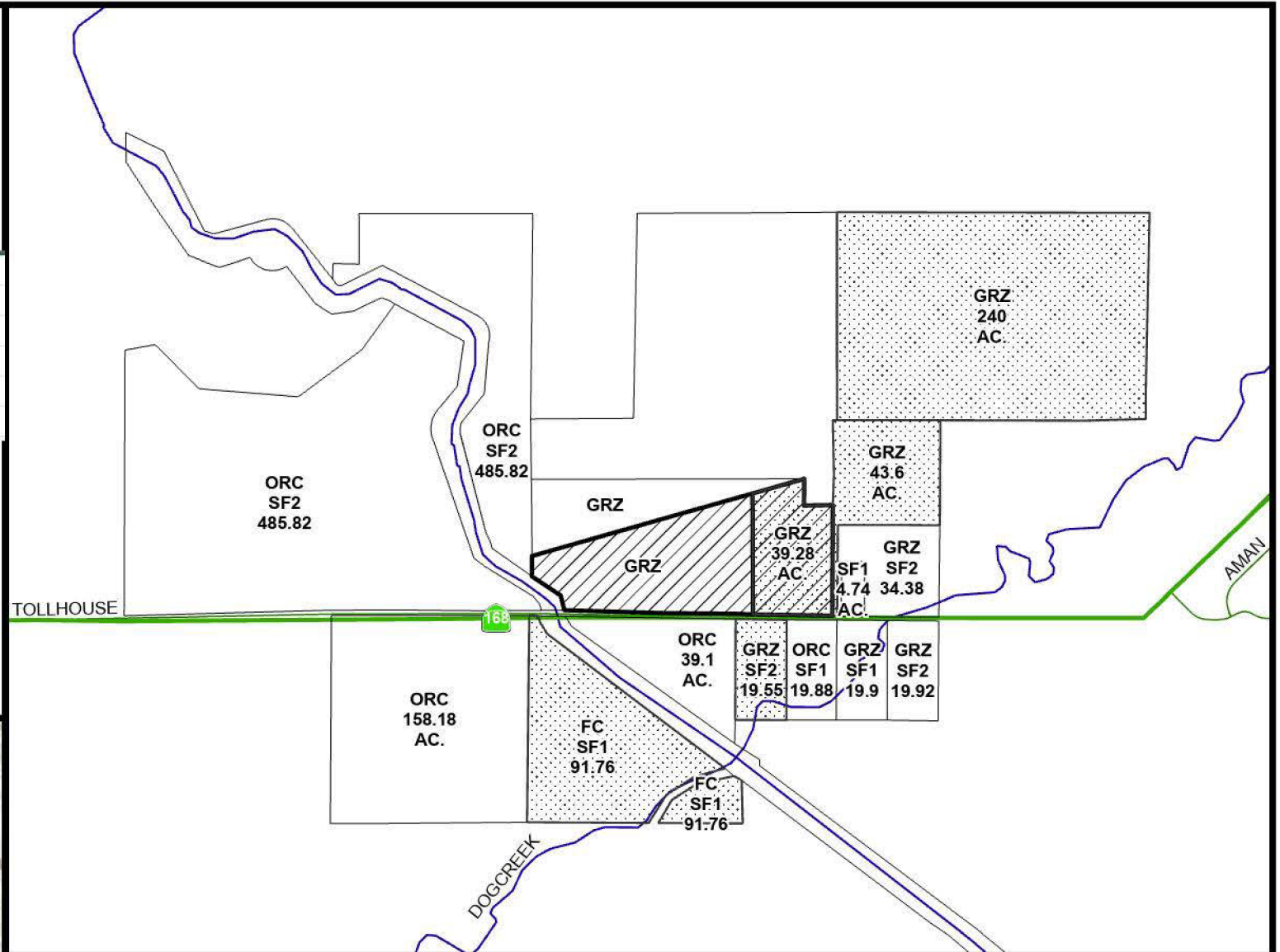
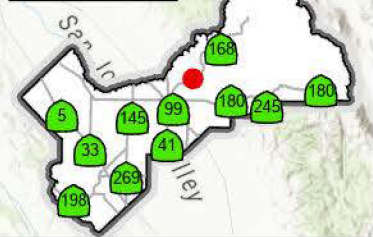
V - VACANT

GRZ - GRAZING

SF#- SINGLE FAMILY RESIDENCE

FC - FIELD CROP

VICINITY MAP



Existing Land Use Map

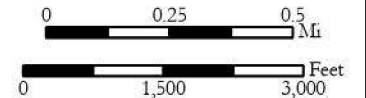
AA3880

2025

Prepared by : County of Fresno, Department of Public Works and Planning, Development Services Division

Person Prepared by : mdo

On Date : 11/4/2025



July 3, 2025

KA Project. No. 012-25053

Mr. Austin Ewell
Ewell Group of Companies
695 W. Cromwell Avenue #102
Fresno, California 93711

**RE: Preliminary Sewage Feasibility Evaluation and Exploratory Borings
Sample Ranch Development
11000 Tollhouse Road
Fresno County, California**

Dear Mr. Ewell:

In accordance with your request, we have completed the Preliminary Sewage Feasibility Evaluation and Exploratory Borings with soil classification for the above-reference project site.

As requested, subsurface soil conditions were explored by drilling 24 exploratory soil borings within the site to evaluate the subsurface conditions for sewage feasibility. The borings were advanced to a depth of approximately 15 feet below existing site grade. Percolation testing was performed within the general areas proposed for the leach lines. During drilling operations, soil cuttings were obtained at regular intervals to evaluate the soil consistency and to obtain information regarding the engineering properties of the subsoils. The soils encountered were continuously examined and visually classified in accordance with the Unified Soil Classification System. A more detailed description of the soils encountered is shown on the attached boring logs.

Project Setting

The site is irregular in shape, encompasses approximately 118 acres, and is located approximately 0.8 miles west of the eastern intersection of E. Shepherd Avenue and California State Highway 168 in Fresno County, California. The central portion of the property is located at longitude 119.588993° West and latitude 36.868410° North. The site is located on the south side of Dry Creek (which consists of an earthen levee) and approximately 0.25 miles northwest of Dog Creek. The Friant-Kern Canal is concrete lined and bounds the west side of the site. A rural residence with an address of 11000 Tollhouse Road, animal corrals, and agricultural feed crop and grazing land are located to the east of the site.

Presently, the area of proposed development is utilized as an agricultural feed crop and grazing land. Barbed wire fencing is located surrounding the site and segmented across portions of the site for the purpose of cattle grazing. The site is covered by a moderately dense grass or feed crop growth, and the surface soils

have a loose consistency. The site has been previously leveled/terraced for the purpose of flood irrigation with concrete irrigation pipes located along the eastern and western sides of the site. The lowest terrace or portion of the site is on the western edge with the overall relief of the site being approximately 5 feet.

Field Exploration and Subsurface Conditions

Subsurface soil conditions were explored at the project site by drilling 24 exploratory borings across the site to a depth of approximately 15 feet, using a truck mounted drill rig. In addition, 24 percolation tests were performed next to each of the 24 boring locations. The approximate boring and percolation test locations are shown on the attached Site Map, Figure 1.

Based on our findings, the subsurface conditions encountered in our exploratory borings appear typical of those found in the geologic region of the site. In general, the upper approximately 3 to 5 feet of silty sand, sandy silt, silty sand/sandy silt, and sandy clay were encountered. Some of the granular soils contained traces of clay. In addition, some of these soils were weakly to moderately cemented. These soils have low to moderate strength characteristics and have poor to moderate absorption characteristics.

Beneath the upper 3 to 5 feet of soils, approximately 5 to 8 feet of silty sand, sandy silt, clayey sand, silty sand/sand and clayey sandy silt were encountered. Some of these soils contained traces of clay or gravel. Field and laboratory tests suggest that these soils are moderately strong and have fair to good absorption characteristics.

Below approximately 8 to 10 feet, predominately silty sand, clayey sand, and silty sand/sand were encountered. Some of these soils contained traces of clay or gravel. Field and laboratory tests suggest that these soils are moderately strong and have a fair to good absorption characteristics. These soils had similar absorption characteristics as the upper soils and extended to the termination depth of our borings.

Test boring locations were checked for the presence of groundwater during and immediately following the drilling operations from April 28 to April 30, 2025. Groundwater was encountered during our exploratory drilling and percolation testing. It should be recognized that water table elevations may fluctuate with time, being dependent upon seasonal precipitation, irrigation, land use, and climatic conditions, as well as other factors. The evaluation of such factors is beyond the scope of this report.

For additional information about the soils encountered, please refer to the logs of borings attached.

Percolation Test Results

Twenty-four percolation tests were performed to evaluate the soil absorption characteristics across the site. The percolation tests were performed inside test holes drilled next to exploratory borings at the approximate locations shown on the attached site map. The test holes were presoaked for 24 hours prior to the tests being conducted. The percolation tests were performed at depths ranging from 5 to 8 feet below the existing ground surface. The tests were conducted in general accordance with the criteria set in the "Manual of Septic Tank Practice" published by the Department of Health, Education, and Welfare. Results of the tests are as follows:

Test No.	Depth (feet)	Percolation Rate (min/in)	Soil Type
P1	6	20	Sandy Clay (SC)
P2	7	30	Silty Sand (SM) w/ trace clay
P3	5.5	30	Silty Sand (SM)
P4	7	20	Silty Sand (SM)
P5	8	11	Silty Sand/Sand (SM/SP)
P6	7	10	Silty Sand (SM)
P7	6	20	Sandy Silt (ML)
P8	8	5	Silty Sand (SM)
P9	7.5	12	Silty Sand (SM)
P10	5	60	Silty Sand/Sandy Silt (SM/ML)
P11	8	5	Silty Sand (SM)
P12	6	20	Clayey Sand (SC)
P13	5	15	Silty Sand (SM) w/ trace clay
P14	5.5	40	Clayey Sand (SC)
P15	6	120	Clayey Sand (SC)
P16	8	10	Clayey Sand (SC) w/ trace gravel
P17	7	15	Clayey Sand (SC)
P18	8	17	Silty Sand (SM)
P19	6	10	Clayey Sand (SC)
P20	5.5	10	Clayey Sand (SC)
P21	7	11	Clayey Sand (SC)
P22	6	15	Silty Sand (SM)
P23	5	10	Clayey Sand (SC)
P24	8	12	Silty Sand (SM)

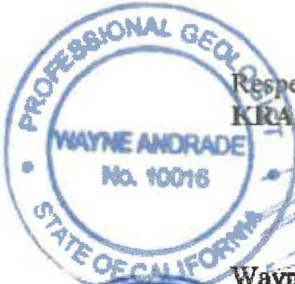
The test results indicate that the soils tested within the upper 5 to 8 feet generally have fair to good absorption characteristics. The test results do not include a factor of safety. The percolation rates given are based on 1 inch of fall within an approximately 4½ diameter hole, starting with an approximately 6-inch head of water. The percolation tests were conducted in general accordance with the criteria set in the "Manual of Septic Tank Practice" published by the Department of Health, Education, and Welfare. Following saturation, the tests were performed for 3 hours with readings taken every 30 minutes. The final percolation rates were based on the last 30-minute readings. Based on our testing, it is our opinion the site is satisfactory for individual septic systems.

Closing Remarks

The information contained in this report are based on the exploratory borings and percolation tests that were done at the project site. The geotechnical data presented herewith is based upon professional interpretation utilizing the current "standard of practice" and degree of conservatism deemed proper as of the report date. It is not warranted that such data cannot be superseded by future development at the site or additional geotechnical investigations.

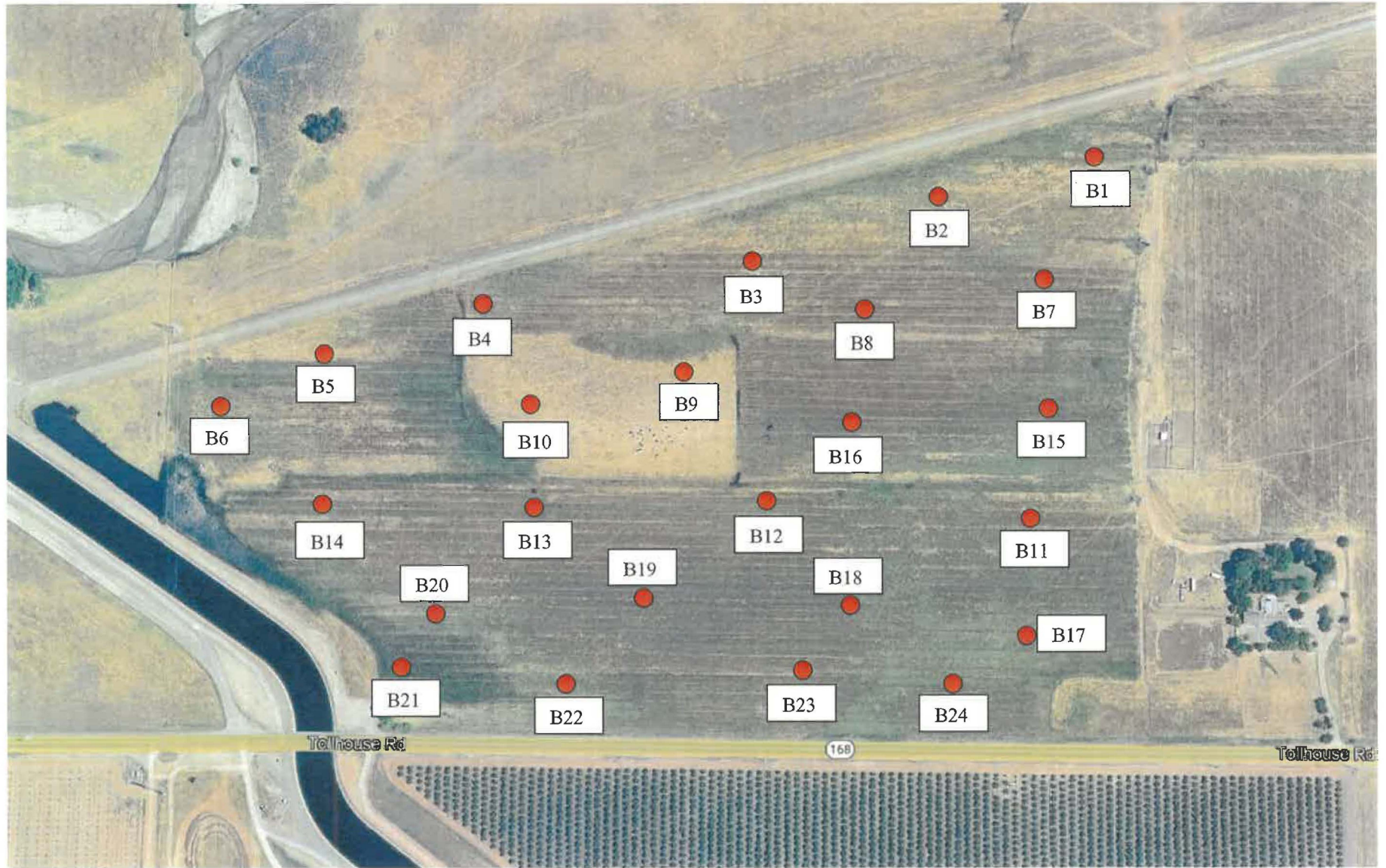
If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (559) 348-2200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.


Wayne Andrade
Project Geologist


David R. Jarosz, II
Managing Engineer
RCE No. 60185/RGE No. 2698

WA/DRJ:ht



● APPROXIMATE BORING & PERCOLATION TEST LOCATIONS



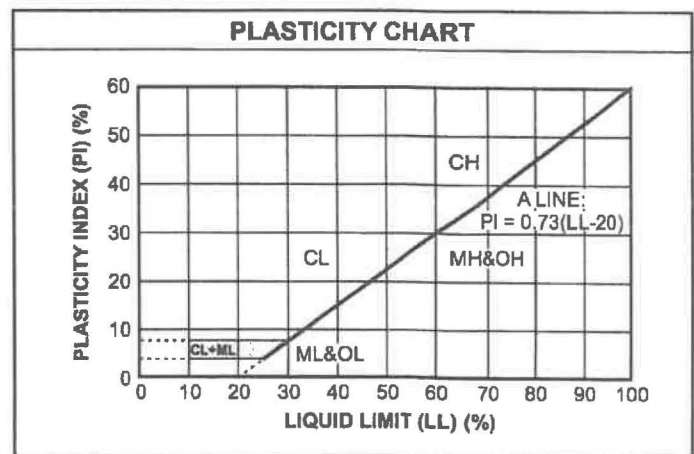
SITE MAP Preliminary Sewage Feasibility Evaluation-Sample Ranch Development 36.868410°, 119.588993°/11000 Tollhouse Road Fresno County, California	Scale: NTS	Date: July 2025	
	Drawn by: WA	Approved by: DJ	
	Project No. 012-25053	Figure No. 1	

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART			
COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)		
		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)		
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)		
		SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)		
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

CONSISTENCY CLASSIFICATION	
Description	Blows per Foot
<i>Granular Soils</i>	
Very Loose	< 5
Loose	5 – 15
Medium Dense	16 – 40
Dense	41 – 65
Very Dense	> 65
<i>Cohesive Soils</i>	
Very Soft	< 3
Soft	3 – 5
Firm	6 – 10
Stiff	11 – 20
Very Stiff	21 – 40
Hard	> 40

GRAIN SIZE CLASSIFICATION		
Grain Type	Standard Sieve Size	Grain Size in Millimeters
Boulders	Above 12 inches	Above 305
Cobbles	3 to 12 inches	305 to 76.2
Gravel	3 inches to No. 4	76.2 to 4.76
Coarse-grained	3 to ¾ inches	76.2 to 19.1
Fine-grained	¾ inches to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.074
Coarse-grained	No. 4 to No. 10	4.76 to 2.00
Medium-grained	No. 10 to No. 40	2.00 to 0.42
Fine-grained	No. 40 to No. 200	0.42 to 0.074
Silt and Clay	Below No. 200	Below 0.074



Log of Boring B1

Project: Sample Ranch Development

Client: Eewell Group of Companies

Location: 11000 Tollhouse Road, Fresno County, California

Depth to Water>

Initial: None

Project No: 012-25053

Figure No.: A-1

Logged By: Michael Rupright

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
2		SILTY SAND (SM) Fine- to medium-grained; light brown, moist, drills easily											
4		CLAYEY SANDY SILT (ML) Fine-grained; dark brown, moist, drills easily											
6		CLAYEY SAND (SC) Fine-grained; dark brown, moist, drills easily											
8		CLAYEY SAND (SC) Fine- to medium-grained with GRAVEL; dark brown, moist, drills firmly											
10													
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Rig: CME 45C

Driller: Brent Snyder

Krazan and Associates

Drill Date: 4-28-25

Hole Size: 4½ Inches

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B2

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-2

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
		Ground Surface					20	40	60	10	20	30	40
0		SILTY SAND (SM) Fine-grained with trace CLAY; brown, moist, drills easily											
2													
4													
6													
8		With decreased SILT and dark brown below 8 feet											
10													
12		With trace GRAVEL below 12½ feet											
14		End of Borehole											
16													
18													
20													

Drill Method: Solid Flight

Drill Date: 4-28-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 13 Feet

Sheet: 1 of 1

Log of Boring B3

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-3

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
		SILTY SAND (SM) Fine- to medium-grained; brown, moist, drills easily											
2													
4													
6		With decreased SILT and drills hard at 5 feet											
8													
10													
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-28-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B4

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-4

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
		SANDY SILT (ML) Fine-grained; light brown, moist, drills easily											
2													
4													
6		SILTY SAND (SM) Fine- to medium-grained; brown, moist, drills easily											
8													
10													
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-28-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B5

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-5

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
2		SILTY SAND (SM) Fine- to medium-grained with trace CLAY; brown, moist, drills easily											
4													
6		SILTY SAND/SAND (SM/SP) Fine- to coarse-grained with trace CLAY; brown, moist, drills easily											
8													
10													
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-28-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B6

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-6

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
2		SILTY SAND (SM) Fine- to medium-grained with CLAY; brown, moist, drills easily											
4		Weakly cemented at 2½ to 3½ feet											
6		SILTY SAND (SM) Fine- to coarse-grained; brown, moist, drills easily											
8													
10		With trace CLAY below 10 feet											
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-28-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B7

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-7

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
2		SILTY SAND (SM) Fine- to medium-grained with CLAY; brown, moist, drills easily											
4													
6		SANDY SILT (ML) Fine-grained; light brown, moist, drills easily											
8													
10		SILTY SAND (SM) Fine- to coarse-grained with trace CLAY; dark brown, moist, drills easily											
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-28-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B8

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-8

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
		Ground Surface					20	40	60	10	20	30	40
0		SILTY SAND (SM) Fine- to medium-grained with trace CLAY; brown, moist, drills easily											
2													
4													
6		SILTY SAND (SM) Fine- to medium-grained; dark brown, moist, drills easily											
8													
10													
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-28-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B9

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-9

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
0		SANDY CLAY (CL) Fine-grained; brown, moist, drills easily											
2		SILTY SAND/SANDY SILT (SM/ML) Fine-grained; light brown, moist, drills easily											
4													
4		SILTY SAND (SM) Fine- to coarse-grained; dark brown, moist, drills easily											
6													
8													
10													
12													
14													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-29-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B10

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-10

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.					
							20 40 60	10 20 30 40			
0		Ground Surface									
2		SILTY SAND/SANDY SILT (SM/ML) Fine-grained with trace CLAY; light brown, moist, drills easily									
4											
6		SILTY SAND (SM) Fine- to medium-grained with CLAY; dark brown, moist, drills firmly									
8		Fine- to coarse-grained with decreased CLAY below 8 feet									
10											
12											
14											
16		End of Borehole									
18											
20											

Drill Method: Solid Flight

Drill Date: 4-29-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B11

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-11

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.					
		Ground Surface					20 40 60	10 20 30 40			
0		SILTY SAND/SANDY SILT (SM/ML) Fine-grained with trace CLAY; light brown, moist, drills easily									
2		Weakly cemented and drills firmly from 2 to 4 feet									
4											
6		SILTY SAND (SM) Fine- to medium-grained; dark brown, moist, drills easily									
8											
10											
12											
14											
16		End of Borehole									
18											
20											

Drill Method: Solid Flight

Drill Date: 4-29-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B12

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-12

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
2		SILTY SAND (SM) Fine-grained; brown, moist, drills easily											
4		Weakly cemented at 2 to 3 feet											
6		CLAYEY SAND (SC) Fine- to coarse-grained; dark brown, moist, drills easily											
8													
10		CLAYEY SAND (SC) Fine- to coarse-grained; dark brown, moist, drills easily											
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-29-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B13

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-13

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.					
							20 40 60	10 20 30 40			
0		Ground Surface									
		SANDY SILT (ML) Fine-grained; light brown, moist, drills easily									
2		Weakly cemented and drills firmly from 2 to 3 feet									
4											
6		SILTY SAND (SM) Fine- to medium-grained with trace CLAY; brown, moist, drills easily									
8											
10											
12											
14											
16		End of Borehole									
18											
20											

Drill Method: Solid Flight

Drill Date: 4-29-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B14

Project: Sample Ranch Development

Project No: 012-25053

Client: Ewell Group of Companies

Figure No.: A-14

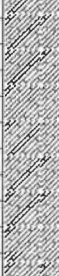
Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.					
		Ground Surface					20 40 60	10 20 30 40			
0		SILTY SAND (SM) Fine-grained with trace CLAY; brown, moist, drills easily									
2											
4											
6		CLAYEY SAND (SC) Fine-grained; dark brown, moist, drills easily									
8											
10		Fine- to medium-grained, with decreased CLAY below 10 feet									
12											
14											
16											
18		End of Borehole									
20											

Drill Method: Solid Flight

Drill Date: 4-29-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B15

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-15

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
0		SANDY CLAY (CL) Fine-grained; dark brown, moist, drills easily											
2		SILTY SAND/SANDY SILT (SM/ML) Fine-grained; light brown, moist, drills easily											
4													
6		CLAYEY SAND (SC) Fine- to medium-grained; dark brown, moist, drills easily											
8													
10		SILTY SAND (SM) Fine- to medium-grained with CLAY; dark brown, moist, drills easily											
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-29-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B16

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-16

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
		SILTY SAND (SM) Fine-grained; brown, moist, drills easily											
2													
		CLAYEY SAND (SC) Fine- to medium-grained; dark brown, moist, drills easily											
4													
6		With trace GRAVEL below 7 feet											
8													
10		Fine- to coarse-grained below 10 feet											
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-29-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B17

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-17

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.					
		Ground Surface					20 40 60	10 20 30 40			
0		SILTY SAND/SANDY SILT (SM/ML) Fine-grained with trace CLAY; light brown, moist, drills easily									
2											
4		CLAYEY SAND (SC) Fine- to medium-grained; dark brown, moist, drills easily									
6											
8											
10											
12											
14											
16		End of Borehole									
18											
20											

Drill Method: Solid Flight

Drill Date: 4-30-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B18

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-18

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
0		SANDY CLAY (CL) Fine-grained; dark brown, moist, drills easily											
2		SANDY SILT (ML) Fine-grained with trace CLAY, weakly cemented; brown, moist, drills firmly											
4													
6		SILTY SAND (SM) Fine-grained; brown, moist, drills easily											
8													
10													
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-30-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B19

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-19

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
		Ground Surface					20	40	60	10	20	30	40
0		SILTY SAND/SANDY SILT (SM/ML) Fine-grained with trace CLAY; light brown, moist, drills easily											
2													
4													
6		CLAYEY SAND (SC) Fine- to medium-grained; dark brown, moist, drills easily											
8													
10													
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-30-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B20

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-20

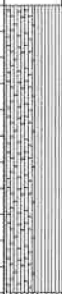
Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)				
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.								
		Ground Surface					20	40	60	10	20	30	40	
0		SILTY SAND/SANDY SILT (SM/ML) Fine-grained with CLAY; light brown, moist, drills easily												
2														
4														
6														
8														
10		CLAYEY SAND (SC) Fine- to medium-grained; dark brown, moist, drills easily												
12														
14														
16														
18														
20		End of Borehole												

Drill Method: Solid Flight

Drill Date: 4-30-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B21

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-21

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
		SILTY SAND/SANDY SILT (SM/ML) Fine-grained with trace CLAY; light brown, moist, drills easily											
2													
4													
6		CLAYEY SAND (SC) Fine- to coarse-grained; dark brown, moist, drills easily											
8		With increased CLAY below 8 feet											
10													
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-30-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B22

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-22

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
2		SILTY SAND/SANDY SILT (SM/ML) Fine-grained with trace CLAY; light brown, moist, drills easily											
4		Weakly cemented from 2½ to 3½ feet											
6		SILTY SAND (SM) Fine- to medium-grained; dark brown, moist, drills easily											
8													
10													
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-30-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B23

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-23

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
							20	40	60	10	20	30	40
0		Ground Surface											
2		SANDY CLAY (CL) Fine-grained; brown, moist, drills easily											
4		CLAYEY SAND (SC) Fine- to medium-grained; brown, moist, drills easily											
6													
8		With increased CLAY below 8 feet											
10													
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-30-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B24

Project: Sample Ranch Development

Project No: 012-25053

Client: Eewell Group of Companies

Figure No.: A-24

Location: 11000 Tollhouse Road, Fresno County, California

Logged By: Michael Rupright

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft			Water Content (%)			
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.							
		Ground Surface					20	40	60	10	20	30	40
0		SILTY SAND/SANDY SILT (SM/ML) Fine-grained with CLAY; light brown, moist, drills easily											
2		Weakly cemented and drills firmly from 2 to 3 feet											
4													
6		SILTY SAND (SM) Fine-grained; light brown, moist, drills easily											
8													
10													
12													
14													
16		End of Borehole											
18													
20													

Drill Method: Solid Flight

Drill Date: 4-30-25

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Brent Snyder

Elevation: 15 Feet

Sheet: 1 of 1



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Biological Resource Evaluation



Sample Project Fresno County, California

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April 2025

TABLE OF CONTENTS

1	Introduction and Summary.....	1
1.1	Project Description	1
1.2	Project Location.....	1
1.3	Special-Status Species	1
1.4	Designated Critical Habitat	1
1.5	Potentially Jurisdictional Aquatic Resources	2
2	Methods.....	2
2.1	Preliminary Review	2
2.2	Targeted Sensitive Biological Resources	2
2.3	Field Survey.....	3
3	Results.....	4
3.1	Existing Conditions	4
3.2	Jurisdictional Waters and Wetlands of the US and of the State of California.....	4
3.3	Special-Status Species	6
3.3.1	Federal or State-listed Wildlife Species	6
3.3.1.1	<i>California Tiger Salamander – Central Valley DPS</i>	6
3.3.1.2	<i>Tricolored Blackbird (Agelaius tricolor)</i>	7
3.3.1.3	<i>Swainson’s Hawk (Buteo swainsoni)</i>	7
3.4	Proposed or Candidate Wildlife Species	8
3.4.1	Crotch’s Bumble Bee (<i>Bombus crotchii</i>)	8
3.4.2	Western Spadefoot (<i>Spea hammondi</i>).....	9
3.4.3	Burrowing Owl (<i>Athene cunicularia</i>)	10
3.5	Other Special-Status Wildlife Species.....	10
3.5.1	American Badger (<i>Taxidea taxus</i>).....	10
3.5.2	Migratory and Nesting Birds.....	11
3.6	Special-status Plant Species and Communities	11
4	Recommended Avoidance and Minimization Measures.....	12
5	Conclusion	12
6	References.....	13
	Appendix A. Special-Status Species in Project Region.....	15
	Appendix B. Recommended Mitigation Measures	20
	Appendix C. Representative Site Photographs	28
	Appendix D. Map Figures.....	33

1 INTRODUCTION AND SUMMARY

This report presents the methods and results of a Biological Resources Evaluation conducted by Vollmar Natural Lands Consulting, Inc. (VNLC) at the Sample Property, located in Fresno County, California (Project Site). The Project Site is the site of a proposed single family development, described below. This evaluation was conducted to identify and characterize existing biological conditions within the Project Site; assess the potential for special-status species, habitats, and jurisdictional features to occur; assess the potential impacts of the proposed project on any sensitive biological resources; and recommend appropriate measures to mitigate such impacts. It is intended to support the CEQA review of the Proposed Project.

1.1 Project Description

WCP Developers, LLC has proposed that the County of Fresno amend the General Plan to allow the rezoning and change in land use designation of the Project Site from AE-40 to R-1-E to allow for a planned residential development consisting of approximately 44 two to three and one-half acre single family residential lots. The Proposed Project is the development and construction of this residential subdivision.

1.2 Project Location

The Project Site is approximately 117.64 acres, encompassing three parcels of land (Fresno County Assessor's Parcel Numbers 150-061-26, 150-061-27, and 150-061-28). It is bordered by Tollhouse Road (Highway 168) to the south, the Big Dry Creek levee to the north, privately-owned rangeland to the east, and the Friant-Kern Canal to the west.

1.3 Special-Status Species

Based on habitat requirements and regional distribution, three Federal or State listed wildlife species have low to moderate potential to occur within the Project Site (see **Section 3.3** and **Table 1, Appendix A**). In addition, three species which are proposed or candidates for listing (**Section 3.4**) have low or moderate potential to occur, as does one species designated a Species of Special Concern (SSC) by the California Department of Fish and Wildlife, CDFW (**Section 3.5**).

The Project Site may also support nesting and migrating birds protected under the Migratory Bird Treaty Act (**Section 3.5.2**) and California Fish and Game Code 3503. There is no suitable habitat for special-status plant species within the Project Site (**Table 2, Appendix A**).

The implementation of recommended minimization and avoidance measures would ensure that any impacts on potentially occurring special-status species would be less-than-significant.

1.4 Designated Critical Habitat

Designated Critical Habitat for one ESA-listed species is mapped as slightly crossing into the Project Site; however, this appears to be an artifact of mapping inaccuracy, and no Primary

Constituent Elements for the species are present on the Project Site; the Project would have no effect on Designated Critical Habitat.

1.5 Potentially Jurisdictional Aquatic Resources

The Project Site contains mapped aquatic features, some of which may be jurisdictional waters of the U.S. and/or the State of California. The Project has been designed to avoid impacts to jurisdictional aquatic habitats. The implementation of recommended minimization and avoidance measures would ensure that there are no significant impacts on aquatic resources.

2 METHODS

2.1 Preliminary Review

Prior to the site visit, VNLC Ecologists reviewed the most recent version of the California Natural Diversity Database (CNDDB 2025) to identify special-status plant and wildlife observations in the project vicinity. Additionally, the U.S. Fish and Wildlife Service (USFWS) Information Planning and Consultation System (IPAC 2025) was also reviewed to assess which federally listed species could occur in the vicinity of the Project Site. A nine-quad search for rare and listed plants was queried through the California Native Plant Society's (CNPS) online Inventory of Rare and Endangered Plants (CNPS 2025). All species scoping lists are included in **Tables 1 and 2** of **Appendix A**. The site's aerial imagery, project description, and general regional conditions were also reviewed prior to the site visit.

2.2 Targeted Sensitive Biological Resources

Special-status animal species targeted and analyzed in this report include those listed by the USFWS and/or California Department of Fish and Wildlife (CDFW) as threatened or endangered, as well as those proposed for listing or that are candidates for listing as threatened or endangered. The listing of "Endangered, Rare, or Threatened" is defined in Section 15380 of the *California Environmental Quality Act (CEQA) Guidelines*. Section 15380(b) states that a species of animal or plant is "endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. A species is "rare" when either "(A) although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or (B) the species is likely to become endangered within the foreseeable future throughout all or a portion of its range and may be considered 'threatened' as that term is used in the Federal Endangered Species Act" (ESA).

Animal species are designated as "Species of Special Concern" (SSC) or "Fully Protected" by the CDFW. Although these species have no legal status under the California Endangered Species Act (CESA), CDFW recommends their protection as their populations are generally declining and they could be listed as threatened or endangered (under CESA) in the future. "Fully Protected" species

generally may not be taken or possessed at any time. The CDFW may only authorize take for necessary scientific research and may authorize live capture and relocation of “fully protected” birds to protect livestock. Birds are designated by the USFWS as “Birds of Conservation Concern.” Although these species have no legal status under ESA, the USFWS recommends their protection as their populations are generally declining, and they could be listed as threatened or endangered (under ESA) in the future.

Special-status plants include species that are designated rare, threatened, or endangered, as well as candidate species for listing by the USFWS. Special-status plants also include species considered rare or endangered under the conditions of Section 15380 of the CEQA Guidelines, such as those plant species identified by the CNPS as California Rare Plant Rank (CRPR) 1A, 1B, and 2 in the Inventory of Rare and Endangered Vascular Plants of California. Finally, special-status plants may include other species that are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included as CRPR List 3 in the CNPS Inventory. For the purposes of this report, ‘sensitive plant communities’ include those designated as such by the CDFW, either in the CNDDB, the list of California Sensitive Natural Communities (CDFW 2025), or as sensitive alliances classified in the Manual of California Vegetation (MCV) (Sawyer et al. 2009). Alliances included within the MCV that are designated as global or state rank (“G” or “S”) 1-3 are considered “rare or threatened” at the global and/or state level, and are therefore considered sensitive.

In addition, wetland and riparian habitats, regardless of MCV status, are considered sensitive. Wetlands, streams, and permanent and intermittent drainages are potentially subject to the jurisdiction of the U.S. Army Corps of Engineers under Section 404 of the Federal Clean Water Act (CWA). The CDFW also generally has jurisdiction over these resources, together with other aquatic features that provide an existing fish and wildlife resource pursuant to Sections 1602- 1603 of the California Fish and Game Code. The CDFW asserts jurisdiction to the outer edge of vegetation associated with a riparian corridor. The Regional Water Quality Control Board (RWQCB) also generally has jurisdiction over streams and wetlands. Any grading, excavation, or filling of jurisdictional drainage corridors or wetlands would require a Section 404 permit and will require mitigation.

2.3 Field Survey

VNLC Ecologists conducted an initial reconnaissance survey of the Project Site on September 29, 2023. They walked the entire Project Site to ensure complete visual coverage, documenting observed plant and wildlife species, site conditions, and notable habitat features. They evaluated the potential for special-status species to occupy the Site, including nesting sites, burrows, or dens. Additional visits were conducted to evaluate hydrology and document changed conditions on January 29, 2024; February 15, 2024, and September 19, 2024.

3 RESULTS

3.1 Existing Conditions

The Project Site is primarily composed of irrigated pasture, with an existing house sitting on the southern edge of the center parcel. Photographs representing site conditions are included in **Appendix C**. Most of the Project Site is biologically unremarkable, having been given almost entirely over to agricultural practice. The immediate area around the existing home contains landscaping trees such as oak (*Quercus* sp.), Pine (*Pinus* sp.), and willow (*Salix* sp.); as well as turf grasses. The pasture primarily supports herbaceous species, with a few small Mexican palo verdes (*Parkinsonia aculeata*) at the southwestern corner as the only other trees present in the Project Site. The Project Site is dominated by Bermuda grass (*Cynodon dactylon*) and Dallis grass (*Paspalum dilatatum*), with scattered populations of clover (*Trifolium* sp.) and deer grass (*Muhlenbergia rigens*). While most of the Project Site is flood-irrigated, one section of grassland raised by 1.5-2 feet occurs in the western parcel. This area was graded for a previously present building and is currently vegetated with soft brome (*Bromus hordeaceus*), turkey mullein (*Croton setiger*), and narrow tarplant (*Holocarpha virgata*). The pasture is fed by four wells with a depth of approximately 60 feet each.

At the west end of the pasture, tailwater historically collected against the berm of the Friant-Kern Canal and formed a marsh. While the pasture itself is vegetated with facultative wetland grasses, this marsh was deeper and longer-lasting, and was vegetated with obligate wetland plants such as cattail (*Typha* sp.), bulrush (*Schoenoplectus* sp.) and spikerush (*Eleocharis macrostachya*). The marsh was approximately 0.67 acre in area within the Project Site, and also extended out of the Project Site to the northwest. Recent changes in agricultural practice have reduced the size, ponding duration, and vegetation height in the marsh area.

3.2 Jurisdictional Waters and Wetlands of the US and of the State of California

Non-isolated wetlands, streams, and permanent and intermittent drainages are subject to the joint jurisdiction of the U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (EPA) under the CWA. The RWQCB also generally has jurisdiction over these resources under Porter-Cologne, while CDFW has jurisdiction over aquatic features that provide an existing fish and wildlife resource pursuant to FGC 1600. While CWA jurisdiction extends to the ordinary high water mark, the CDFW asserts FGC 1600 jurisdiction to the top of bank or to outer edge of vegetation associated with a riparian corridor, whichever is greater. Placement of dredge or fill material in jurisdictional waters of the U.S. would require a CWA Section 404 permit. Impacts to Waters of the State of California (which are not Waters of the U.S.) would be subject to Waste Discharge Requirements under Porter-Cologne. Impacts to riparian habitats would require a Lake and Stream Bed Alteration Notification, and possibly a Lake and Streambed Alteration Agreement under FGC 1600. Each of these may be subject to required avoidance, minimization, and mitigation measures.

Due to the Project Site's status primarily as irrigated pasture, wetland indicator plants are widespread across the site (including in the marsh discussed above). However, most or all of these plants are present due to the application of agricultural irrigation water. A formal wetland delineation is the standard practice for determining the exact extent of potentially jurisdictional aquatic resources. There are three classes of features at the Project Site which would be of note when conducting a wetland delineation. First, the National Wetland Inventory maps a single pond near the existing homestead. This feature is an old irrigation water storage pond. It is no longer in use, and is not an aquatic feature. A delineation would formally demonstrate this fact. Second, the irrigated pastures themselves support wetland vegetation. However, this is due only to the application of irrigation water. Finally, the former marsh formed by the tailwater irrigation pond supports remnant indicators of wetland hydrology, soil, and vegetation. This feature had the strongest indicators during initial site visits, though recent changes in site management may have reduced the amount of irrigation water entering the marsh and caused a reduction in the area displaying wetland indicators.

Under current State Water Resources Control Board policy, artificial wetlands constructed in uplands, and currently used and maintained primarily for agricultural crop irrigation, are not considered Waters of the State (unless they meet certain other criteria which do not apply in this case; SWRCB 2021). Under current federal guidance, wetlands are only considered jurisdictional Waters of the US if they have a continuous, direct surface connection to jurisdictional waters (EPA 2025). Moreover, artificially irrigated areas that would revert to dry land if the irrigation ceased and artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for irrigation are never jurisdictional Waters of the US (Code of Federal Regulations § 120.2).

In light of this regulatory regime, the irrigated pasture and the old irrigation water storage pond **would not be considered jurisdictional waters of the US or of the State**. The tailwater marsh would not be considered a jurisdictional water of the US, but might be considered a jurisdictional water of the State.

Potential Project Impacts

Vegetation removal, ground disturbance, and land conversion from the proposed Project could directly affect these features. Impacts to jurisdictional aquatic resources may be considered significant. We therefore recommend that, if the project may impact potentially jurisdictional aquatic resources, that it incorporate measures such as a formal aquatic resource delineation and jurisdictional determination, avoidance of aquatic resources by project grading, permitting of required impacts, and appropriate water quality protection measures. These measures would bring the potential impact to a **less-than-significant** level. Recommended measures are described in **Table 3**, presented in **Appendix B**.

3.3 Special-Status Species

3.3.1 Federal or State-listed Wildlife Species

Three Federal or State listed wildlife species documented in the vicinity of the Project Site have the potential to occur within the Project Site. These and other special-status wildlife species known from the project region are listed in **Appendix A**, along with their regulatory status, habitat requirements, and an evaluation of their potential to occur on or near the Project Site.

3.3.1.1 California Tiger Salamander – Central Valley DPS (*Ambystoma californiense*)

The California Tiger Salamander (CTS) is a State Threatened and Federally Threatened species. This large, black amphibian with distinctive yellow blotches spends most of its life underground in grasslands and lowland foothills, using small mammal burrows as refuges from heat and drought. This species depends on seasonal vernal pools and temporary ponds for breeding, with adults emerging during winter rains to migrate to these aquatic habitats. Larvae develop in standing water before metamorphosing and moving into upland areas. CTS faces significant threats from habitat loss, agricultural development, and urban expansion. Conservation efforts focus on preserving breeding pools and surrounding upland habitat to support long-term population stability.

CTS has been documented to move as much as 1.3 miles from its breeding habitat. The entire Project Site is within 1.3 miles of at least one documented breeding pond. These ponds are separated from the Project Site by partial barriers such as Dry Creek and Tollhouse Road. However, individual CTS could still enter the Project Site. The Project Site provides poor-quality habitat for this species. CTS spends most of its life in burrows in dry uplands. The irrigated pastures of the Project Site generally lack burrows (which would be flooded by irrigation). CTS breeds in long-lasting seasonal or perennial ponds. Observations of the Project Site in the winter of 2024 found no such ponds. The tailwater marsh at the west end of the Project Site was flooded during the January 29, 2024 visit, but was dry by February 15. CTS needs upwards of 90 days of inundation to complete its lifecycle, so this pond would not provide suitable breeding habitat. The other mapped pond on the Project Site is an old irrigation water storage pond which is not in use and does not hold any surface water.

Potential Project Impacts

The Project Site's long, generational history of continuous agricultural use has effectively destroyed its habitat values for CTS; the project would not result in the conversion of suitable CTS habitat. There is a small possibility that individual CTS moving across the Project Site could be harmed by project activities. Because of this species' status as endangered, take of individuals could be significant. The incorporation of avoidance and minimization measures, such as pre-construction surveys, seasonal restrictions, and protective fencing, would bring the potential impact to a **less-than-significant** level.

3.3.1.2 Tricolored Blackbird (*Agelaius tricolor*)

The Tricolored Blackbird is a State Threatened species, a CDFW Species of Special Concern, and a USFWS Bird of Conservation Concern. Males are distinguished from the similar Red-winged Blackbird by a red shoulder patch bordered by a bright white stripe. This highly social species forms North America's largest land-bird colonies, nesting in dense cattail and bulrush marshes, agricultural fields, and other thick vegetation from mid-March to July. Foraging primarily on the ground, they feed on insects during the breeding season and seeds in fall and winter. Tricolored Blackbirds are particularly vulnerable to habitat loss, as their survival depends on large, intact colonies with nearby foraging areas. Conservation efforts focus on protecting wetland breeding sites and reducing agricultural disturbances to ensure population stability.

There is a CNDDDB occurrence for Tricolored Blackbird along Dry Creek; the polygon for this occurrence covers a portion of the Project Site. The tailwater marsh formerly supported stands of cattail which could have provided breeding habitat for this species. However, changes in agricultural practice (e.g. water conservation) have eliminated the cattail, so no suitable breeding habitat is present within the Project Site. Suitable breeding habitat may be present off-site along Dry Creek or on other neighboring properties. The pasture within the Project Site may provide foraging habitat for the species.

Potential Project Impacts

Vegetation removal, ground disturbance, and noise from construction activities on the Project Site could result in significant impacts to Tricolored Blackbird, particularly if nesting colonies are present in the vicinity. The removal of foraging habitats could lead to the abandonment of active nests. Additionally, construction noise could cause disturbance, leading to nest abandonment or reduced breeding success. The incorporation of avoidance and minimization measures, such as pre-construction surveys for nesting colonies and seasonal restrictions, would bring the potential impact to a **less-than-significant** level.

3.3.1.3 Swainson's Hawk (*Buteo swainsoni*)

The Swainson's Hawk is a migratory bird that's distinguishable from most other hawks by its long, narrow, pointed wings. Its plumage is polymorphic, with a light phase, dark phase, and intermediate colorations. The light phase is a whitish or buffy-white wing linings against darkly barred brown flight feathers, whitish to pale underparts, and a dark bib. The dark phase is largely dark brown, with white undertail coverts. It does not have sharp contrast between wing linings and flight feathers. Intermediate colorations include a reddish plumage (Scott 1987). Most birds are light to intermediate color (England 1997).

Swainson's Hawks largely consume insects, including grasshoppers, crickets, and dragonflies, and are an important part of their diet throughout the year (England 1997; Woodbridge 1991). However, the hawks have also been known to prey on mice, gophers, ground squirrels, rabbits, large arthropods, amphibians, reptiles, and birds (Zeiner et. al. 1990). Its foraging habitats consist of relatively open stands of desert, grassland, relatively sparse shrublands, and croplands

containing scattered, large trees, or small groves (Zeiner et. al. 1990). Much of the natural habitats have been converted to urban developments or cultivated agricultural uses. However, areas of moderate agricultural development, besides orchards and vineyards, are often used by Swainson's Hawks as foraging grounds, particularly alfalfa crop (Battistone 2016; England 1997).

Swainson's Hawks breed in western United States and Canada, and winters in South America (Battistone 2016). It often nests peripheral to riparian systems. Nests are built out of a platform of sticks, bark, and fresh leaves, and are typically located in a tree, bush, or utility pole peripheral to or adjacent to riparian systems and suitable foraging habitat, such as agricultural fields or pastures (Zeiner et. al. 1990; Battistone 2016). If no other nesting options are available, some hawks will nest on the ground. Females lay one to four eggs, typically in early March to April (England 1997).

Although the Swainson's Hawk population has increased since the species was listed, the amount of increase is still significantly below original population estimates. The greatest threat to Swainson's Hawks are loss of natural foraging habitats and breeding grounds. Other threats also include climate change, infrastructure placement, disease, pesticide poisoning, and electrocution (Battistone 2016).

CNDDDB Lacks recent Swainson's Hawk documentations near the Project Site. However, the citizen-science platform eBird shows recent observations of this species in the vicinity. These documentations may be simple overflights, or they may represent foraging or nesting individuals.

Potential Project Impacts

Vegetation removal, ground disturbance, and noise from construction activities on the Project Site could result in significant impacts to Swainson's Hawk, particularly if active nests are present in the vicinity. The removal of foraging habitats could lead to the abandonment of active nests. Additionally, construction noise could cause disturbance, leading to nest abandonment or reduced breeding success. The incorporation of avoidance and minimization measures, such as pre-construction surveys for nesting colonies and seasonal restrictions, would bring the potential impact to a **less-than-significant** level.

3.4 Proposed or Candidate Wildlife Species

Three species which are proposed or candidates for listing may occur on the Project Site

3.4.1 Crotch's Bumble Bee (*Bombus crotchii*)

Crotch's Bumble Bee is a State Candidate Endangered species and a pollinator of conservation concern. This yellow, black, and orange bumble bee is native to coastal California, grasslands, and scrub habitats in the Central Valley and surrounding foothills. This species nests underground or in abandoned rodent burrows, relying on a variety of native flowering plants for nectar and pollen. It is most active during the spring and summer months, when queens establish colonies and workers forage to support the next generation. Crotch's Bumble Bees face significant declines due to habitat destruction, pesticide use, and climate change. Conservation efforts focus on restoring

native plant communities, reducing pesticide exposure, and protecting nesting and foraging habitats.

CNDDDB documents few occurrences of Crotch's Bumble Bee in the vicinity of the Project Site. However, recent surveys have shown the species to be present in the region (VNLC unpublished data). The Project Site lacks large wildflower stands or other significant pollinator resources. However, little is known about this species' nesting preferences, and so its use of the Project Site cannot be ruled out.

Potential Project Impacts

Vegetation removal, grading, and habitat disturbance on the Project Site could result in significant impacts to Crotch's Bumble Bee, particularly if suitable foraging or nesting habitats are present. Construction activities, such as land clearing and heavy machinery use, could destroy floral resources and nesting sites, leading to potential displacement of individuals. The incorporation of avoidance and minimization measures, such as pre-construction surveys, would bring the potential impact to a **less-than-significant** level.

3.4.2 Western Spadefoot (*Spea hammondi*)

The western spadefoot is Proposed for listing under ESA, and is a CDFW Species of Special Concern. This small, fossorial amphibian is named for the keratinized spades on its hind feet, which it uses to burrow into loose, sandy, or gravelly soils. It primarily inhabits grasslands, chaparral, and open woodlands at low to moderate elevations. This species depends on seasonal rain-fed pools and vernal pools for breeding, typically emerging after winter rains to reproduce in ephemeral water bodies that lack predatory fish. Outside the breeding season, it remains underground for extended periods to avoid desiccation. Western spadefoot populations are threatened by habitat loss, agricultural development, and climate change. Conservation efforts focus on protecting vernal pool habitats, maintaining natural hydrological cycles, and minimizing land conversion in key breeding areas.

Western spadefoot has been documented from about 0.7 mile south of the Project Site; suitable habitat exists nearer the Project Site and may be occupied but undocumented. As discussed above under CTS, the Project Site provides poor-quality habitat for this species. The irrigated pastures of the Project Site provide poor burrowing opportunities, and the Project Site lacks suitable breeding ponds. Nonetheless, individual western spadefoot may move through the Project Site.

Potential Project Impacts

Ground disturbance, grading, and vegetation removal associated with the development on the Project Site could result in significant impacts to western spadefoot. Construction activities, especially during the species' breeding season, could result in direct mortality of individuals moving through the Project Site. The incorporation of avoidance and minimization measures, such as conducting pre-construction surveys, seasonal restrictions to avoid impacts during the breeding

season, and installation of protective barriers, would bring the potential impact to a **less-than-significant** level.

3.4.3 Burrowing Owl (*Athene cunicularia*)

The Burrowing Owl is a CDFW Species of Special Concern. Unlike most owls, this small, ground-dwelling raptor nests in abandoned burrows created by mammals such as ground squirrels and prairie dogs. It inhabits open grasslands, coastal dunes, agricultural fields, and desert scrub with low vegetation for visibility and foraging. This species is active during both day and night, often seen perching at burrow entrances or hunting for insects and small vertebrates. Nesting occurs in spring and summer, with pairs reusing burrows over multiple years. Burrowing Owl populations are declining due to habitat loss, ground squirrel control programs, and urban development. Conservation efforts focus on preserving grassland habitats, maintaining burrowing mammal populations, and implementing artificial burrow programs in suitable areas.

CNDDDB Lacks recent Burrowing Owl documentations near the Project Site. However, the citizen-science platform eBird shows recent observations of this species a few miles west of the Project Site.

Potential Project Impacts

Ground disturbance, grading, and vegetation removal on the Project Site could result in significant impacts to Burrowing Owl, particularly if active burrows or suitable habitat are present. Construction activities, including excavation and noise, could lead to the abandonment of nests or the destruction of burrows, potentially resulting in harm or displacement of individuals. The incorporation of avoidance and minimization measures, such as conducting pre-construction surveys for active burrows, establishing buffer zones, and implementing seasonal restrictions, would bring the potential impact to a **less-than-significant** level

3.5 Other Special-Status Wildlife Species

3.5.1 American Badger (*Taxidea taxus*)

The American Badger is a CDFW Species of Special Concern. This solitary, burrowing carnivore is adapted to grasslands, open woodlands, and scrub habitats with loose, well-drained soils that support its digging behavior. Badgers excavate extensive burrow systems used for shelter and hunting, often preying on small mammals such as ground squirrels and gophers. They are most active at night but may be seen during the day in undisturbed areas. Habitat fragmentation, urbanization, and road mortality threaten badger populations. Conservation efforts focus on preserving open space, maintaining connectivity between habitats, and reducing human-wildlife conflicts.

Open, herbaceous habitat suitable to support this species occurs in the Project Site. Some friable soils preferred by this species occur in the Project Site, above the hardpan layer. CNDDDB records for this species are relatively distant: the nearest is an old record about 7.5 miles to the southeast, within the urbanized Fresno metropolitan area. Additional occurrences in the citizen-science

platform iNaturalist show more activity in the region. This species has a large home range and is highly mobile, so it may occasionally move through the Project Site, even if it has not been observed there.

Potential Project Impacts

Ground disturbance, grading, and vegetation removal on the Project Site could result in significant impacts to the American Badger, particularly if active burrows are present. Construction activities, including excavation and heavy machinery, could destroy burrows or disturb the species during critical life stages, such as breeding or hibernation. The incorporation of avoidance and minimization measures, such as conducting pre-construction surveys for active burrows, establishing protective buffers around identified burrows, and restricting activities during sensitive periods, would bring the potential impact to a **less-than-significant** level.

3.5.2 Migratory and Nesting Birds

The Migratory Bird Treaty Act (16 U.S.C. 704) and the California Fish and Game Code (Section 3503) prohibits the take of migratory birds, or disturbance to the active nests of most native birds. Several migratory birds have potential to occur within the regional vicinity of the Project Site.

Potential Project Impacts

Building demolition, grading, and tree removal on the Project Site could result in significant impact to birds protected by the Migratory Bird Treaty Act through direct loss of nests. Additionally, construction-related noise could result in the abandonment of an active nest in trees adjacent to the Project Site, including potential nests of special-status bird species. The incorporation of avoidance and minimization measures, below, would ensure that potential impacts would be **less-than-significant**.

3.6 Special-status Plant Species and Communities

Special-status plant species documented in the vicinity of the Project Site are listed below in **Appendix A**. No special-status plants were observed within the Site at the time of the reconnaissance survey, although the timing of the Site survey was not within the flowering period for most species, and VNLC did not conduct a focused rare plant survey. No rare plants are considered to have a moderate or high potential to occur. No special-status plant communities occur within the Project Site (with the possible exception of wetlands, discussed above). Because of the lack of suitable habitat for special-status plant species, the projects effects on special-status plants is expected to be **less-than-significant** without additional mitigation measures.

Designated Critical Habitat for succulent owl's-clover (*Castilleja campestris* ssp. *succulenta*) is mapped to include the vernal pool grasslands to the north, east, and south of the Project Site. A sliver of this polygon crosses into the Project Site along its eastern edge. However, there are no vernal pools within this area; its inclusion is clearly a mapping artifact. Therefore, development of this area would not have significant effects on the Designated Critical Habitat.

4 RECOMMENDED AVOIDANCE AND MINIMIZATION MEASURES

Table 3, below, provides recommended measures to reduce the Proposed Project's potential impacts on biological resources to a less-than-significant level.

5 CONCLUSION

Given the existing intensive agricultural use of the Project Site, the overall impact on biological resources is expected to be **less-than-significant** with the implementation of recommended avoidance and minimization measures. These measures, including working outside sensitive periods, pre-construction surveys, and worker awareness programs, will ensure compliance with environmental regulations and help mitigate potential impacts on wildlife.

6 REFERENCES

Brattistone, C. (2016). Swainson's hawks in California. California Department of Fish and Wildlife. Web. January 13, 2017.

California Department of Fish and Wildlife (CDFW). 2023. California Natural Diversity Database (CNDDB) (September updates). California Department of Fish and Wildlife.

Calflora Database. 2023. Plant database website available (as of 11/2023) at: <http://www.calflora.org/search.html>

California Department of Fish and Wildlife (CDFW). 2023. Special Animals List. (October.) Available (as of 11/2023) at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406>. Downloaded: November 2023.

CDFW. 2018. Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities.

Divisions of Public Works and Planning, Fresno County. 2000. Fresno County General Plan: Policy Document. Available (as of 11/2023) online at: <https://www.fresnocountyca.gov/files/sharedassets/county/v/1/vision-files/files/18117-2000-general-plan-policy-document.pdf>

England, A.S. Swainson's Hawk. Bureau of Land Management. 1997. Web. January 13, 2017.

Environmental Protection Agency (EPA). 2025. Memorandum to the Field Between the U.S. Department Of The Army, U.S. Army Corps Of Engineers and the U.S. Environmental Protection Agency Concerning the Proper Implementation of "Continuous Surface Connection" Under the Definition of "Waters of The United States" Under the Clean Water Act. Retrieved April 2025 from <https://www.epa.gov/system/files/documents/2025-03/2025cscguidance.pdf>

Helm, B. 1998. Biogeography of eight large branchiopods endemic to California. Available online at: https://www.researchgate.net/publication/228487928_Biogeography_of_eight_large_branchiopods_endemic_to_California

Jepson eFlora. 2023. Jepson Herbarium. University of California, Berkeley. Accessible online (as of 11/2023) at <https://ucjeps.berkeley.edu/eflora>

Kaufman, K. 2005. *Kaufman field guide to birds of North America*. Houghton Mifflin Harcourt.

Koch, J., Strange, J., and Williams, P., 2011. *Bumble Bees of the Western United States*. US Forest Service and Pollinator Partnership. pp (82-85)

- Scott, S. L. (Ed.). (1987). Field Guide to the Birds of North America. Washington, D.C.: National Geographic.
- Searcy, C.A. and H. B. Shaffer. 2008. Calculating Biologically Accurate Mitigation Credits: Insights from the California Tiger Salamander. *Conservation Biology*. 22, 4. 997-1005.
- Searcy, C. A., E. Gabbai-Saldate, and H. B. Shaffer. Microhabitat use and migration distance of an endangered grassland amphibian. *Biological Conservation*. 158, 2013. 80-87.
- Shaffer, H.B., D. Cook, B. Fitzpatrick, K. Leyse, A. Picco, and P. Trenham. 2008. Guidelines for the relocation of California tiger salamanders (*Ambystoma californiense*). Final report.
- Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
- State Water Resources Control Board (SWRCB). 2021. State Policy for Water Quality Control: State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. Adopted April 2, 2019 and Revised April 6, 2021. Retrieved April 2025 from <https://www.waterboards.ca.gov/>
- Stebbins, R. C., and Samuel M McGinnis 2012. *Field Guide to Amphibians and Reptiles of California*, University of California Press.
- Woodbridge, B. 1991. Habitat selection by nesting Swainson's Hawks: a hierarchical approach. M.S. Thesis, Oregon State Univ., Corvallis, Oregon.
- US Department of Agriculture, Forest Service. 1999. Southern California Mountains and Foothills Assessment: Habitat and Species Conservation Issues. Available online (as of 11/2023) at: https://www.fs.usda.gov/psw/publications/documents/psw_gtr172/psw_gtr172.pdf
- USFWS. 2017. Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. v + 69 pages.
- Zeiner, D. C., Laudenslayer Jr., W. F., Mayer, K. E., and White, Marshall. (1990). California's Wildlife California Department of Fish and Game. (Vol II). Sacramento, CA

APPENDIX A.

SPECIAL-STATUS SPECIES IN PROJECT REGION

Table 1. Regional Special-Status Wildlife Species

Common Name Scientific Name	Federal/State Status/Other*	Preferred Habitat	Potential to Occur on Project Site
Amphibians			
California tiger salamander - Central valley DPS <i>Ambystoma californiense</i>	FT/ST/-	Grasslands, oak savanna, edges of mixed woodland, lower elevation conifer forests, vernal pools, wetlands, underground refuge (ground squirrel or gopher burrows)	Moderate Potential. Only low-quality CTS habitat is present in the Project Site. The entire Project Site is within 1.3 miles of a documented CTS breeding pond.
Western spadefoot <i>Spea hammondi</i>	-/-/SSC: CDFW	Open areas with sandy or gravelly soils, mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Rain pools which do not contain bullfrogs, fish, or crayfish are necessary for breeding.	Moderate potential. The Project Site provides low-quality habitat in the form of irrigated pasture. The nearest documented occurrence is less than 1 mile south of Project Site.
Birds			
Burrowing owl <i>Athene cunicularia</i>	-/-/SSC: CDFW	Open grassland, prairies, and farmland. Favors areas of flat open ground with very short grass or bare soil. Inhabits abandoned mammal burrows.	Moderate potential. Open grassland habitat occurs on site. The nearest CNDDB occurrence is 6 miles to the southeast; occurrences in eBird are closer. Limited small mammal burrows suitable for burrowing owl are present on site.

Common Name <i>Scientific Name</i>	Federal/State Status/Other*	Preferred Habitat	Potential to Occur on Project Site
Least Bell's vireo <i>Vireo bellii pusillus</i>	FE/SE/-	Willows, stream sides. Breeds in low dense growth, streamside thickets in Southwest, locally in chaparral, woodland edges, or scrub oaks.	Not expected. No potential habitat on site. The only documented occurrence in the Project Site vicinity is a historical occurrence 7 miles away which is presumed extirpated.
Tricolored blackbird <i>Agelaius tricolor</i>	-/ST/SSC: CDFW	Throughout the Central Valley and coastal mountains south of Sonoma County. Breeds near freshwater, preferring emergent wetlands with dense cattail or tule.	High potential. Documented CNDDB occurrence is located less than 600 ft to the north. Marsh provides some nesting habitat, and irrigated pasture provides foraging habitat.
Mammals			
American badger <i>Taxidea taxus</i>	-/SSC: CDFW	Throughout California, especially in open stages of shrub, forest, and herbaceous habitats. Prefers friable soils.	Moderate Potential. Open herbaceous habitat suitable to support this species occurs in the Project Site. Some friable soils preferred by this species occur in the Project Site, above the hardpan layer.
Reptiles			
Western pond turtle <i>Emys marmorata</i>	-/SSC: CDFW	Found in suitable permanent or near permanent water features such as ponds, lakes, and streams with abundant vegetation, and either rocky or muddy bottoms, in woodland, forest, and grassland. In streams, prefers pools to shallower areas. Logs, rocks, cattail mats, and exposed banks are required for basking.	Not expected. The nearest occurrence is 4.6 miles west of the Project Site. No permanent or near permanent open water features suitable to support this species occur in the Project Site.

Common Name Scientific Name	Federal/State Status/Other*	Preferred Habitat	Potential to Occur on Project Site
Insects			
Crotch's bumble bee <i>Bombus crotchii</i>	-/SCE/-	This species occurs primarily in California, including the Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of southwestern California.	Moderate potential. The closest occurrence is a historical occurrence 9.3 miles northeast of the Project Site, from 1982. Irrigated pasture dominated by grasses and forbs occurs in the Project Site. Some pollinator resource plants are present in upland habitats.
Crustaceans			
California linderiella <i>Linderiella occidentalis</i>	-/-/IUCN: NT	Vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, ditches, backhoe pits, and ruts caused by vehicular activities.	Not expected. No vernal pools suitable to support this species occur in the Project Site.
Midvalley Fairy Shrimp <i>Branchinecta mesovallensis</i>	-/-/-	Lives in vernal pools, vernal swales, and other ephemeral water bodies; sometimes in roadside puddles.	Not expected. No vernal pools suitable to support this species occur in the Project Site.
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i>	FT/-/-	Vernal pools and other seasonal pools with sparse vegetation.	Not expected. No vernal pools suitable to support this species occur in the Project Site.

Note: Taxa with the potential to occur in the Study Area, based on the presence of habitat, are shaded in gray.

***Status definitions:**

FT – Federally Threatened;

FE – Federally Endangered;

FCC – Federal Bird of Conservation Concern;

ST – State Threatened;

SE – State Endangered;

SC – State Candidate;

FP – Fully Protected;

SSC – CDFW Species of Special Concern;

SCE – State Candidate Endangered;

SA – CDFW Special Animal Watch List;

FP – CDFW Fully Protected;

WL – CDFW Watch List;

WBWG: M or H or LM – Western Bat Working Group, Medium Rank, High Rank or Low-Medium;

IUCN: Endangered ('EN'), Near Threatened ('NT'), Vulnerable ('VU'), or Least Concern ('LC')

Table 2. Regional Special-Status Plant Species

Scientific Name Common Name (Family)	CRPR/CA/Fed	Habitat; Elevation Range; Blooming Period	Potential to Occur in Project Site
Dwarf downingia <i>Downingia pusilla</i>	2B.2/-/-	Valley and foothill grassland (mesic), Vernal pools, 1-445 Meters, Mar-May	Not expected. The southernmost and only occurrence in Fresno County is a historical occurrence from 1979, approximately 7.5 miles to the northwest of the Project Site. Valley and foothill grassland habitat on site consists of irrigated pasture which is highly impacted by anthropogenic modifications.
Forked hare-leaf <i>Lagophylla dichotoma</i>	1B.1/-/-	Cismontane woodland, Valley and foothill grassland, 45-335 Meters, Apr-May	Low potential. Valley and foothill grassland habitat on site consists of irrigated pasture which is highly impacted by anthropogenic modifications.
Greene's tuctoria <i>Tuctoria greenei</i>	1B.1/CR/FE	Vernal pools, 30-1070 Meters, May-Jul (Sep)	Not expected. No vernal pools suitable to support this species occur in the Project Site. The closest CNDDDB occurrence is a historical occurrence, 3 miles to southwest from 1987 which is considered extirpated due to habitat loss.
San Joaquin adobe sunburst <i>Pseudobahia peirsonii</i>	1B.1/CE/FT	Cismontane woodland, Valley and foothill grassland; Microhabitat: adobe and clay; 90-800 Meters, Feb-Apr	Low potential. The closest occurrence is 1.6 miles southeast of the Project Site. Valley and foothill grassland habitat on site consists of irrigated pasture which is highly impacted by anthropogenic modifications. No clay soils exist on site.
San Joaquin Valley Orcutt grass <i>Orcuttia inaequalis</i>	1B.1/CE/FT	Vernal pools, 10-755 Meters, Apr-Sep	Not expected. No vernal pools suitable to support this species occur in the Project Site.
Sanford's arrowhead <i>Sagittaria sanfordii</i>	1B.2/-/-	Marshes and swamps (shallow freshwater), 0-650 Meters, May-Oct (Nov)	Not expected. No suitable habitat to support this species occurs in the Project Site.
Succulent owl's-clover <i>Castilleja campestris</i> var. <i>succulenta</i>	1B.2/CE/FT	Vernal pools (often acidic), 50-750 Meters, (Mar) Apr-May	Not expected. No vernal pools suitable to support this species occur in the Project Site.

CNPS 1B – CA Native Plant Society – Plants Rare, Threatened, or Endangered in CA and Elsewhere; CNPS 2B – CA Native Plant Society – Plants Rare, Threatened, or Endangered in CA but More Common Elsewhere; CNPS 3 – CA Native Plant Society – Review List: Plants About Which More Information is Needed.

APPENDIX B. RECOMMENDED MITIGATION MEASURES

Table 3. Recommended Avoidance and Minimization Measures

Measure	Species Addressed	Requirements
Construction Window	Listed bird species, common bird species protected under Migratory Bird Treaty Act.	If feasible, construction start will be scheduled between September 1 and January 31, outside the February 1 – August 31 nesting period. If new construction activities would begin during the nesting period, the Project proponent will retain a qualified biologist to conduct a pre-construction nesting bird survey covering the project footprint and a 300-foot-wide surrounding buffer. If Project-related activities stop for two weeks or more and then re-start during the nesting period, this requirement will also apply. The survey will be conducted within 2 weeks of the start of construction-related activity. If active nest(s) of any protected species are identified within the survey area, a no-activity buffer will be established around the nest for the duration of the nesting season, or until a biologist determines the young have fledged and left the nest, or that the nest has been abandoned. No entry into the no-activity buffer will be permitted. The no-activity buffer will be delineated in the field by or under the supervision of the biologist, using temporary construction fencing or another suitable low-impact medium. The width of the buffer will be determined by the biologist, based on the species involved, the amount of vegetative and other screening between the nest and areas where construction activity will take place, and, if appropriate, other site-specific factors. If special-status species are involved, the biologist will consult with the appropriate resource Agency(ies) (US Fish and Wildlife Service (USFWS)) in determining the width of the buffer.
Worker Awareness Training	All special-status species with potential to occur in the Project Site	Before work begins, the Project proponent will retain a qualified biologist or ecologist with construction site experience and experience delivering training to non-specialists to provide worker awareness training regarding special-status species and sensitive/jurisdictional habitats in the project vicinity. Training will be site-specific and will cover the following topics. • Sensitive habitats on and near the work area. • Water quality protection requirements per Water Quality below. • Special-status amphibian, reptile, bird, and mammal species that may be present, where they have the greatest potential to occur, and how to recognize them. • Procedures in the event of a sighting, per Special-Status Species Sighting – Contractor Staff Response below. • Potential penalties associated with take of special-status species. All special-status species with the potential to occur in the project vicinity will be covered in the training.

Measure	Species Addressed	Requirements
Special-Status Species Sighting – Contractor Staff Response	All special-status species with potential to occur in the Project Site	In the event of a known or potential sighting of special-status wildlife in or near the work area, the following requirements will apply. - Contractor staff will avoid the animal and will immediately notify the qualified biologist, who will advise them on how to proceed. - If warranted in the judgment of the qualified biologist, the biologist will respond onsite to relocate the animal or assist in implementing other protective measures; depending on the situation and the species involved, the biologist may also consult with Agency (USFWS and California Department of Fish and Wildlife (CDFW)) staff. - If the sighting is confirmed by the biologist, the species and location will be reported to CDFW for inclusion in the California Natural Diversity Database (CNDDB). The biologist will be responsible for making the report.
Aquatic Resource Protection	Potentially Jurisdictional Waters, Regional Water Quality	The following measures will be required to protect water quality and sensitive aquatic habitats in the vicinity of the Project Site. - If Project activities may take place in or adjacent to potentially jurisdictional Waters of the US or of the State of California, the Project Proponent shall obtain a jurisdictional determination for the Project Site. If any jurisdictional aquatic resources are determined to be present, these features will be avoided to the extent practicable. If impacts to these features are required, the proponent shall obtain permits under the Clean Water Act, Porter Cologne Act, and/or FGC 1600, as appropriate. - Runoff control measures such as straw wattles, filter rolls, filter fences or silt fences will be installed to contain disturbed soil materials, as designed by an appropriately qualified professional. Runoff control will be in place prior to groundbreaking. If straw wattles are used, they will consist of certified sterile, weed-free rice straw or similar, suitable for use in sensitive habitat. If filter fences or mesh are used, they will consist of materials, and employ a design, approved by CDFW and USFWS as safe for amphibians and reptiles. Erosion control methods will not utilize plastic, monofilament, jute or other fiber netting with potential to entrap CTS. Acceptable substitutes include coconut coir matting, tackified hydroseeding compounds or other similar materials. - If onsite fueling, maintenance, or repairs are required, containment measures such as drip pans will be required. If stationary diesel or gasoline-powered equipment is needed, it will be situated in a paved area if possible and will be placed within secondary (dual) containment.

Measure	Species Addressed	Requirements
		3. In the event of a spill, appropriate spill response procedures will be initiated as soon as the incident is discovered. 4. Trash generated at the work site will be promptly and properly removed from the site for offsite disposal.
Species-Specific Protection for Special-Status Amphibians	California Tiger Salamander and Western Spadefoot	1. Ground-disturbing and vegetation-removing activities will be confined to May 1 through October 31. If rain exceeds ½" in a 24-hour period, work will cease until no more rain is forecast for a seven-day window. This provision will not apply to areas inside of wildlife exclusion fence (described below). 2. If project-related work which will disturb vegetation or soil is required between November 1 and April 30, the work area will be enclosed in wildlife exclusion fence to prevent California tiger salamander and western spadefoot from entering the work area. The entire area to be enclosed will be subject to a pre-construction survey (described below) prior to fence installation. Fencing will consist of woven nylon fabric at least 2 feet in height and attached to wooden stakes, or equivalent material. The bottom of the fencing will be buried in a trench or stretched outward along the ground and be secured with a continuous line of sandbags to prevent burrowing beneath the fence. All fencing materials will be maintained during construction and completely removed after construction is completed. The fencing will be inspected before the start of each workday and maintained by the Project Proponent until completion of the project. The fencing will be removed after the completion of ground- or vegetation-disturbing project activities. 3. A biologist familiar with the life history of California tiger salamander and western spadefoot will conduct a walking survey of the work area no more than 48 hours prior to starting work in a previously-undisturbed work area. This requirement also applies to any areas which will be enclosed by exclusion fence. If work is halted due to rain, the pre-construction survey must be repeated prior to resuming work (unless the area was already enclosed by wildlife exclusion fence). If a California tiger salamander is found during a pre-construction survey, all work in the area will be halted until the animal has left the work area on its own. If the animal does not leave the work area on its own, CDFW and USFWS must be consulted prior to resuming project activities which could result in take of the animal. If western spadefoot becomes listed under the Endangered Species Act, this provision will apply to it as well.

Measure	Species Addressed	Requirements
		4. To prevent amphibians from becoming entangled, trapped, or injured, erosion control materials that use plastic or synthetic monofilament netting will not be used. Silt fencing can be used because it is not considered a netting and does not entangle species. Acceptable materials include natural fibers such as jute, coconut, twine, or other similar fibers.
Species-Specific Protection for Swainson's Hawk	Swainson's Hawk	Prior to contractor mobilization onsite for any work scheduled to begin between March 1 and August 31, the applicant will retain a qualified biologist to conduct surveys for nesting SWHA. Surveys will cover the work area plus a 0.5-mile-wide buffer, and will be conducted consistent with <i>Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley</i> (Swainson's Hawk Technical Advisory Committee 2000). Pedestrian survey will extend to the boundary of property to which the applicant has legal access; where the buffer encompasses property owned/ controlled by others, survey will be visual-only, using binoculars. If SWHA nest-building activity is observed or active SWHA nests are found at any time, the following measures will be implemented. • No-disturbance buffer zone(s) will be established for nest protection • Buffers will be delineated in the field by or under the supervision of the biologist, using temporary construction fencing or another suitable low-impact medium • Buffer width will be 0.5 mile • Buffers will remain in place for the duration of the nesting season or until the biologist determines that all young have fledged or that the nest has been abandoned • No entry of personnel, equipment, or materials into SWHA no-activity buffers will be permitted, except as specified below. • The applicant may submit a written request to CDFW to encroach within a SWHA no-activity buffer if encroachment is necessary to project completion. Requests for buffer encroachment will include the following information • A justification for the encroachment that is based on the activity to be completed and includes the timing (season and time of day), anticipated duration of project activity, stage of nesting and other nest characteristics, and any natural visual/auditory barriers to the nest • A description of the proposed approach for monitoring the nest to detect changes from baseline behaviors

Measure	Species Addressed	Requirements
		- A description of how disturbance to nesting individuals would be identified and the actions that would be taken if disturbance occurs - Any other actions proposed to prevent adverse effects to nesting adults and dependent young No encroachment into any SWHA no-activity buffer will be permitted until or unless CDFW has provided written or email authorization.
Species-Specific Protection for Tricolored Blackbird	Tricolored Blackbird	<u>For any work conducted during the TRBL nesting season</u> (March 1 – September 15), the following requirements will apply. - Prior to the start of construction, the applicant will retain a qualified biologist to conduct a survey for nesting TRBL. Surveys will cover the work area footprint plus a 500-foot-wide buffer. Pedestrian survey will extend to the boundary of property to which the applicant has legal access; where the buffer encompasses property owned/ controlled by others, survey will be visual-only, using binoculars - Two advance surveys will be required, one within 30 days and the other within 3 days of the planned start of work, with the exception that surveys conducted in February for work starting in March will be conducted within 14 days and 3 days of the planned start of work - If any active nests are identified within the survey area, the following actions will be taken - The applicant will promptly notify CDFW and USFWS - The biologist will establish a 500-foot-wide no-disturbance buffer around the nest(s), using temporary construction fencing or another suitable low-impact medium. The buffer will remain in place for the duration of the nesting season or until the biologist determines that all young have fledged and are no longer dependent on the nest, or that the nest has been abandoned. No entry of personnel, equipment, or materials into the no-activity buffer will be permitted without authorization from CDFW - The biologist will be onsite daily to monitor nesting activity while work in proximity to the buffer is in progress. If the biologist determines that the nesting birds are showing signs of disturbance, construction will be suspended in the vicinity of the buffer and the buffer size will be increased to reduce the potential for disturbance. If the biologist determines that nesting success is at risk, the applicant will consult with CDFW and

Measure	Species Addressed	Requirements
		USFWS to identify the appropriate course of action to avoid nest abandonment, and will proceed as agreed with the agencies
Species-Specific Protection for Burrowing Owl	Burrowing Owl	If any disturbance would take place within upland areas during the western burrowing owl nesting season (February 1 – August 31), the following measures will be required. Prior to the start of construction activities, the Project proponent will retain a qualified biologist to conduct preconstruction surveys covering all areas of suitable habitat within 250 feet of the proposed activity. The survey will conform to the description of Take Avoidance Surveys in the <i>Staff Report on Burrowing Owl Mitigation</i>. All owls observed will be counted and their locations will be mapped. If evidence of nesting western burrowing owls is found, a 250-foot-wide no-disturbance buffer zone will be established around each occupied nest and will be delineated in the field by the biologist, using a suitable low-impact medium. Construction may proceed outside the no-disturbance buffer zones.
Species-Specific Protection for American Badger	American Badger	Prior to the start of construction, a qualified biologist will conduct a pedestrian preconstruction survey for American badger. The survey will be conducted no more than 14 days prior to the start of ground disturbance. If no badger den openings of suitable size are found within 50 feet of the grading footprint, then work may proceed without further restrictions for American badger. If den openings are found, they will be monitored for activity. If evidence of recent activity is noted, and the den is found to be occupied, animals may be <u>passively excluded through the use of one-way doors</u>.
Species-Specific Protection for Crotch's Bumble Bee	Crotch's Bumble Bee	If the California Fish and Game Commission chooses not to list Crotch's Bumble Bee, no further species-specific measures will apply. If Crotch's Bumble Bee is still a candidate species, or has been listed as Threatened or Endangered under CESA, the following measures shall apply: - Prior to work start in a previously undisturbed area, a qualified entomologist familiar with the species' behavior and life history will conduct a foraging bee survey consistent with the recommendations in <i>Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species</i> (California Department of Fish and Wildlife 2023). - If no Crotch's bumble bee individuals or nests are observed onsite and no sign of the species' presence is detected during the surveys, <u>no further action will be required</u>

Measure	Species Addressed	Requirements
		If Crotch's bumble bee or a Crotch's bumble bee nest or colony is <u>observed onsite during the surveys</u>, the project proponent will notify CDFW and will consult with agency staff to identify the best way to avoid take, in consideration of site conditions, the nature of the observation, and the construction activities planned.

APPENDIX C. REPRESENTATIVE SITE PHOTOGRAPHS



Drone aerial of property, looking east from western end (09/29/2023)



Drone aerial of property, looking west from location of residence (09/29/2023)



Representative photo showing general conditions of the irrigated pasture (09/29/2023)



Representative view of irrigated pasture dominated by non-native grasses including Bermuda grass (*Cynodon dactylon*) and Dallis grass (*Paspalum dilatatum*) (09/29/2023)



Upland section within the irrigated pasture (09/29/2023)



Mexican palo verde in the irrigated pasture (09/29/2023)



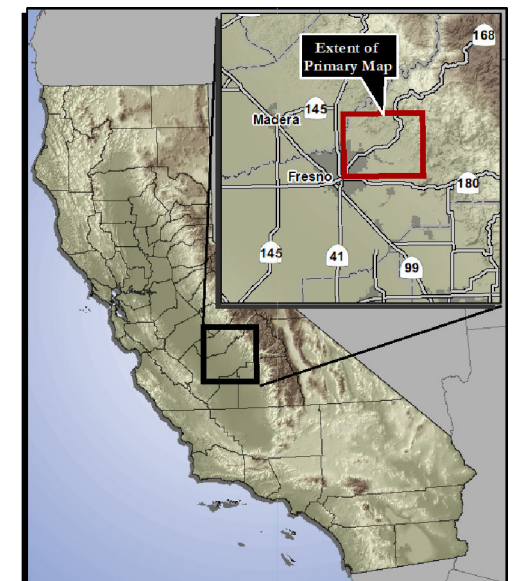
Tailwater marsh, dry and without tall vegetation (09/19/2024)

APPENDIX D. MAP FIGURES

FIGURE 1
Regional Vicinity Map
Sample Property
Fresno County, California

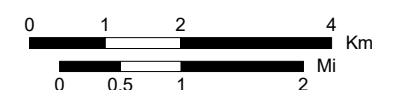
Legend

- Major River, Stream, or Canal
- Highway
- Property Boundary
- County Boundary
- Urban Area



1:100,000

1 inch = approx. 1.6 miles at tabloid layout



Data Sources: VNLC, 2024 | USGS, various
TIGER, 2011 | USDA, 2020 | DWR 2020
GIS/Cartography by: T. Hurd, Nov 2024
Map File: 600_Sample_Site_Vicinity_B-L_2024-1105.mxd

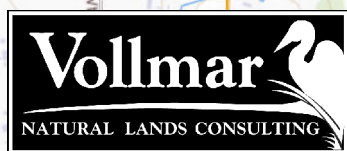
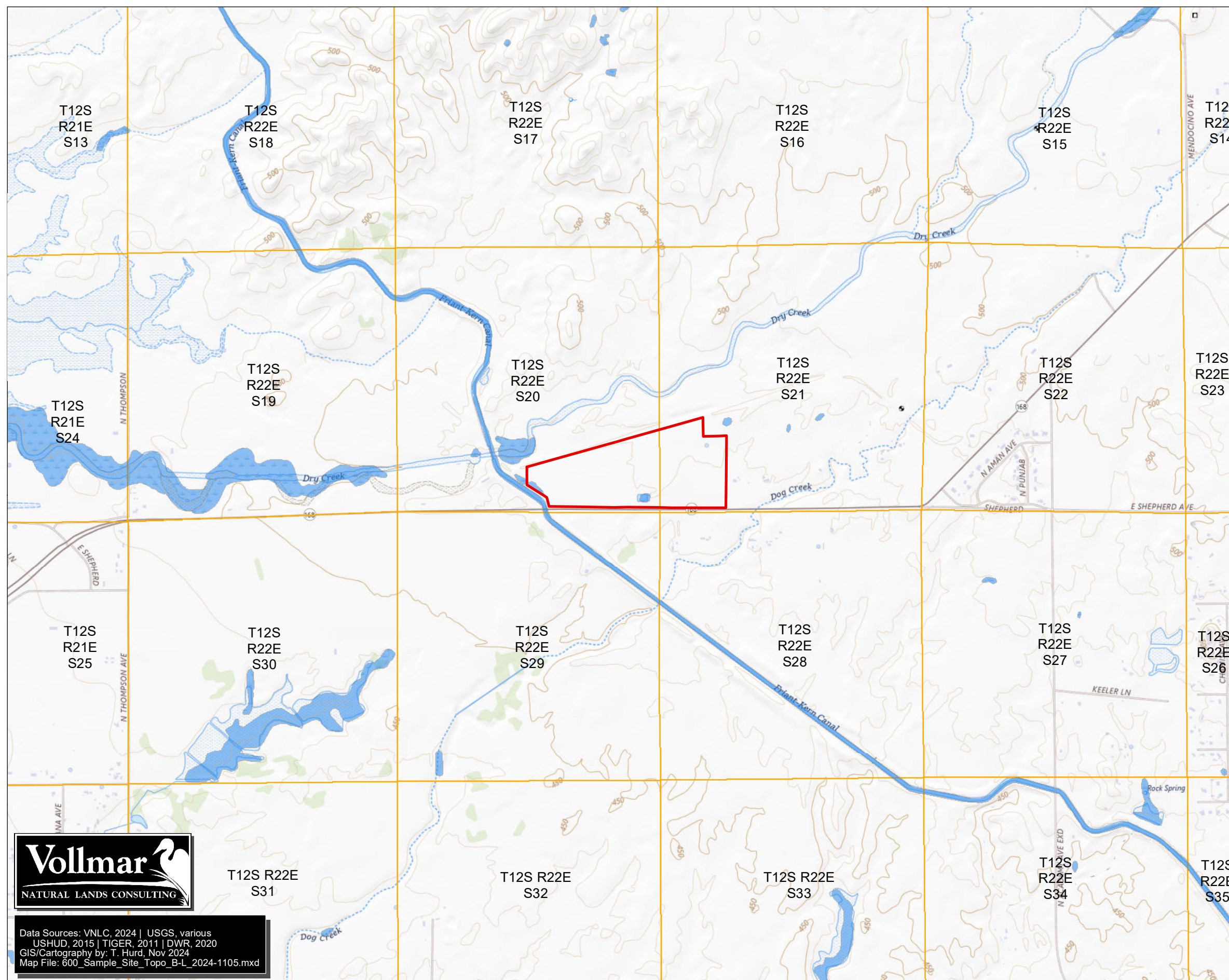
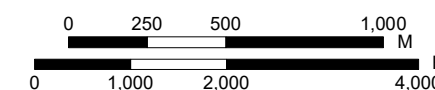
FIGURE 2
USGS Topographic Map
 Sample Property
 Fresno County, California

Legend

-  Property Boundary
-  NWI Wetland
-  Public Land Survey Boundary



1:24,000
 (1 in. = 2,000 feet at Tabloid Layout)

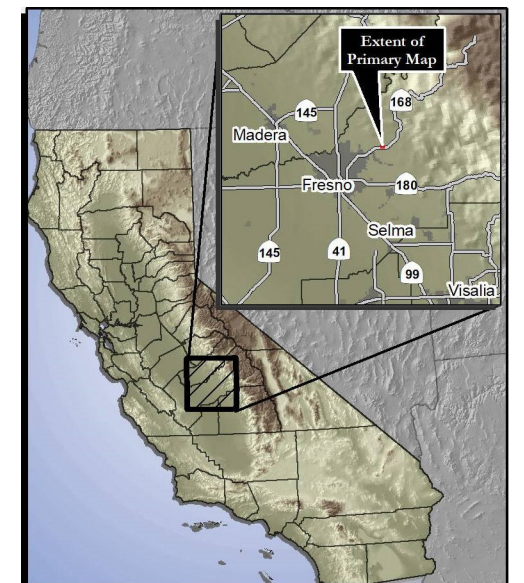


Data Sources: VNLC, 2024 | USGS, various
 USHUD, 2015 | TIGER, 2011 | DWR, 2020
 GIS/Cartography by: T. Hurd, Nov 2024
 Map File: 600_Sample_Site_Topo_B-L_2024-1105.mxd

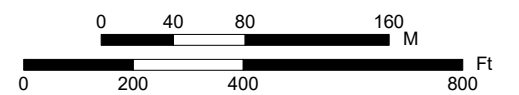
FIGURE 3
Aerial Imagery Map
Sample Property
Fresno County, California

Legend

- Canal or Creek
- == Highways
- Property Boundary



1:4,200
(1 in. = 350 feet. at Tabloid Layout)



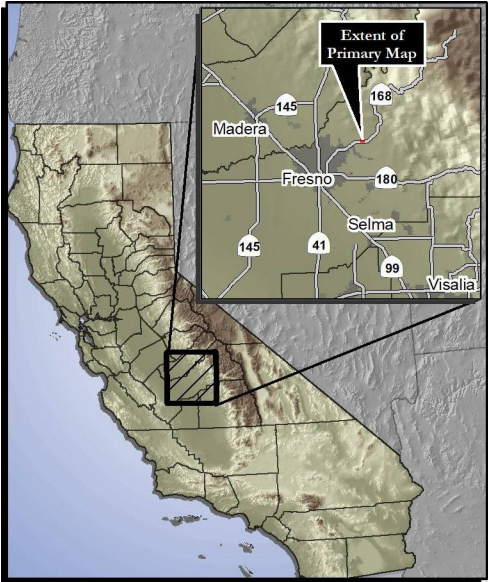
Data Sources: VNLC, 2024 | USDA-WSS, 2023 | GAP, 1998
USGS, various
GIS/Cartography by: T. Hurd, Nov 2024
Map File: 600_Sample_Site_AP_B-L_2024-1105.mxd

FIGURE 4
Soil Unit Map

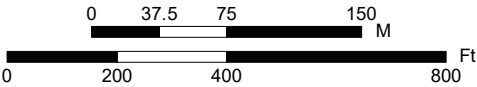
Sample Property
Fresno County, California

Legend

- Property Boundary
- Academy loam, 3 to 9 percent slopes
- Cometa sandy loam, 3 to 9 percent slopes
- Grangeville fine sandy loam



1:4,200
(1 in. = 350 feet. at Tabloid Layout)



Data Sources: VNLC, 2024 | USDA-WSS, 2023
USGS, various | GAP, 1998
GIS/Cartography by: T. Hurd, Nov 2024
Map File: 600_Sample_Site_Soils_B-L_2024-1105.mxd

Archaeological Resources Inventory Report for the Sample Ranch Project

Fresno County, California

Prepared For:

WCP Developers
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Prepared By:

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April 2025

MANAGEMENT SUMMARY

WCP Developers retained ECORP Consulting, Inc. in 2025 to conduct an archaeological resources inventory for the Sample Ranch Project in Fresno County, California. The Proposed Project is located approximately 2 miles northeast of the City of Clovis and would construct 44 single-family residences, each on 2-to-3.5-acre lots. The Project Area is currently used for agricultural and animal pasture purposes.

The ECORP study included a records search, literature review, and field survey. The records search results from the Southern San Joaquin Valley Information Center (SSJVIC) indicated that five previous cultural resources studies have been conducted within the Project Area. The Project Proponent provided a copy of a 2012 cultural resources study that included the Project Area but was not one of the reports revealed during the SSJVIC records search. As a result of those studies, no archaeological or built environment resources had been recorded within the Project Area.

During the field survey, ECORP did not identify any archaeological resources within the Project Area but noted an older rural residence and agricultural irrigation features. These resources have not been evaluated using the National Register of Historic Places or California Register of Historical Resources eligibility criteria; therefore, ECORP recommends avoidance.

Although no archaeological resources were identified during the survey, the Project still has the potential to encounter buried pre-contact and historic-age archaeological deposits within the Project Area. As such, this report also provides management recommendations for contractor awareness training, archaeological monitoring, and procedures for unanticipated discoveries.

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	Project Location	1
1.2	Project Description	1
1.3	Area of Potential Effects	1
1.4	Regulatory Context.....	4
1.4.1	National Environmental Policy Act	4
1.4.2	National Historic Preservation Act.....	4
1.4.3	California Environmental Quality Act.....	6
1.4.4	Regional Laws and Regulations	7
1.5	Report Organization	9
2.0	SETTING.....	9
2.1	Environmental Setting.....	9
2.2	Geology and Soils	9
2.3	Vegetation and Wildlife.....	10
3.0	CULTURAL CONTEXT	10
3.1	Regional Pre-Contact History.....	10
3.2	Local Pre-Contact History	11
3.2.1	Paleo-Indian Period	12
3.2.2	Archaic Period.....	12
3.2.3	Emergent Period	13
3.3	Ethnohistory	16
3.4	Regional History	17
3.4.1	City of Clovis History	19
4.0	METHODS	20
4.1	Personnel Qualifications.....	20
4.2	Records Search Methods	21
4.3	Sacred Lands File Coordination Methods	22
4.4	Other Interested Party Consultation Methods	22
4.5	Field Methods.....	22
5.0	RESULTS.....	25
5.1	Records Search.....	25
5.1.1	Previous Research	25
5.1.2	Records.....	26
5.1.3	Map Review and Aerial Photographs	28

5.2	Sacred Lands File Results	29
5.3	Other Interested Party Consultation Results.....	29
5.4	Field Survey Results.....	29
5.4.1	Cultural Resources	30
6.0	MANAGEMENT CONSIDERATIONS.....	32
6.1	Conclusions	32
6.2	Likelihood for Subsurface Cultural Resources	32
6.3	Recommendations.....	32
6.3.1	Contractor Awareness Training.....	32
6.3.2	Archaeological Monitoring.....	32
6.3.3	Post-Review Discoveries	33
7.0	REFERENCES CITED	35

LIST OF FIGURES

Figure 1.	Project Location and Vicinity	2
Figure 2.	Aerial Overview.....	3
Figure 3.	Survey Coverage	24
Figure 4.	Project Area Overview (view southwest; January 25, 2025).....	30
Figure 5.	Cattle Trail within the Project Area (view north; January 24, 2025).....	29
Figure 6.	Exposed Ground in Windrows (view south; January 24, 2025).	29
Figure 7.	Rural Residence within the Project Area (view north; January 25, 2025).....	30
Figure 8.	Agricultural Irrigation Feature (view west; January 24, 2025).	31

LIST OF TABLES

Table 1.	Previous Cultural Studies within the Project Area.....	25
Table 2.	Previously Recorded Cultural Resources within 1 Mile of the Project Area.....	26
Table 3.	GLO Land Patent Records that Overlap with Project Area.....	27

LIST OF APPENDICES

Appendix A – Records Search Confirmation and Historical Society Coordination

Appendix B – Sacred Lands File Coordination

Appendix C – Project Area Photographs

LIST OF ACRONYMS AND ABBREVIATIONS

Term	Definition
AB	Assembly Bill
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
APN	Assessor's Parcel Number
BERD	Built Environment Resource Directory
BLM	Bureau of Land Management
BP	Years before present
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CCTS	Central California Taxonomic System
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHL	California Historical Landmark
CHRIS	California Historical Resources Information System
CRHR	California Register of Historical Resources
DPR	California Department of Parks and Recreation
ECORP	ECORP Consulting, Inc.
GLO	General Land Office
MDBM	Mount Diablo Base and Meridian
MLD	Most Likely Descendant
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	U.S. National Park Service
NRHP	National Register of Historic Places
NW	Northwest
OHP	California Office of Historic Preservation
PRC	Public Resources Code
SE	Southeast
SHPO	State Historic Preservation Officer
SSJVIC	Southern San Joaquin Valley Information Center
SW	Southwest
TCR	tribal cultural resource
USGS	U.S. Geological Survey

1.0 INTRODUCTION

WCP Developers retained ECORP Consulting, Inc. in 2025 to conduct an archaeological resources inventory for the Sample Ranch Project in Fresno County, California. A survey of the Proposed Project Area was required to identify potentially eligible cultural resources (i.e., archaeological sites and historic buildings, structures, and objects) that could be affected by the Project.

1.1 Project Location

The Project Area consists of 119.14 acres of land located in the southern half of the southeast quarter of Section 20 and the western half of the southwest quarter of Section 21 of Township 12 South, Range 22 East, Mount Diablo Base and Meridian, as depicted on the 1964 U.S. Geological Survey (USGS) Round Mountain, California 7.5-minute topographic quadrangle (Figure 1). The Project Area currently comprises two parcels: Assessor's Parcel Number [APN] 150-061-45 (which would be subdivided into APNs 150-061-26 and 150-061-27) and APN 150-061-28. It is located approximately 2 miles northeast of the City of Clovis, immediately north of Tollhouse Road and east of the Friant-Kern Canal (Figure 2).

1.2 Project Description

The Proposed Project entails the construction of 44 single-family residences, each on 2-to-3.5-acre lots. The development would include common areas, drought-tolerant landscaping, a natural trail system, perimeter fencing, and entry gates. After completion of the Project, private landowners would maintain the water and sewer infrastructure.

1.3 Area of Potential Effects

The Area of Potential Effects (APE) consists of the horizontal and vertical limits of a project and includes the area within which significant impacts or adverse effects to Historical Resources or Historic Properties could occur as a result of the project. The APE is defined for projects subject to regulations implementing Section 106 (federal law and regulations). For projects subject to the California Environmental Quality Act (CEQA) review, the term Project Area is used rather than APE. The terms Project Area and APE are interchangeable for the purpose of this document.

The horizontal APE consists of all areas where activities associated with a project are proposed and, in the case of this Project, equals the Project Area subject to environmental review under the National Environmental Policy Act (NEPA) and CEQA. This includes areas proposed for construction, vegetation removal, grading, trenching, stockpiling, staging, paving, and other elements in the official Project Description. The horizontal APE is illustrated in Figures 1 and 2.

The vertical APE is described as the maximum depth below the surface to which excavations for project foundations and facilities will extend. Therefore, the vertical APE for this Project includes all subsurface areas where archaeological deposits could be affected. The subsurface vertical APE varies across the Project Area but could extend as deep as 20 feet below the current surface; therefore, a review of geologic and soils maps was necessary to determine the potential for buried archaeological sites that cannot be seen on the surface.

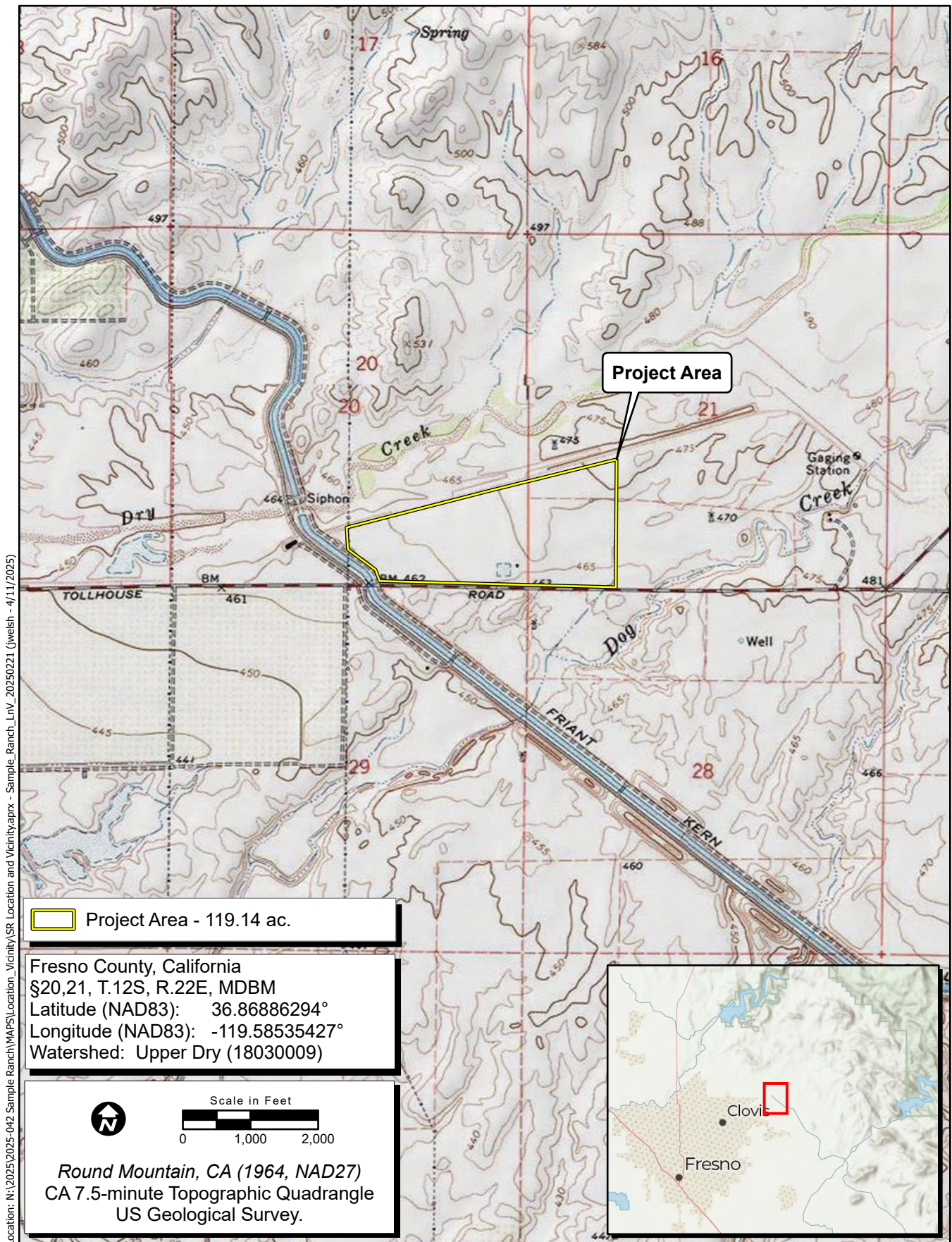


Figure 1. Project Location and Vicinity



Map Contents

Project Area - 119.14 ac.

Sources: ESRI, Fresno County, Maxar (2024), NHD

Location: N:\2025\2025-042 Sample Ranch\MAPS\Aerial_Maps\SR Aerial Maps.aprx - SR Aerial 20250410 (jwelsh - 4/11/2025)

The vertical APE also is described as the maximum height of structures that could affect the physical integrity and integrity of setting of cultural resources, including districts and traditional cultural properties. For this Project, the above-surface vertical APE is assumed to extend up to 50 feet above the surface, which is for the planned single-family residences and any above-ground street lighting.

1.4 Regulatory Context

The CEQA Lead Agency for this Project is Fresno County. There is no known NEPA or Section 106 lead agency for this Project.

A review of the regulatory context is provided below; however, the inclusion of any of these laws and regulations in this report does not make a law or regulation apply when it otherwise would not. Similarly, the omission of any other laws and regulations from this section does not mean that they do not apply. Rather, the purpose of this section is to provide context in explaining why the study was carried out in the manner documented herein.

1.4.1 National Environmental Policy Act

NEPA establishes national policy for the protection and enhancement of the environment. Part of the function of the federal government in protecting the environment is to “preserve important historic, cultural, and natural aspects of our national heritage.” Cultural resources need not be determined eligible for the National Register of Historic Places (NRHP) through the National Historic Preservation Act (NHPA) of 1966 (as amended) to receive consideration under NEPA. NEPA is implemented by regulations of the Council on Environmental Quality (40 Code of Federal Regulations [CFR] 1500-1508).

The definition of *effects* in the NEPA regulations includes adverse and beneficial effects on historic and cultural resources (40 CFR 1508.1(i)). When determining the level of NEPA review, Federal agencies must analyze if potential effects to historic or cultural resources that could result from the proposed action and each alternative would be significant (40 CFR 1501.3(d)). In considering whether an alternative may “significantly affect the quality of the human environment,” a federal agency must consider, among other things:

- Unique characteristics of the geographic area, such as proximity to historic or cultural resources (40 CFR 1501.3(d)(1) and 40 CFR 1501.3(2)(ii)), and
- The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP (40 CFR 1501.3(2)(v)).

Therefore, because historic properties are a subset of *cultural resources*, they are one aspect of the *human environment* defined by NEPA regulations.

1.4.2 National Historic Preservation Act

The federal law that covers cultural resources that could be affected by federal undertakings is the NHPA of 1966, as amended. Section 106 of the NHPA requires that federal agencies take into account the effects of a federal undertaking on properties listed in or eligible for the NRHP. The agencies must afford the

Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on the undertaking. A federal undertaking is defined in 36 CFR 800.16(y):

A federal undertaking means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license, or approval.

The regulations that stipulate the procedures for complying with Section 106 are in 36 CFR 800. The Section 106 regulations require:

- definition of the APE;
- identification of cultural resources within the APE;
- evaluation of the identified resources in the APE using NRHP eligibility criteria;
- determination of whether the effects of the undertaking or project on eligible resources will be adverse; and
- agreement on and implementation of efforts to resolve adverse effects, if necessary.

The federal agency must seek comment from the State Historic Preservation Officer (SHPO) and, in some cases, the ACHP, for its determinations of eligibility, effects, and proposed mitigation measures. Section 106 procedures for a specific project can be modified by negotiation of a Memorandum of Agreement or Programmatic Agreement between the federal agency, the SHPO, and, in some cases, the project proponent.

Effects to a cultural resource are potentially adverse if the lead federal agency, with the SHPO's concurrence, determines the resource eligible for the NRHP, making it a Historic Property, and if application of the Criteria of Adverse Effects (36 CFR 800.5[a][2] et seq.) results in the conclusion that the effects will be adverse. The NRHP eligibility criteria, contained in 36 CFR 60.4, are as follows:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess aspects of integrity of location, design, setting, materials, workmanship, feeling, association, and

- A. that are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. that are associated with the lives of persons significant in our past; or
- C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. that have yielded, or may be likely to yield, information important in prehistory.

In addition, the resource must be at least 50 years old, barring exceptional circumstances (36 CFR 60.4). Resources that are eligible for, or listed on, the NRHP are *historic properties*.

Regulations implementing Section 106 of the NHPA (36 CFR 800.5) require that the federal agency, in consultation with the SHPO, apply the Criteria of Adverse Effect to historic properties within the APE. According to 36 CFR 800.5(a)(1):

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association.

1.4.3 California Environmental Quality Act

CEQA is the state law that applies to a project's impacts on cultural resources. A project is an activity that may cause a direct or indirect physical change in the environment and that is undertaken or funded by a state or local agency, or requires a permit, license, or lease from a state or local agency. CEQA requires that impacts to Historical Resources be identified and, if the impacts are significant, then apply mitigation measures to reduce the impacts.

A Historical Resource is a resource that:

- (1) is listed in or has been determined eligible for listing in the California Register of Historical Resources (CRHR) by the State Historical Resources Commission, or has been determined historically significant by the CEQA lead agency because it meets the eligibility criteria for the CRHR;
- (2) is included in a local register of historical resources, as defined in Public Resources Code (PRC) 5020.1(k); or
- (3) has been identified as significant in a historical resources survey, as defined in PRC 5024.1(g) (California Code of Regulations [CCR] Title 14, Section 15064.5(a)).

The eligibility criteria for the CRHR are as follows (CCR Title 14, Section 4852(b)):

- (1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
- (2) It is associated with the lives of persons important to local, California, or national history;
- (3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
- (4) It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In addition, the resource must retain integrity, which is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association (CCR Title 14, Section 4852(c)). Resources that have been determined eligible for the NRHP are automatically eligible for the CRHR.

Impacts to a Historical Resource, as defined by CEQA (listed in an official historic inventory or survey or eligible for the CRHR), are significant if the resource is demolished or destroyed or if the characteristics that made the resource eligible are materially impaired (CCR Title 14, Section 15064.5(b)). Demolition or alteration of eligible buildings, structures, and features that they would no longer be eligible would result in a significant impact. The whole or partial destruction of eligible archaeological sites would result in a significant impact. In addition to impacts from construction resulting in destruction or physical alteration of an eligible resource, impacts to the integrity of setting (sometimes termed *visual impacts*) of physical features in the Project Area could also result in significant impacts.

Tribal cultural resources (TCRs) are defined in Section 21074 of the California PRC as sites, features, places, cultural landscapes (geographically defined in terms of the size and scope), sacred places, and objects with cultural value to a California Native American tribe that are either included in or determined to be eligible for inclusion in the CRHR, or are included in a local register of historical resources as defined in subdivision (k) of Section 5020.1, or are 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 Section 5024.1. Section 1(b)(4) of Assembly Bill (AB) 52 established that only California Native American tribes, as defined in Section 21073 of the California PRC, are experts in the identification of TCRs and impacts thereto. Because ECORP does not meet the definition of a California Native American tribe, it only addresses information in this report for which it is qualified to identify and evaluate, and that which is needed to inform the cultural resources section of CEQA documents. This report, therefore, does not identify or evaluate TCRs. Should California Native American tribes ascribe additional importance to or interpretation of archaeological resources described herein, or provide information about non-archeological TCRs, that information is documented separately in the AB 52 tribal consultation record between the tribe(s) and lead agency and summarized in the TCRs section of the CEQA document, if applicable.

1.4.4 Regional Laws and Regulations

1.4.4.1 Fresno County General Plan

The Open Space and Conservation Element of the 2024 Fresno County General Plan lists several policies pertaining to cultural resources:

OS-J.1 Preservation of Historic Resources

The County shall encourage preservation of any sites and/or buildings identified as having historical significance pursuant to the list maintained by the Fresno County Historic Landmarks and Records Advisory Commission.

OS-J.2 Historic Resources Consideration

The County shall consider historic resources during preparation or evaluation of plans and discretionary development projects that may impact buildings or structures. For a project projected on a property that includes buildings, structures, objects, sites, landscapes, or other features that are 45 years of age or older at the time of permit application, the project applicants shall be responsible for preparing and

implementation the recommendations of a historical resources evaluation completed by qualified cultural resources practitioners.

OS-J.3 Minimize Impacts

Whenever a historical resource is known to exist on a proposed project site, the County (i.e., Fresno County Historic Landmarks and Records Advisory Commission) shall evaluate and make recommendations to minimize potential impacts to said resource.

OS-J.4 Cultural Resources Protection and Mitigation

The County shall require that discretionary development projects, as part of any required CEQA review, identify and protect important historical, archeological, tribal, paleontological, and cultural sites and resources. For projects requiring ground disturbance and located within a high or moderate cultural sensitivity areas, a cultural resources technical report may be warranted, including accurate archival research and site surveys conducted by qualified cultural resources practitioners. The need to prepare such studies shall be determined based on the tribal consultation process and initial outreach to local or state information centers.

OS-J.5 Archeological Sites Confidentiality

The County shall, within the limits of its authority and responsibility, maintain confidentiality regarding the location of archeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.

OS-J.6 Native American Consultation

The County shall solicit the views of the local Native American community in cases where development may result in disturbance to sites containing evidence of Native American activity and/or sites of cultural importance.

OS-J.7 Historical Sites Inventory

The County shall maintain an inventory of all sites and structures in the county determined to be of historical significance (Index of Historic Properties in Fresno County).

OS-J.8 Landmark Designations

The County shall support the registration by property owners and others of cultural resources in appropriate landmark designations (i.e., National Register of Historic Places, California Historical Landmarks, Points of Historical Interest, or Local Landmark).

OS-J.9 Historical Site Markers

The County shall provide for the placement of historical markers or signs on adjacent County roadways and major thoroughfares to attract and inform visitors of important historic resource sites. If such sites are open to the public, the County shall ensure that access is controlled to prevent damage or vandalism.

OS-J.10 Cultural Resource Preservation

The County shall use the State Historic Building Code and existing legislation and ordinances to encourage preservation of cultural resources and their contributing environment.

OS-J.11 Interpretive Services and Facilities

The County shall support efforts of other organizations and agencies to preserve and enhance historic resources for educational and cultural purposes through maintenance and development of interpretive services and facilities at County recreational areas and other sites.

1.5 Report Organization

The following report documents the study and its findings and was prepared in conformance with the California Office of Historic Preservation's (OHP) *Archaeological Resource Management Reports: Recommended Contents and Format*. Appendix A includes a confirmation of the records search with the California Historical Resources Information System (CHRIS) and historical society coordination. Appendix B contains documentation of a search of the Sacred Lands File. Appendix C presents photographs of the Project Area.

Sections 6253, 6254, and 6254.10 of the California Code authorize state agencies to exclude archaeological site information from public disclosure under the Public Records Act. In addition, the California Public Records Act (Government Code § 6250 et seq.) and California's open meeting laws (The Brown Act, Government Code § 54950 et seq.) protect the confidentiality of Native American cultural place information. Because the disclosure of information about the location of cultural resources is prohibited by the Archaeological Resources Protection Act of 1979 (16 U.S. Code 552 470hh) and Section 307103 of the NHPA, it is exempted from disclosure under Exemption 3 of the federal Freedom of Information Act (5 U.S. Code 552). Likewise, the Information Centers of the CHRIS maintained by the OHP prohibit public dissemination of records search information. This inventory report was prepared as a non-confidential document.

2.0 SETTING**2.1 Environmental Setting**

The Project Area is located in the San Joaquin Valley, near the foothills of the Sierra Nevada mountains. The Project Area is adjacent to Friant-Kern Canal to the west and Tollhouse Road to the south. Two perennial drainages are located to the north and south of the Project Area: Dry Creek and Dog Creek, respectively. Elevations within the Project Area range from 465 to 475 feet above mean sea level.

2.2 Geology and Soils

The underlying geology of the Project Area comprises Quaternary alluvium of recent age (Matthews and Burnett 1965).

Three different soil units have been mapped within the Project Area (Natural Resources Conservation Service 2019):

- *Academy loam, 3 to 9 percent slopes*—This soil comprises alluvium derived from igneous or metamorphic rock.
- *Cometa sandy loam, 3 to 9 percent slopes*—This soil comprises alluvium derived from granite found on stream terraces.
- *Grangeville fine sandy loam, 0 to 1 percent slopes*—This soil comprises alluvium derived from granite found on floodplains and alluvial fans.

The Project Area has a high potential for buried pre-contact archaeological sites due to the presence of alluvial deposits that, due to their age, may contain evidence of human occupation. Soil composition and proximity to waterways, however, are not the only factors in determining potential for buried resources; this is discussed further in Section 6.2.

2.3 Vegetation and Wildlife

The dominant plant community within the Project Area includes fallow farmland/pastures, rural development landscaping, and invasive grasses and weeds.

Wildlife species that may occur in the Project Area include desert cottontail, California ground squirrel, western fence lizard, rock pigeon, house sparrow, common crow, and common raven (ECORP 2022).

3.0 CULTURAL CONTEXT

3.1 Regional Pre-Contact History

It is generally believed that human occupation of California began at least 10,000 years before present (BP). The archaeological record indicates that between approximately 10,000 and 8,000 BP, a predominantly hunting economy existed, characterized by archaeological sites containing numerous projectile points and butchered large animal bones. Animals that were hunted probably consisted mostly of large species still in existence today. Bones of extinct species have been found but cannot definitively be associated with human artifacts. Although small animal bones and plant grinding tools are rarely found within archaeological sites of this period, small game and floral foods were probably exploited on a limited basis. A lack of deep cultural deposits from this period suggests that groups included only small numbers of individuals who did not often stay in one place for extended periods (Wallace 1978).

Around 8,000 BP, there was a shift in focus from hunting toward a greater reliance on plant resources. Archaeological evidence of this trend consists of a much greater number of milling tools (e.g., metates and manos) for processing seeds and other vegetable matter. This period, which extended until around 5,000 years BP, is sometimes referred to as the Millingstone Horizon (Wallace 1978). Projectile points are found in archaeological sites from this period, but they are far fewer in number than from sites dating to before 8,000 BP. An increase in the size of groups and the stability of settlements is indicated by deep, extensive middens at some sites from this period (Wallace 1978).

In sites dating to after about 5,000 BP, archaeological evidence indicates that reliance on both plant gathering and hunting continued as in the previous period, with more specialized adaptation to particular environments. Mortars and pestles were added to metates and manos for grinding seeds and other vegetable material. Flaked-stone tools became more refined and specialized, and bone tools were more common. During this period, new peoples from the Great Basin began entering southern California. These immigrants, who spoke a language of the Uto-Aztecan linguistic stock, seem to have displaced or absorbed the earlier population of Hokan-speaking peoples. During this period, known as the Late Horizon, population densities were higher than before, and settlement became concentrated in villages and communities along the coast and interior valleys (Erlandson 1994; McCawley 1996). Regional subcultures also started to develop, each with its own geographical territory and language or dialect (Kroeber 1925; McCawley 1996; Moratto 1984). These were most likely the basis for the groups encountered by the first Europeans during the eighteenth century (Wallace 1978). Despite the regional differences, many material culture traits were shared among groups, indicating a great deal of interaction (Erlandson 1994). The introduction of the bow and arrow into the region sometime around 2,000 BP is indicated by the presence of small projectile points (Moratto 1984; Wallace 1978).

3.2 Local Pre-Contact History

This section provides a regional overview with contextual elements drawn from California's Central Valley Region and the Western Foothills Region. There exists extensive research and study of Central Valley prehistory than the prehistory of the Sierra Nevada foothill zone, but a fair amount of cultural overlap exists within these regions. This section includes the most recent and readily available research of both regions (Rosenthal et al. 2007) and includes some reference to the climactic changes that swept the Sierra Nevada being a catalyst for population movement that led to cultural change in the foothills.

California's Great Central Valley has long held the attention of archaeologists and was a focus of early research in California. Archaeological work during the 1920s and 1930s led to the cultural chronology for central California presented by Lillard, Heizer, and Fenenga in 1939. This chronology was based on the results of excavations conducted in the lower Sacramento River Valley. This chronology identified three archaeological cultures named Early, Transitional, and Late (Lillard et al. 1939).

Heizer (1949) redefined the description of these three cultures. He subsumed the three cultural groups into three time periods designated the Early, Middle, and Late Horizons. He primarily focused his research and reexamination of Lillard et al. (1939) on the Early Horizon, which he named Windmill. He also intimated that new research and a reanalysis of existing data would be initiated for cultures associated with the Middle and Late Horizons; however, he did not complete this work and other research filled in the gaps.

Following years of documenting artifact similarities among sites in the San Francisco Bay region and the Delta, Beardsley (1948, 1954) formatted his findings into a cultural model known as the Central California Taxonomic System (CCTS). This system proposed a linear, uniform sequence of cultural succession in Central California, and explicitly defined Early, Middle, and Late Horizons for cultural change. Archaeological researchers have subsequently refined and redefined aspects of the CCTS. For instance, Fredrickson (1973, 1974, and 1994) reviewed general economic, technological, and mortuary traits

between archaeological assemblages across the region. He separated cultural, temporal, and spatial units from each other and assigned them to six chronological periods: Paleo-Indian (12,000 to 8,000 BP); Lower, Middle, and Upper Archaic (8,000 BP to AD 500) and Upper and Lower Emergent (AD 500 to 1800).

Fredrickson further defined three cultural patterns: The Windmill (named after Heizer 1949 and Lillard et al. 1939), the Berkeley, and the Augustine patterns, and assigned them to the Early, Middle, and Late horizons of the CCTS. These patterns were defined to reflect the general sharing of lifeways within groups in a specific geographic region. The Windmill pattern of the Early Horizon included cultural patterns dating from 5,000 to 3,000 BP; the Berkeley Pattern of the Middle Horizon (also known as the Cosumnes cultural pattern after Ragir 1972), included cultural patterns dating from 3,000 BP to AD 500, and the Augustine Pattern of the Late Horizon included the cultural patterns from AD 500 to the historic period.

Fredrickson's (1974) Paleo-Archaic-Emergent cultural sequence was redefined by Rosenthal et al. (2007). Rosenthal et al.'s recalibrated sequence is divided into three broad periods: The Paleoindian Period (11,550 to 8,550 cal. BC); the three-staged Archaic period, consisting of the Lower Archaic (8,550 to 5,550 cal. BC), Middle Archaic (5,550 to 550 cal. BC), and Upper Archaic (550 cal. BC to cal. AD 1100); and the Emergent Period (cal. AD 1100 to Historic) (Rosenthal et al. 2007). The three divisions of the Archaic Period correspond to climate changes. This is the most recently developed sequence and is now commonly used to interpret Central California prehistory. The aforementioned periods are characterized below.

3.2.1 Paleo-Indian Period

This period began when the first people began to inhabit what is now known as the California culture area. It was commonly believed these first people subsisted on big game and minimally processed foods, (i.e., hunters and gatherers), presumably with no trade networks. More recent research indicates these people may have been more sedentary, relied on some processed foods, and traded (Rosenthal et al. 2007). Populations likely consisted of small groups traveling frequently to exploit plant and animal resources.

3.2.2 Archaic Period

This period was characterized by an increase in plant exploitation for subsistence, more elaborate burial accoutrements, and increase in trade network complexity (Bennyhoff and Fredrickson 1994). The three divisions that correspond to pre-contact climate change are characterized by the following aspects (Rosenthal et al. 2007):

- *Lower Archaic Period*—This period is characterized by cycles of widespread floodplain and alluvial fan deposition. Artifact assemblages from this period include chipped stone crescents and early wide-stemmed points, marine shell beads, eastern Nevada obsidian, and obsidian from the north Coast Ranges. These types of artifacts found on sites dating to this period indicate trade was occurring in multiple directions. A variety of plant and animal species were also utilized, including acorns, wild cucumber, and manzanita berries.

- *Middle Archaic Period*—This period is characterized by a drier climate period. Rosenthal et al. (2007) identified two distinct settlement/subsistence patterns in this period: the Foothill Tradition and the Valley Tradition. Functional artifact assemblages consisting primarily of locally sourced flaked stone and groundstone cobbles characterize the foothills tradition, while the Valley Tradition was generally characterized by diverse subsistence practices and extended periods of sedentism.
- *Upper Archaic Period*—This period is characterized by abrupt change to wetter and cooler environmental climate conditions. Much greater cultural diversity is evident from this period. More specialized artifacts, such as bone tools, ceremonial blades, polished and groundstone plummets, saucer and saddle Olivella shell beads, Haliotis shell ornaments, and a variety of groundstone implements are characteristic of this period.

3.2.3 Emergent Period

This period is most notably marked by the introduction of the bow and arrow, the emergence of social stratification linked to wealth, and more expansive trade networks signified by the presence of clam disk beads that were used as currency (Moratto 1984). The Augustine pattern (the distinct cultural pattern of the Emergent Period) is characterized by the appearance of small projectile points (largely obsidian), rimmed display mortars, flanged steatite pipes, flanged pestles, and chevron-designed bird-bone tubes. Large mammals and small seeded resources appear to have made up a larger part of the diet during this period (Fredrickson 1968; Meyer and Rosenthal 1997).

The following discussion summarizes the cultural patterns and the different local developments that are represented in archaeological deposits in the region surrounding the Project Area.

The Windmill Pattern of the Early Horizon (as defined by Beardsley 1948), dates to the Middle Archaic (as defined by Rosenthal et al. 2007) and may be the most extensively studied of all the cultural patterns defined for the Central Valley. In fact, the similarity noted between elements of Windmill and materials from other sites may have been the catalyst for early archaeologists identifying the material cultural “blending” of groups in the Central Valley during this period. The temporal span for Windmill has been updated and reanalyzed several times in the archaeological literature (Fredrickson 1973, 1974; Heizer 1949; Moratto 1984; Ragir 1972). The date originally proposed for the emergence of Windmill was 4,500 BP (Lillard et al. 1939; Ragir 1972), because the culture 4,000 years ago appeared to have been fully developed and seemed to have been well integrated into the regional economic system.

Characteristics to identify the Windmill pattern have been presented by multiple authors over time (Fredrickson 1973, 1974; Heizer 1949; Moratto 1984; Ragir 1972). Most notable characteristics are:

- large, heavy stemmed and leaf-shaped projectile points commonly made of a variety of materials other than obsidian;
- perforate charmstones;
- Haliotis and Olivella shell beads and ornaments;
- trident fish spears;

- baked clay balls (presumably for cooking in baskets);
- flat slab milling stones;
- small numbers of mortars; and
- ventrally extended burials oriented toward the west.

The subsistence pattern of Windmill groups probably emphasized hunting and fishing, with supplemental seed collecting (possibly including acorns) (Heizer 1949; Moratto 1984; Ragir 1972).

Windmill groups acquired obsidian from at least two Coast Ranges and three trans-Sierran sources, *Haliotis* and *Olivella* shells and ornaments from the coast, and quartz crystals from the Sierra Nevada foothills (Heizer 1949; Ragir 1972). It is widely hypothesized that the bulk of these materials were acquired through trade, however some may have been acquired as part of seasonal movements between the Central Valley and the Sierra Nevada foothills.

There is evidence for seasonal transhumance in the distribution of Windmill artifacts, sites, and burial patterns. Johnson's work (1967, 1970) along the edge of the Sierra Nevada foothills at Camanche Reservoir and CA-AMA-56, the Applegate site, suggests a link between Windmill groups of the Central Valley and the Sierra Nevada mortuary caves. Johnson (1970) suggested that his data reveals a pattern of gradual change from the Early through the Middle Horizon (as defined by Beardsley 1948), rather than a displacement of local groups by foreign populations as theorized by Baumhoff and Olmsted (1963) based on ethnolinguistic evidence. Rondeau (1980), also working at the edge of the Central Valley at CA-ELD-426, the Bartleson Mound, identified components of the Early Horizon (as defined by Beardsley 1948). Rondeau (1980) even postulated a potential relationship between the Early Horizon cultures and the Martis Complex (a basalt preferring culture in the Martis Valley of the Sierra Nevada). In addition, analysis of Windmill burial orientation (Schulz 1970) and skeletal analyses (e.g., Harris Lines) by McHenry (1968) suggest a high percentage of winter death among Windmill groups. Incorporating all of these data, Moratto (1984) postulated that Windmill groups were exploiting the foothills of the Sierra Nevada during the summer and returning in the winter to villages in the Central Valley as early as 4,000 BP.

Excavations at CA-PLA-500 (Wohlgemuth 1984), the Sailor Flat site located near CA-PLA-101, sites at the Twelve Bridges Golf Course now known as Catta Verdera Country Club in Lincoln, and the Spring Garden Ravine site CA-PLA-101 provide examples of Windmill sites that had items in their cultural assemblages similar to the material culture of groups elsewhere in California and the foothills.

The succeeding Middle Horizon, namely the Cosumnes Culture after Ragir (1972), the Berkeley Pattern after Fredrickson (1974), and absorbed into the Middle and Upper Archaic designations by Rosenthal et al. (2007) was first recognized at site CA-SAC-66. Much less published material discusses the patterns defined for this era than does Windmill; none the less, some of the most notable characteristics are:

- tightly flexed burials with variable orientation;
- red ochre stains in burials;
- distinctive *Olivella* and *Haliotis* beads and ornaments;

- distinctive charmstones;
- cobble mortars and evidence of wooden mortars;
- numerous bone tools and ornaments;
- large, heavy foliate and lanceolate concave base projectile points made of materials other than obsidian; and
- objects of baked clay.

Further classification of the Middle Archaic (as defined by Rosenthal et al. 2007) into the Foothill Tradition and Valley Tradition helped to clarify the different types of cultural sequences which occurred during these time periods. Functional artifact assemblages consisting primarily of locally sourced flaked stone and groundstone cobbles characterize the Foothill Tradition, with very few trade goods. Sites that represent the Valley Tradition are much fewer in number and are generally characterized by much more diverse subsistence practices and extended periods of sedentism. Specialized tools, trade goods, and faunal refuse that indicate year-round occupation are evident on sites of the Valley Tradition (Rosenthal et al. 2007). Distinct artifacts attributed to this tradition include one of the oldest dated shell bead lots in central California (4,160 BP) and a particular type of pestle used with a wooden mortar (Meyer and Rosenthal 1997).

The Sierra Nevada experienced significant climactic shifts and concomitant vegetation change throughout the Holocene, but pollen analysis and climactic records indicate that the current climate pattern and primary constituents of vegetation communities were in place by the Middle Archaic around 1,000 BC (Hull 2007). Seasonal transhumance practiced by indigenous populations of the Sierra may have become more consistent during this period of relative environmental stasis.

Paleobotanical analyses from sites of the Foothill Tradition including CA-CAL-789, CA-CAL-629, and CA-CAL-630 confirm that acorns and pine nuts were preferred for subsistence (Rosenthal and McGuire 2004; Wohlgemuth 2004). Sites near the Project Area associated with the Valley Tradition are rare in the early Middle Archaic (ca. 5,550 to 2,050 cal. BC) but include the Reservation Road site (CA-COL-247) and two buried sites in the northern Diablo range (CA-CCO-637 and CA-CCO-18/548). Sites associated with later portions of the Middle Archaic (post-2,050 cal. BC) near the Project Area include CA-SAC-107 and CA-BUT-233, both of which produced elaborate material culture and diverse dietary and technological assemblages.

The next era in the region is identified as the Late Horizon by Beardsley (1948, 1954), the Hotchkiss Culture by Ragir (1972), and the Augustine Pattern by Fredrickson (1974). The culture was formed by populations during the later Upper Archaic and Emergent Periods, as defined by Rosenthal et al. (2007), and ranges in age from around 550 cal. BC to contact (dates vary between the different models of prehistory developed for the region). The Upper Archaic, as discussed above, corresponds with the late Holocene change in environmental conditions to a wetter and cooler climate. The Emergent Period and Late Horizon are markedly represented by the introduction of bow and arrow technology, as well as more pronounced cultural diversity as reflected in diversity of burial posturing, artifact styles, and material culture. Cultural patterns for this era are represented in the northern Sacramento Valley, namely within the

Whiskeytown Pattern, at sites CA-SHA-47, CA-SHA-571/H, CA-SHA-890, CA-SHA-891, and CA-SHA-892 (Sundahl 1982, 1992).

This era primarily represents both local innovation and the blending of new cultural traits introduced into the Central Valley. The Emergent Occupation (as defined by Rosenthal et al. 2007) coincides with the Augustine Pattern (Fredrickson 1974) in the lower Sacramento Valley/Delta region, and with the Sweetwater and Shasta complexes in the northern Sacramento Valley (Fredrickson 1974; Kowta 1988; Sundahl 1982). The emergence of the Augustine Pattern appears to have been associated with the expansion of Wintun populations from the north, which appears to have led to an increase in settlements in the area after 550 BP (Bennyhoff 1994; Moratto 1984).

During this period in the Sierra Nevada, paleoenvironmental data suggest severe droughts occurred from around AD 892 to 1112 and AD 1210 to 1350 (Hull 2007; Lindström 1990; Stine 1994). These drier conditions surely affected the seasonal resource procurement rounds of the native populations during this time, and likely led to an influx of population movement and cultural blending into the foothills zone and Central Valley by Sierra Nevada groups.

Despite the varying designations, this emergent era is distinguished in the archaeological record by intensive fishing, extensive use of acorns, elaborate ceremonialism, social stratification, and cremation of the dead. Artifacts associated with the defined patterns (Augustine, Emergent, Hotchkiss) include bow and arrow technology (evidenced by small projectile points), mortars and pestles, and fish harpoons with unilaterally or bilaterally placed barbs in opposed or staggered positions (Bennyhoff 1950). Mortuary patterns include flexed burials and cremations, with elaborate material goods found in association with prestigious individuals. A local form of pottery, Cosumnes brownware, emerged in the lower Sacramento Valley (Rosenthal et al. 2007).

3.3 Ethnohistory

The Project Area is within the traditional territory of the Foothill Yokuts. The Yokuts, (meaning person or people), were Penutian speakers who were divided into three distinct groups: the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothills Yokuts. These groups spoke different dialects and were separated by topography (Kroeber 1925; Shipley 1978). The Foothill Yokuts occupied the 2,000-to-4,000-foot elevation range of the Sierra Nevada Mountains between the Fresno River and the present-day town of Oakhurst in the north and the Kern River in the south. This region is crossed by numerous tributaries that flow in an irregular direction forming a disorderly arrangement of ridges and valleys. Tribal boundaries among the Foothill Yokuts were fairly vague but used streams as the axis for tribal settlements and boundaries.

Daily substance needs were met primarily through hunting and gathering and supplemented by fishing. Deer, quail, and acorns were the predominant food resources. They also hunted ground squirrel, rabbits, ducks, fished for trout and salmon from rivers and gathered pine nuts, wild oats, manzanita berries, freshwater mussels and wasp grubs among others. The Foothill Yokuts obtained fish, freshwater mussels, and waterfowl from the nearby rivers, lakes and marshes. Fishing was carried out by spearing, the use of weirs with a basket trap, by poisoning with buckeye fruits, or caught by hand. Deer was hunted with a bow and arrow following still-stalking, driving with fire, or hunted from a blind located near a waterhole.

Quail were often trapped or shot while they roosted in trees. Trapping quail was a substantial community endeavor using a miniature stockade fence made of sticks and tension set noose traps. Acorns were gathered from the ground or shaken from trees, some of which were claimed as private property (Spier 1978). Green acorns were peeled and sun-dried and were kept up to five years. Dried acorns were cracked with the use of a hammerstone then ground to a powder in bedrock mortars, typically on granite outcrops. The tannic acid was then leached from the powder using a sandy basin then cooked as mush using a basket and heated stones or was turned into cakes.

The Foothill Yokuts use stone tools primarily made of obsidian (from the eastern slopes of Sierra Nevada), soapstone, and locally available granite, and quartz. Crafting among the Yokuts did not really differ than the rest of California tribes except for their basketry. They used twine and coil techniques to weave multi-purpose baskets. Some Yokuts tribal women made utilitarian pottery.

The structures of the Foothill Yokuts included: a conical dwelling in at least two forms, a flat shade or ramada, a sweathouse and a hemispherical shade or grinding booth (Spier 1978). There was little organization to Foothill Yokuts settlements based on personal preference. Although the sharing of springs, bedrock mortars, sweathouses, and swimming places would often hold people to a small area. Lineages, with membership inherited in the paternal line were found among the Foothill Yokuts. Each lineage had a totem that gave potential strength and wisdom to members of the group. Tribal offices of the chief passes within the lineage from father to son. Each tribe had several chiefs, and no individual chief was paramount with matters affecting the whole group called upon fellow chief concurrence.

Foothill Yokuts society began to change with the arrival of Spanish explorers to California in 1542 and the establishment of permanent settlements beginning in 1769. Exploration of the Central Valley began in 1806 when Spanish army officer Gabriel Moraga entered the region. His explorations resulted in the naming of numerous natural features in the Central Valley, especially rivers, that are still used today (Alchetron 2024). The Spanish presence introduced diseases that greatly reduced Foothill Yokuts population. The discovery of gold near the town of Coloma in 1848 further impacted Foothill Yokuts society with the influx of thousands of miners to the gold fields in the Sierra Nevada mountains. The sudden increase of non-native populations in the area resulted in the displacement of Foothill Yokuts communities and the further degradation of traditional social structures. By the mid-20th century Foothill Yokuts culture had greatly changed by more than 100 years of European contact (Spier 1978). Isolated individuals would still partake in the use of acorns, the native diet and basketry; however, native housing has been replaced by European style structures. By 1950 the Picayune community of Foothill Yokuts near the town of Oakhurst had an estimated population of 112 people. Other Foothill Yokuts communities, such as Chukchansi, had similar populations in 1950 (Spier 1978).

3.4 Regional History

The first Viceroy of New Spain, Antonio de Mendoza, commissioned maritime explorer Hernando de Alarcón to chart the Gulf of California and Colorado River in 1540. Alarcón and his crew became the first Europeans to reach Alta (Upper) California when they set foot on the banks of the Colorado River in what is now Imperial County. In 1542, the Spanish maritime explorer Juan Rodriguez Cabrillo and his crew became the first Europeans to explore the Alta California coastline, anchoring at San Diego Bay, Santa

Catalina Island, and San Pedro Bay. In 1579, the English privateer Francis Drake, midway through his circumnavigation of the world, visited Miwok villages in what is now Marin County. The Spanish explorer Sebastian Vizcaíno, sailing north from Mexico, charted Monterey Bay in 1602 (Starr 2005).

Spanish colonization of Alta California began in 1769 with the Portolá land expedition led by Captain Gaspar de Portolá and Father Junipero Serra. The overland expedition proceeded from San Diego Bay north to the Santa Clara Valley, where an advance party of scouts led by José Ortega became the first Europeans to observe San Francisco Bay. Spain subsequently established a string of 21 Franciscan missions, 4 presidios (forts), and 4 pueblos (towns) in Alta California's coastal regions (Starr 2005). In 1808, the explorer Gabriel Moraga led an expedition from San Jose pueblo into the Central Valley. Moraga named the valley's major rivers, including the Sacramento and San Joaquin, but made no attempt to establish permanent settlements in Alta California's interior (Avella 2003).

The Republic of Mexico achieved independence from Spain in 1821. A year later, Alta California became a territory of Mexico with its capital at Monterey. In 1827, the American fur trapper Jedediah Smith led a party of Rocky Mountain Fur Company trappers across the Mojave Desert to Mission San Gabriel, north up the Central Valley, and east into Nevada, demonstrating the possibility of overland travel across the Sierra Nevada (Starr 2005).

During the 1830s, the Mexican government confiscated mission lands and expelled Franciscan friars from Alta California. In coastal regions and in interior valleys, government officials granted vast amounts of acreage to retired soldiers and other Mexican citizens. Three of Alta California's Spanish pueblos—Los Angeles, San Jose, and Sonoma—survived as permanent towns. Other civilian settlements developed around presidios at San Francisco, Monterey, Santa Barbara, and San Diego. Many Alta California landowners, called *californios*, maintained residences in town while hired vaqueros and unpaid Native American laborers worked on rural ranchos (cattle ranches) to produce cow hides and tallow, commodities prized by foreign merchants (Starr 2005).

In 1821, the liberalized Mexican government began welcoming non-Spanish immigrants to Alta California. Hundreds of Americans, British, and other foreigners arrived to establish trading relationships. Others became naturalized Mexican citizens and applied for land grants. John Sutter, a German-speaking immigrant from Switzerland, built a fort at the confluence of the Sacramento and American rivers in 1839 and petitioned the Mexican governor for a land grant; he received nearly 49,000 acres along the Sacramento River in 1841 (Hurtado 2006).

Following the Mexican-American War of 1846-1848, Mexico ceded Alta California to the United States. Under the Treaty of Guadalupe Hidalgo, Congress agreed to recognize the private property of former Mexican citizens living within the new boundaries of the United States. This meant confirming California's Mexican land grants. In 1851, Congress passed the California Land Act creating the Board of Land Commissioners to determine the validity of the individual grants, placing the burden of proof on patentees. The Board, with assistance from U.S. courts, confirmed most of California's Mexican land grants in subsequent decades (Starr 2005).

3.4.1 City of Clovis History

Founded in 1891, the City of Clovis is known as the “Gateway to the Sierras.” This is due to its location in the eastern San Joaquin Valley near the foothills of the Sierra Nevada Mountains. The San Joaquin valley is considered the richest agricultural region in the world (Visit Clovis 2019). While agriculture was instrumental in Clovis’ founding, the city’s proximity to the Sierras invited other industries which also helped it to develop into the unique community it is today.

The European credited with first considering settling the area around Clovis was Padre Martin, who passed through in 1806 while scouting out a location for a mission site. The first non-native settlers would be mainly missionaries and trappers, soon followed by gold rush prospectors (City of Clovis n.d.). In 1849, an early wave of these gold rush miners would settle near present-day Clovis hoping to take advantage of the area’s rich potential for mining. However, the gold ran out quickly, and rather than abandoning the area, many of the former prospectors stayed in place, establishing farms in the foothills (Visit Clovis 2019). This influx of settlers to this area in the mid-nineteenth century would displace much of the local native population (City of Clovis n.d.).

The logging industry was instrumental in the development of Clovis as the gateway to the timber-rich Sierras. An early example of this is the construction of Tollhouse Road, which was first constructed by brothers J.H. and J.N. Woods, who began manufacturing sugar pine shingles in the area south of Shavel Lake in 1866. Fresno County purchased the road in 1878 and later reconstructed it in 1922. The portion of Highway 168 which bypasses Tollhouse Road was constructed in 1863 (Bos 2024). While the road still exists today, at the time it was built, it was a precarious and expensive method of transporting lumber down the mountain due to the steep grade and numerous switchbacks. To mitigate the risks of traveling this road, the Fresno Flume was established in 1891, arriving in Clovis two years later (Bos 2024).

In addition to logging, agriculture and ultimately the railroad which supported it became the industries which would lead to the City of Clovis being founded. In 1872, pioneer Stephen H. Cole and his family arrived in the area. In 1874, Cole gifted four horses to his teenaged son Clovis, who used the animals to haul lumber from the nearby Sierra Nevada. Also recognizing the area’s potential for agriculture, Clovis Cole started acquiring parcels of land to raise grain. In 1880, the 22-year-old purchased 480 acres of property that would later become the City of Clovis. Cole would eventually come to own a 50,000-acre farm, which led to him being known as the “Wheat King of the United States”. Cole and the other farmers in the area depended on the railroad to transport their products to market. However, in the late 19th century, all the railroads in the area were controlled by trusts, which continued to raise their rates beyond what local farmers could afford. Seeking an alternative, several prominent Fresno farmers joined with Chicago railroad developer Marcus Pollasky in 1890 and succeeded in raising 100,000 dollars to establish the independent San Joaquin Valley Railroad. (Visit Clovis 2019).

The railroad was constructed to run along the property line between the land of the two most prominent landowners in the area: George Owen and Clovis Cole. Cole’s property, on the west side, is where the train depot was built in 1891, which is how he became the namesake for the City of Clovis (Chau 2022; Visit Clovis 2019). The Southern Pacific Railroad later purchased the independent railroad, which it continued to operate for decades (Visit Clovis 2019). While the railroad was the primary reason for Clovis’ growth in

the late 19th century, infrastructure supporting other industries contributed significantly, including the 42-mile-long Shaver log flume, the Clovis mill and finishing plant, grain production, and livestock (City of Clovis n.d.). The growth of these industries naturally led to a growing population and the establishment of schools, stores, and other amenities, and the city was officially incorporated in 1912 (City of Clovis n.d.).

In 1930, the Clovis Chamber of Commerce erected the iconic sign across Clovis Avenue which reads “Clovis: the Gateway to the Sierras” (Bos 2024). However, at the point the city’s growth had largely stopped due to changes in the industries which supported its establishment and early development. By the 1960s, Clovis was largely vacant and was not drawing residents or industry. In the 1970s, in attempts to revive the city, Clovis was rebranded as an Old Western style town and many of the buildings were restored or improved. Advertisements on Highway 99 drew people into the revitalized Old Town Clovis (Chau 2022).

Today the City of Clovis comprises over 23 square miles in area and has a population of over 100,000 residents, having doubled since the mid-1980s. The city’s primary economic drivers in the 21st century are retail sales and light manufacturing. Despite the enormous growth in population in recent decades, Clovis maintains the feel of a small western town, and the Old Town area serves as a reminder of its origins (City of Clovis n.d.).

4.0 METHODS

4.1 Personnel Qualifications

Registered Professional Archaeologist (RPA) Robert Ramirez, who meets the Secretary of the Interior’s Professional Qualifications Standards for prehistoric and historical archaeology, was responsible for this archaeological resources investigation and conducted the survey of the Project Area. Casey LeJeune, RPA and Michael DeGiovine, RPA prepared the technical report. Lisa Westwood, RPA and Brian Marks, PhD, RPA provided technical report review and quality assurance.

Robert Ramirez, RPA has 30 years of cultural resource management experience. He meets the Secretary of the Interior’s Professional Qualifications Standards for prehistoric archaeology and has served as principal investigator, project manager, and field director on projects throughout California, as well as Nevada, Utah, Arizona, Washington, North Dakota, Kentucky, and Ohio. He is well versed in the cultural resources requirements of CEQA and NEPA and has managed or served as principal investigator for cultural resource and multi-disciplinary projects requiring federal, state, and local agency compliance. He has subject matter expertise in lithic analysis, marine shell analysis, and working with inhumations.

Casey LeJeune, RPA has worked in cultural resource management since 2020, with experience in the Southeast and Southern California. She holds an M.A. in anthropology with a focus in forensic anthropology and bioarchaeology. She meets the Secretary of the Interior’s Professional Qualifications Standards for prehistoric and historic archaeology. Ms. LeJeune has served as a field director on numerous projects and participated in fieldwork on forensic and historic burials, surveys, large-scale data recovery, testing, and construction monitoring. She also has extensive laboratory experience in human osteology

and analysis of historic and precontact artifacts. Additionally, she has contributed to numerous cultural resource technical reports.

Michael M. DeGiovine, RPA has more than 19 years of experience in cultural resources management. He meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historic archaeology. Mr. DeGiovine holds an M.A. in Anthropology from California State University, Fullerton in addition to a B.A in Anthropology from the University of California-San Diego. He has prepared or contributed to environmental documents, such as Environmental Impact Reports/Environmental Impact Statements or Cultural Resource studies that deal with CEQA and NHPA Sections 106 and 110.

Dr. Marks is the Principal Investigator and has been an archaeologist since 1997. He has been working in cultural resources management in California since 2010 following eight years of archaeological work in the southeast United States. Dr. Marks holds a Ph.D. and an M.S. in Anthropology. He has participated in or supervised more than 200 survey, testing, and data recovery excavations and has recorded and mapped a multitude of pre-contact and historical sites, including Civil War battlefields, Gold Rush boom towns, submerged pre-contact sites, and others. He has conducted evaluations of cultural resources for eligibility to the NRHP and CRHR and is well versed in impact assessment and development of mitigation measures for CEQA and Section 106 (NHPA) projects. Dr. Marks is the Northern California Cultural Resources Group Manager for ECORP.

Lisa Westwood, RPA has 30 years of experience and meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historical archaeology. She holds a B.A. in Anthropology and an M.A. in Anthropology (Archaeology). She is the Director of Cultural Resources for ECORP.

4.2 Records Search Methods

ECORP requested a records search for the Project Area at the Southern San Joaquin Valley Information Center (SSJVIC) of the CHRIS at California State University, Bakersfield on February 24, 2025. The purpose of the records search was to determine the extent of previous surveys within a 1-mile radius of the Proposed Project Area, and whether previously documented pre-contact or historic archaeological sites, architectural resources, or traditional cultural properties exist within this area. SSJVIC staff completed and returned the records search to ECORP on March 10, 2025 (Appendix A).

In addition to the official records and maps for archaeological sites and surveys in Fresno County, ECORP reviewed the following historical references: Built Environment Resource Directory (BERD) for Fresno County (OHP 2025a); the National Register Information System (National Park Service [NPS] n.d.); Office of Historic Preservation, California Historical Landmarks (CHL; OHP 1996, 2025b); California Points of Historical Interest (OHP 1992 and updates); Directory of Properties in the Historical Resources Inventory (OHP 1999); Caltrans Local Bridge Survey (California Department of Transportation [Caltrans] 2019); Caltrans State Bridge Survey (Caltrans 2018); and *Historic Spots in California* (Kyle 2002).

Other references examined include a RealQuest Property Search and historic General Land Office (GLO) land patent records (Bureau of Land Management [BLM] n.d.). ECORP reviewed the following historic-era maps:

- 1854 BLM GLO Plat map for Township 12 South, Range 22 East
- 1922 USGS Round Mountain, California topographic quadrangle (1:31,680 scale)
- 1946 USGS Clovis, California topographic quadrangle (1:62,500 scale)
- 1964 USGS Round Mountain, California topographic quadrangle (1:24,000 scale)
- 1982 USGS Fresno, California topographic quadrangle (1:100,000 scale)

ECORP reviewed historic aerial photographs from 1957, 1962, 1984, 1998, 2005, 2009, 2010, 2012, 2014, 2016, 2018, 2020, and 2022 for any indications of Project Area usage and built environment.

ECORP conducted a search for a local historical registry and identified the Fresno County List of Historic Places as the nearest historical registry.

4.3 Sacred Lands File Coordination Methods

In addition to the records search, ECORP contacted the California Native American Heritage Commission (NAHC) on February 18, 2025 to request a search of the Sacred Lands File for the Project Area. This search determines whether California Native American tribes have recorded Sacred Lands within the Project Area. This is because the Sacred Lands File is populated by members of the Native American community with knowledge about the locations of tribal resources. In requesting a search of the Sacred Lands File, ECORP solicited information from the Native American community regarding TCRs, but the responsibility to formally consult with the Native American community lies exclusively with the federal and local agencies under applicable state and federal laws. The lead agencies do not delegate government-to-government authority to any private entity to conduct tribal consultation.

4.4 Other Interested Party Consultation Methods

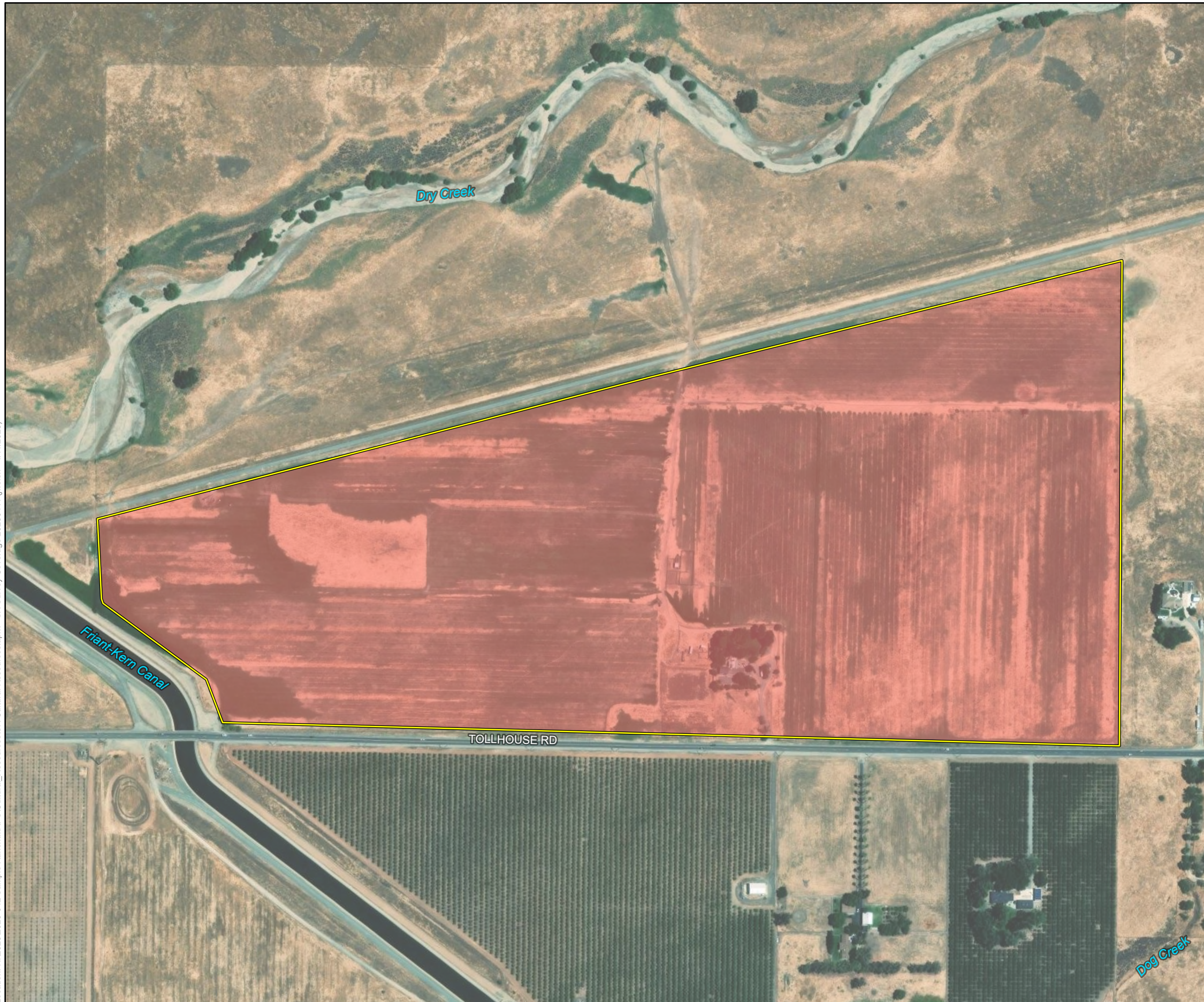
ECORP contacted the Fresno County Historical Society on March 26, 2025 to solicit comments or obtain historical information that the repository might have regarding events, people, or resources of historical significance in the area (Appendix A).

4.5 Field Methods

ECORP conducted an intensive pedestrian survey of the Project Area on March 24 and 25, 2025, in accordance with the *Secretary of the Interior's Standards for the Identification of Historic Properties* (NPS 1983), using 15-meter transects (Figure 3). During the survey, ECORP archaeologists examined the ground surface for indications of surface or subsurface cultural resources and inspected the general morphological characteristics of the ground surface for indications of subsurface deposits that may be manifested on the surface, such as circular depressions or ditches. Whenever possible, the archaeologists examined the locations of subsurface exposures caused by such factors as rodent activity, water or soil erosion, or vegetation disturbances for artifacts or for indications of buried deposits. ECORP did not conduct any subsurface investigations or artifact collections during the pedestrian survey.

Standard professional practice requires that all cultural resources encountered during the survey be recorded using Department of Parks and Recreation (DPR) 523-series forms approved by the California OHP. Encountered resources are usually photographed, mapped using a handheld Global Positioning System receiver, and sketched as necessary to document their presence using appropriate DPR forms.

Location: N:\2025\2025-042 Sample Ranch\Maps\Cultural Resources.aprx - SR Survey Coverage 20250411 (jwelsh - 4/11/2025)



Map Contents

-  Project Area - 119.14 ac.
-  Survey Coverage

Sources: ESRI, Fresno County, Maxar (2024), NHD



Map Date: 4/11/2025

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

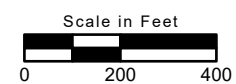


Figure 3. Survey Coverage

2025-042 Sample Ranch

5.0 RESULTS

5.1 Records Search

The records search consisted of a review of previously conducted cultural resources research, literature on file with the SSJVIC, and historical aerial photographs and maps of the Project Area and vicinity.

5.1.1 Previous Research

The SSJVIC records search identified 15 previous cultural resources investigations within 1 mile of the Project Area (Appendix A). The Project Proponent provided a copy of a 2012 cultural resources study that was not included in the SSJVIC records search; the results of this study are included herein. Collectively, these studies cover approximately 45 percent of the total area of the records search radius. The studies revealed the presence of pre-contact sites, including lithic scatters and habitation sites; and historical sites, including single-family homes and water conveyance systems. The previous studies were conducted between 1975 and 2020 and vary in size from 40 to 9,270 acres. Of the 16 previously conducted studies, six included the Project Area (Table 1).

Table 1. Previous Cultural Studies within the Project Area			
Report No. (FR-)	Author(s)	Report Title	Year
661	Price, Barry A., Moratto, Michael J., and Lebow, C.G.	Archaeological Survey Report of Route 168 Study Areas, Fresno County, California	1992
1130	Wren, Donald G. and Crist, Michael	Archaeological Reconnaissance of the Redbank and Fancher Creek Investigation Area	1975
1588	Smith, Ephraim K.	Historical Architectural Survey Report for Route 168 Rural Project	1991
1590	Corbett, Michael R.	Route 168 Temperance Avenue to Lodge Road 06-FRE-168- R9.0/R28.1	1991
2658	Price, Barry A, Moratto, M.J., and Lebow, C.G.	Archaeological Survey Report of Route 168 Study Areas, Fresno County, California	1992
–	Varner, Dudley M.	Cultural Resource Study for the Sample Home Ranch Project, Grantor Real Estate Investments, LLC, Fresno County, California	2012

The results of the records search indicate that approximately 60 percent of the Project Area has been previously surveyed for cultural resources; however, these studies were conducted in smaller segments, at different times, by different consultants, and the most recent survey was 13 years ago; therefore, ECORP concluded that a pedestrian survey of the Project Area using current protocols was necessary.

The records search also determined that nine previously recorded pre-contact and historic-era cultural resources are located within 1 mile of the Project Area (Table 2). Of these, four are associated with Native American occupation; four are historic-era sites associated with early European-American ranching and

mining activities, including a segment of an irrigation canal; and one is a multicomponent archaeological site. There are no previously recorded cultural resources within the Project Area. There is one previously recorded resource (P-10-5801; Friant-Kern Canal) located adjacent to the Project Area on the west.

Table 2. Previously Recorded Cultural Resources within 1 Mile of the Project Area				
Site No. (CA-FRE-)	Primary No. (P-10-)	Recorder and Year	Age/ Period	Site Description
1155	1155	D. Wren, M. Crist, CSU Fresno 1975	Pre-contact	Habitation site
2574/H	2574	Price, Crisson, Riddell, Whitesell, INFOTEC Research, Inc. 1990	Multi- component	Flaked stone tool, debitage, and ground stone scatter; historic-era domestic debris scatter
2610	2610	Price, Crisson, Riddell, Whitesell, INFOTEC Research, Inc. 1990	Pre-contact	Lithic and ground stone scatter
2718	2718	D. Forrest, J. Kus, C. Mader, CSU Fresno 1991	Pre-contact	Bedrock milling features
2719	2719	D. Forrest, J. Kus, C. Mader, CSU Fresno 1991	Pre-contact	Bedrock milling features
–	4970	Michael R. Corbett, Dames & Moore 1991	Historic	Single-family residence
–	4971	Michael R. Corbett, Dames & Moore 1991	Historic	Ranch complex
–	4993	E.K. Smith, N.L. Pennington, CSU, Fresno Foundation 1990	Historic	Sample-Harry Sample Ranch complex
3519H	5801	Mark Beason and Rebecca Flores 2008	Historic	Friant-Kern Canal

5.1.2 Records

The OHP's BERD for Fresno County (dated September 23, 2023) did not include any resources within 1 mile of the Project Area (OHP 2025a). The nearest BERD lists five properties is within the City of Clovis.

The National Register Information System (NPS n.d.) failed to reveal any eligible or listed properties within the Project Area. The nearest National Register properties are located in the City of Fresno, more than 10 miles from the Project Area.

ECORP reviewed resources listed as CHLs (OHP 1996) by the OHP (2025b) on March 19, 2025. The nearest listed CHLs are located in the City of Fresno, more than 10 miles from the Project Area.

Historic Spots in California (Kyle 2002) mentions that Tollhouse Road was built in 1867 to connect the lumber mills near Shaver Lake to the valley below. This road remains mostly in its original alignment and passes through Clovis along its 30-mile course up the steep incline to Shaver Lake (Kyle 2002).

Historic GLO land patent records from the BLM's patent information database (BLM n.d.; Table 3) revealed that the Project Area is located within portions of land granted to John Overstreet in 1873 and 1874 under two patent types: the Act Donating Public Land for Colleges (12 Stat. 503), and the Scrip Warrant Act of March 18, 1842 (5 Stat. 607).

- The Morrill Act of 1862 (12 Stat. 503), to "provide colleges for the benefit of agriculture and mechanic arts...", held that lands sold would have those proceeds invested and the interest applied in the support of a college for agriculture and mechanic arts (California State University Monterey Bay 2016).
- The Scrip/Warrant Act of March 17, 1842 (5 Stat. 607) allowed for patents to be issued for military or other service (Jackson County Genealogy Library n.d.).

Table 3. GLO Land Patent Records that Overlap with Project Area				
Patentee	Patent Date	Serial No.	Patent Type/Authority	Location
John Overstreet	July 1, 1873	1364	Morrill Land Grant College Act, 1862 (12 Stat. 503)	S½ of SE¼ of Section 20; SW¼ of SW¼ of Section 21 (T12S, R22E, MDBM)
John Overstreet	June 1, 1874	CACAAA 123585	Scrip/Warrant Act of March 17, 1842 (5 Stat. 607)	NW¼ of SW¼ of Section 21 (T12S, R22E, MDBM)

GLO = General Land Office; MDBM = Mount Diablo Base and Meridian; NW = Northwest; SE = Southeast; SW = Southwest

A RealQuest online property search for APN 150-061-45 (original APN for 150-061-26 and 150-061-27) revealed that the parcel is composed of 78.36 acres of natural pasture. A search for APN 150-061-28 revealed that the parcel is composed of 39.28 acres of natural pasture. No other Project Area history information was on record with RealQuest.

The Tollhouse Road Bridge over the Friant-Kern Canal is adjacent to the Project Area's southern boundary and is listed on the Caltrans State Bridge Inventory as Bridge No. 42-0002. The inventory indicates that the bridge was built in 1947 and is currently listed as Category 4: "Historical Significance not Determined" (Caltrans 2018).

The *Handbook of North American Indians* (Spier 1978) lists the *Gashowu* as the nearest Foothill Yokut tribal group to the Project Area.

A review of the Fresno County List of Historic Places did not reveal any resources in the vicinity of the Project Area.

5.1.3 Map Review and Aerial Photographs

The review of historical aerial photographs and maps of the Project Area provides information on the past land uses of the Project Area and potential for buried archaeological sites. This information shows that the Project Area has been primarily used for agricultural and ranching purposes. The following is a summary of the review of historical maps and photographs:

- The 1854 GLO Plat map for Township 12 South, Range 22 East depicts the Project Area as undeveloped and located between Dry Creek to the north and Dry Creek (present-day Dog Creek) to the south.
- The 1922 USGS Round Mountain, California topographic quadrangle (1:31,680 scale) depicts the Project Area as undeveloped. Tollhouse Road, which is labeled "Fresno and Tollhouse Road", is adjacent the Project Area's southern boundary.
- The 1946 USGS Clovis, California topographic quadrangle (1:62,500 scale) depicts the Project Area as undeveloped. The Friant-Kern Canal is adjacent to the Project Area's western boundary.
- An aerial photograph from 1957 shows the Project Area as farmland with rows of crops located in the southwest portion of the Project Area. A small square of land, which appears to be a possible farmhouse complex, is located to the east of the crop rows.
- An aerial photograph from 1962 shows the Project Area as farmland with rows of crops located throughout. The farmhouse complex visible in the 1957 photograph is still shown.
- The 1964 USGS Round Mountain, California topographic quadrangle (1:24,000 scale) depicts the Project Area as undeveloped. The map depicts a well in the northeastern portion of the Project Area, in addition to a structure and a blue square in the south-central portion of the Project Area, along Tollhouse Road. A levee is located just outside of the northern boundary of the Project Area.
- The 1982 USGS Fresno, California topographic quadrangle (1:100,000 scale) depicts the Project Area as undeveloped. The map depicts the Friant-Kern Canal to the west of the Project Area. The map also depicts Tollhouse Road as "State Route 168," to the south of the Project Area.
- An aerial photograph from 1984 reveals that the Project Area consists of grassy fields. The farmhouse complex visible in previous photographs is still present. The photograph shows a small retention basin adjacent to the location of the farmhouse complex.
- All other aerial photographs from 1998, 2005, 2009, 2010, 2012, 2014, 2016, 2018, 2020, and 2022 show the Project Area in its present-day state.

In sum, the Project Area has never been developed for commercial or residential purposes and has been used primarily as farmland or pastureland.

5.2 Sacred Lands File Results

A search of the Sacred Lands File by the NAHC failed to indicate the presence of Native American cultural resources in the Project Area. Appendix B provides a record of all correspondence to date.

5.3 Other Interested Party Consultation Results

As of the preparation of this document, ECORP has not received a response to the letter sent to the Fresno County Historical Society.

5.4 Field Survey Results

ECORP surveyed the Project Area for cultural resources on March 24 and 25, 2025. Most of the Project Area comprises fallow pastureland used for cattle grazing; however, ECORP observed evidence of previous agricultural activity in the form of a series of north–south- and east–west-oriented windrows and field irrigation features, including standpipes, pumps, and irrigation valves. A rural residence and animal corrals are located in the central-southern portion of the Project Area, adjacent to Tollhouse Road. A dry retention basin is located immediately west of the residence. Ground surface visibility during the survey was very poor (0 to 5 percent) because most of the ground surface was covered by dense grasses and weeds (Figure 4). The greatest surface exposure was within cattle trails and in the form of bare spots on the windrows and across the ground surface (Figures 5 and 6).



**Figure 4. Project Area Overview
(view southwest; January 25, 2025).**



**Figure 5. Cattle Trail within the Project Area
(view north; January 24, 2025).**



**Figure 6. Exposed Ground in Windrows
(view south; January 24, 2025).**

5.4.1 Cultural Resources

As a result of previous investigations by other firms, no previously recorded archaeological or built environment resources are located within the Project Area. During the 2025 survey, ECORP did not identify any new archaeological resources within the Project Area but identified a rural residence and agricultural irrigation features (Figures 7 and 8). The rural residence appears on the 1964 USGS Round Mountain, California topographic quadrangle and on a 1965 aerial photograph of the region, which suggests that the residence is at least 61 years old. A review of aerial photographs indicates that the Project Area has been used for agricultural or ranching purposes since 1957 (earliest available aerial photographs). While the residence is not visible on the 1957 aerial photographs, it is possible that some or all of the irrigation features identified within the Project Area could be historic in age. The animal corrals identified during the survey do not appear on any historic aerial photographs and may be of recent construction.



**Figure 7. Rural Residence within the Project Area
(view north; January 25, 2025).**



**Figure 8. Agricultural Irrigation Feature
(view west; January 24, 2025).**

The survey noted the presence of previously recorded resource P-10-5801 (Friant-Kern Canal) adjacent to the Project Area's western boundary. However, the Project does not propose any alterations or encroachments to the Friant-Kern Canal. The survey also noted the presence of Tollhouse Road located adjacent to the Project Area on the south. This road appears on the 1922 USGS Round Mountain, California topographic map in its present alignment.

6.0 MANAGEMENT CONSIDERATIONS

6.1 Conclusions

The 2025 ECORP survey identified built environment resources that date to the historic period within the Project Area. These resources have not been recorded or evaluated using NRHP/CRHR eligibility criteria; therefore, ECORP recommends avoidance. Until the Lead Agencies concur with the identification and evaluation of eligibility of cultural resources, no Project activity should occur.

6.2 Likelihood for Subsurface Cultural Resources

A review of geologic and soils data indicates the presence of Quaternary-age alluvium deposits within the Project Area. These deposits are likely derived from nearby drainages such as Dry Creek, which is located approximately 900 feet north of the Project Area. The presence of alluvial deposits that are old enough to contain evidence of human occupation, in addition to the location of nearby perennial drainages, indicates a high potential to encounter buried pre-contact archaeological deposits within the Project Area. The use of the Project Area for farming and ranching purposes indicates a moderate potential to encounter buried artifacts that date to the historic period within the Project Area.

6.3 Recommendations

6.3.1 Contractor Awareness Training

The lead agency shall ensure that a Contractor Awareness Training Program is delivered to train equipment operators about cultural resources. The program shall be designed to inform construction personnel about: federal and state regulations pertaining to cultural resources and tribal cultural resources; the subsurface indicators of resources that shall require a work stoppage; procedures for notifying the lead agency of any occurrences; project-specific requirements and mitigation measures; and enforcement of penalties and repercussions for non-compliance with the program.

The training shall be prepared by a qualified professional archaeologist and may be provided either through a brochure, video, or in-person tailgate meeting, as determined appropriate by the archaeologist. The training shall be provided to all construction supervisors, forepersons, and operators of ground-disturbing equipment. All personnel shall be required to sign a training roster. The construction manager is responsible for ensuring that all required personnel receive the training. The Construction Manager shall provide a copy of the signed training roster to the lead agency as proof of compliance.

6.3.2 Archaeological Monitoring

Prior to the start of construction, the Project Proponent shall retain a qualified professional archaeologist to observe all ground-disturbing activities associated with Project construction. Monitoring is not required for placement of equipment or fill inside excavations that were monitored, above-ground construction activities, or redistribution of soils that were previously monitored (such as the return of stockpiles to use in backfilling).

The Monitoring Archaeologist shall meet or work under the direct supervision of a professional archaeologist meeting the Secretary of the Interior's professional qualifications standards for prehistoric and historic archaeology. The monitors shall have the authority to temporarily halt ground-disturbing or construction-related work within 100 feet of any discovery of potential archaeological resources in order to address unanticipated discoveries.

6.3.3 Post-Review Discoveries

There always remains the potential for ground-disturbing activities to expose previously unrecorded cultural resources. Both CEQA and Section 106 of the NHPA require the lead agency to address any unanticipated cultural resource discoveries during Project construction. Therefore, ECORP recommends the following procedures.

- If subsurface deposits believed to be cultural or human in origin are discovered during construction, all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology, shall be retained to evaluate the significance of the find, and shall have the authority to modify the no-work radius as appropriate, using professional judgment. The following notifications shall apply, depending on the nature of the find:
 - If the professional archaeologist determines that the find does not represent a cultural resource, work may resume immediately, and no agency notifications are required.
 - If the professional archaeologist determines that the find does represent a cultural resource from any time period or cultural affiliation, the archaeologist shall immediately notify the lead agencies. The agencies shall consult on a finding of eligibility and implement appropriate treatment measures, if the find is determined to be a Historical Resource under CEQA, as defined by CEQA or a historic property under Section 106 of the NHPA, if applicable. Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the site either: 1) is not a Historical Resource under CEQA or a Historic Property under Section 106; or 2) that the treatment measures have been completed to their satisfaction.
 - If the find includes human remains, or remains that are potentially human, they shall ensure reasonable protection measures are taken to protect the discovery from disturbance (AB 2641). The archaeologist shall notify the Fresno County Coroner (per § 7050.5 of the Health and Safety Code). The provisions of § 7050.5 of the California Health and Safety Code, § 5097.98 of the California PRC, and AB 2641 will be implemented. If the coroner determines the remains are Native American and not the result of a crime scene, the coroner will notify the NAHC, which then will designate a Native American Most Likely Descendant (MLD) for the Project (§ 5097.98 of the PRC). The designated MLD will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (§ 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§ 5097.98 of the PRC). This will also include either

recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.

7.0 REFERENCES CITED

- Alchetron. 2024. *Gabriel Moraga*. <https://alchetron.com/Gabriel-Moraga>. Accessed March 3, 2025.
- Avella, Stephen. 2003. *Sacramento: Indomitable City*. Arcadia Publishing, Charleston, SC.
- Baumhoff, M. A. and D. L. Olmsted. 1963. Palaihnihan: Radiocarbon Support for Glottochronology. In *American Anthropologist* 65(2):278-284.
- Beardsley, R. K. 1954. *Temporal and Areal Relationships in Central California Archaeology, Parts I & II*. University of California Archaeological Survey Reports, Nos. 24 & 25, Berkeley.
- _____. 1948. Cultural Sequences in Central California Archaeology. In *American Antiquity* 14:1-28.
- Bennyhoff, James A. 1994. Central California Augustine: Implications for Northern California Archaeology. In *Towards a New Taxonomic Framework for Central California Archaeology: Essays by James A. Bennyhoff and David A. Fredrickson*, edited by R.E. Hughes, pp. 65-74. Contributions of the University of California Archaeological Research Facility 52, Berkeley.
- _____. 1950. California Fish Spears and Harpoons. In *University of California Anthropological Records* 9:295-338.
- Bennyhoff, James A. and D. Fredrickson. 1994. A Proposed Integrative Taxonomic System for Central California Archaeology. In *Towards a New Taxonomic Framework for Central California Archaeology: Essays by James A. Bennyhoff and David A. Fredrickson*, edited by R.E. Hughes, pp. 15-24. Contributions of the University of California Archaeological Research Facility 52, Berkeley.
- Bos, Peg. 2024. *Let's Talk Clovis: A Historical Timeline Spanning More than a Century*. Clovis Roundup. <https://clovisroundup.com/lets-talk-clovis-a-historical-timeline-spanning-more-than-a-century/>. Accessed March 13, 2025.
- Bureau of Land Management (BLM). n.d. *Bureau of Land Management, General Land Office Records, Records Automation website*. <http://www.glorerecords.blm.gov/>. Accessed March 21, 2025.
- California Department of Transportation (Caltrans). 2019. *Structure and Maintenance & Investigations, Historical Significance–Local Agency Bridges Database March 2019*. Archived on April 27, 2019 at: https://web.archive.org/web/20190427205351/https://dot.ca.gov/hq/structur/strmaint/hs_local.pdf. Accessed March 19, 2025.
- _____. 2018. *Structure and Maintenance & Investigations, Historical Significance–State Agency Bridges Database September 2018*. Archived on June 3, 2019 at: https://web.archive.org/web/20190603060602/http://www.dot.ca.gov/hq/structur/strmaint/hs_state.pdf. Accessed March 19, 2025.
- California State University Monterey Bay. n.d. *U.S. Government Legislation and Statutes*. https://digitalcommons.csumb.edu/hornbeck_usa_2_d/14/. Accessed March 19, 2025.
- Chau, Brooke. 2022. *The Legacy of Old Town Clovis is What Some May Say Started the "Clovis Way of Life"*. Clovis Roundup. <https://clovisroundup.com/the-legacy-of-old-town-clovis-is-what-some-may-say-started-the-clovis-way-of-life/>. Accessed March 13, 2025.

- City of Clovis. n.d. *About Clovis*. <https://cityofclovis.com/government/about-clovis/>. Accessed March 13, 2025.
- ECORP Consulting, Inc. 2022. *Biological Resource Assessment for the Triangle Property Project*. January 2022.
- Erlandson, J. M. 1994. *Early Hunter-Gatherers of the California Coast*. Plenum Press, New York.
- Fredrickson, David A. 1994. Spatial and Cultural Units in Central California Archaeology. In *Toward a New Taxonomic Framework for Central California Archaeology: Essays by James A. Bennyhoff and David A. Fredrickson*, edited by R. E. Hughes, pp. 25-48. Contributions to the University of California Archaeological Research Facility no. 52.
- _____. 1974. Cultural Diversity in Early Central California: A view from the North Coast Ranges. In *Journal of California Anthropology* 1:41-54.
- _____. 1973. *Early Cultures of the North Coast and North Coast Ranges, California*. Ph.D. diss., University of California, Davis.
- _____. 1968. *Archaeological Investigations at CCO-30 near Alamo, Contra Costa County, California*. Center for Archaeological Research at Davis Publication no. 1. University of California, Davis.
- Heizer, Robert F. 1949. *The Archaeology of Central California, I: The Early Horizon*. University Of California Anthropological Records 12(1):1-84. Berkeley, California.
- Hull, Kathleen 2007. The Sierra Nevada: Archaeology in the Range of Light. In *California Prehistory: Colonization, Culture, and Complexity*. edited by T. Jones and K. Klar, pp. 177-190. Altamira Press, Lanham, Maryland.
- Hurtado, Albert L. 2006. *John Sutter: A Life on the North American Frontier*. University of Oklahoma Press, Norman, OK.
- Jackson County Genealogy Library. n.d. Scrip-Warrants Act. <https://archive.rvgslibrary.org/Land/Scrip-Warrant.html>. Accessed March 19, 2025.
- Johnson, Jerald J. 1970. Archaeological Investigations at the Applegate Site (4-Ama-56). In *University of California, Center for Archaeological Research at Davis, Publications* 2:65-144.
- _____. 1967. *The Archaeology of the Camanche Reservoir Locality, California*. Sacramento Archaeological Society Papers No. 6. Sacramento, California.
- Kowta, M. 1988. *The Archaeology and Prehistory of Plumas and Butte Counties, California: An Introduction and Interpretive Model*. Report on file, North Central Information Center, Department of Anthropology, California State University, Sacramento.
- Kroeber, A. L. 1925. *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78. Washington.
- Kyle, Douglas. 2002. *Historic Spots in California*. Stanford University Press. Stanford, California.

- Lillard, J. B., R. F. Heizer, and F. Fenenga. 1939. *An Introduction to the Archaeology of Central California*. Sacramento Junior College, Department of Anthropology Bulletins, No. 2, Sacramento.
- Lindström, S. G. 1990. Submerged Tree Stumps as Indicators of Mid-Holocene Aridity in the Lake Tahoe Basin. In *Journal of California and Great Basin Anthropology* 12:146-57.
- Matthews, R. A. and J. L. Burnett. 1965. *Geologic Map of California: Fresno Sheet*. California Division of Mines and Geology. https://ngmdb.usgs.gov/Prodesc/proddesc_381.htm. Accessed March 26, 2025.
- McCawley, William. 1996. *The First Angelinos: the Gabrielino Indians of Los Angeles*. Malki Museum Press, Ballena Press, Banning, California.
- McHenry, H. 1968. Transverse Lines in Long Bones of Pre-contact California Indians. In *American Journal of Physical Anthropology* 29 (1): 1-18.
- Meyer, J. and J. S. Rosenthal. 1997. *Archaeological and Geoarchaeological Investigations at Eight Prehistoric Sites in the Los Vaqueros Reservoir Area, Contra Costa County, California*. Anthropological Studies Center, Sonoma State University Academic Foundation, Rohnert Park, California. Submitted to the Contra Costa County Water District, Concord, California. Copies available at the Northwest Information center, Sonoma State University, Rohnert Park.
- Moratto, M. J. 1984. *California Archaeology*. Academic Press, Orlando.
- National Park Service (NPS). n.d. *National Register of Historic Places, Digital Archive on NPGallery*. <https://npgallery.nps.gov/nrhp>. Accessed March 19, 2025.
- _____. 1983. *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines*. 48 Federal Register 44716-68.
- Natural Resources Conservation Service. 2019. *Natural Resources Conservation Service Web Soil Survey*. <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. Accessed March 13, 2025.
- Office of Historic Preservation (OHP). 2025a. *Office of Historic Preservation's Built Environment Resource Directory (BERD), dated September 23, 2023 for Fresno County*. <https://ohp.parks.ca.gov/pages/1068/files/Fresno.csv>. Accessed March 19, 2025.
- _____. 2025b. *California Historical Landmarks*. https://ohp.parks.ca.gov/?page_id=21418. Accessed March 19, 2025.
- _____. 1999. *Directory of Properties in the Historical Resources Inventory*.
- _____. 1996. *California Historical Landmarks*. California Department of Parks and Recreation, Sacramento, California.
- _____. 1992. *California Points of Historical Interest*. California Department of Parks and Recreation, Sacramento, California.
- Ragir, S. 1972. *The Early Horizon in Central California Prehistory*. Contributions of the University of California Archaeological Research Facility 15. Berkeley.

- Rondeau, M. F. 1980. *The Archaeology of the Salmon Creek Site, Sierra County, California*. Submitted to Tahoe National Forest, Nevada City, California.
- Rosenthal, J., and K. McGuire. 2004. *Middle Holocene Adaptations in the Central Sierra Nevada Foothills: Data Recovery Excavations at the Black Creek Site CA-CAL-789*. Far Western Anthropological Research Group, Davis. Copies available from Central California Information Center, Department of Anthropology, California State University, Stanislaus, Turlock.
- Rosenthal, J., G. White, and M. Sutton. 2007. The Central Valley: A View from the Catbird's Seat. In *California Prehistory: Colonization, Culture, and Complexity*, edited by T. Jones and K. Klar, pp. 147-163. Altamira Press, Lanham, Maryland.
- Schulz, Peter. 1970. Report of site and burial. In *Society for California Archaeology Newsletter* 4(2&3):23-24. Archived at: https://drive.google.com/file/d/1rsOKbz5nKL_hp4ee0nvSnTfLSQHYAJCI/view?usp=drive_link.
- Shipley, W. F. 1978. Native Languages of California. In *Handbook of North American Indians, Vol. 8: California*, edited by R. F. Heizer, pp. 80-90. Smithsonian Institution, Washington, D.C.
- Spier, Robert F. G. 1978. Foothill Yokuts. In *Handbook of North American Indians, Volume 8 California*, edited by Robert F. Heizer, pp. 471-484. Smithsonian Institution, Washington.
- Starr, Kevin. 2005. *California: A History*. Modern Library, New York.
- Stine, S. 1994. Extreme and Persistent Drought in California and Patagonia During Mediaeval Times. In *Nature* 369:546-549.
- Sundahl, E. M. 1992. Cultural Patterns and Chronology in the Northern Sacramento River Drainage. In *Proceedings of the Society for California Archaeology* 5, edited by M. D. Rosen, L. E. Christiansen, and D. Laylander, pp. 89-112. Society for California Archaeology, San Diego.
- _____. 1982. *The Shasta Complex in the Redding Area, California*. M.A. Thesis, California State University, Chico.
- Visit Clovis. 2019. *About the City of Clovis*. <https://www.visitclovis.com/about-the-city-of-clovis/>. Accessed March 13, 2025.
- Wallace, William J. 1978. Post-Pleistocene Archeology, 9000 to 2000 BC. In *Handbook of North American Indians, Vol. 8: California*, edited by R.F. Heizer, pp. 25-36. Smithsonian Institution, Washington, D.C.
- Wohlgemuth, Eric. 2004. *The Course of Plant Food Intensification in Native Central California*. Ph.D. Dissertation, Department of Anthropology, University of California, Davis.
- _____. 1984. *Archaeological Investigations at CA-PLA-500, the Sailor Flat Site, Placer County, California*. Tahoe National Forest Cultural Resources Report 16. Tahoe National Forest, Nevada City, California.

LIST OF APPENDICES

Appendix A – Records Search Confirmation and Historical Society Coordination

Appendix B – Sacred Lands File Coordination

Appendix C – Project Area Photographs

Records Search Confirmation and Historical Society Coordination

CHRIS Data Request Form

ACCESS AND USE AGREEMENT NO.: 34.00 **IC FILE NO.:** _____

To: Southern San Joaquin Valley Information Center

Print Name: Robert Ramirez Date: 02/24/2025

Affiliation: ECORP Consulting, Inc

Address: 111 Academy Way, Suite 210

City: Irvine State: CA Zip: 92617

Phone: (559) 368-1978 Fax: _____ Email: rramirez@ecorpconsulting.com

Billing Address (if different than above): 2525 Warren Dr. Rocklin, CA 95677

Billing Email: sdonnelly@ecorpconsulting.com Billing Phone: (916) 782-9100

Project Name / Reference: Sample Ranch

Project Street Address: _____

County or Counties: Fresno

Township/Range/UTMs: T 12S/R 22E/11S 4083445.81 mN/269548.83 mE

USGS 7.5' Quad(s): Round Mountain 1964

PRIORITY RESPONSE (Additional Fee): yes ☐ / no ☒

TOTAL FEE NOT TO EXCEED: \$ 800.00

(If blank, the Information Center will contact you if the fee is expected to exceed \$1,000.00)

Special Instructions:

Information Center Use Only

Date of CHRIS Data Provided for this Request: _____

Confidential Data Included in Response: yes ☐ / no ☒

Notes: _____

CHRIS Data Request Form

Mark the request form as needed. Attach a PDF of your project area (with the radius if applicable) mapped on a 7.5' USGS topographic quadrangle to scale 1:24000 ratio 1:1 neither enlarged nor reduced and include a shapefile of your project area, if available. Shapefiles are the current CHRIS standard for submitting digital spatial data for your project area or radius. **Check with the appropriate IC for current availability of digital data products.**

- Documents will be provided in PDF format. Paper copies will only be provided if PDFs are not available at the time of the request or under specially arranged circumstances.
- Location information will be provided as a digital map product (Custom Maps or GIS data) unless the area has not yet been digitized. In such circumstances, the IC may provide hand drawn maps.
- In addition to the \$150/hr. staff time fee, client will be charged the Custom Map fee when GIS is required to complete the request [e.g., a map printout or map image/PDF is requested and no GIS Data is requested, or an electronic product is requested (derived from GIS data) but no mapping is requested].

For product fees, see the CHRIS IC Fee Structure on the [OHP website](#).

1. Map Format Choice:

Select One: Custom GIS Maps ☐ GIS Data ☐ Custom GIS Maps **and** GIS Data ☐ No Maps ☐

Any selection below left unmarked will be considered a "no."

Location Information:

	Within project area	Within 1 _____ radius
ARCHAEOLOGICAL Resource Locations¹		
NON-ARCHAEOLOGICAL Resource Locations Report Locations¹	yes ☐ / no ☐	yes ☐ / no ☐
"Other" Report Locations²	yes ☐ / no ☐	yes ☐ / no ☐

3. Database Information:

(contact the IC for product examples, or visit the [SSJVIC website](#) for examples)

	Within project area	Within 1 _____ radius
ARCHAEOLOGICAL Resource Database¹		
List (PDF format)	yes ☐ / no ☐	yes ☐ / no ☐
Detail (PDF format)	yes ☐ / no ☐	yes ☐ / no ☐
Excel Spreadsheet	yes ☐ / no ☐	yes ☐ / no ☐
NON-ARCHAEOLOGICAL Resource Database		
List (PDF format)	yes ☐ / no ☐	yes ☐ / no ☐
Detail (PDF format)	yes ☐ / no ☐	yes ☐ / no ☐
Excel Spreadsheet	yes ☐ / no ☐	yes ☐ / no ☐
Report Database¹		
List (PDF format)	yes ☐ / no ☐	yes ☐ / no ☐
Detail (PDF format)	yes ☐ / no ☐	yes ☐ / no ☐
Excel Spreadsheet	yes ☐ / no ☐	yes ☐ / no ☐
Include "Other" Reports ²	yes ☐ / no ☐	yes ☐ / no ☐

4. Document PDFs (paper copy only upon request):

	Within project area	Within 1 _____ mi. radius
ARCHAEOLOGICAL Resource Records¹		
NON-ARCHAEOLOGICAL Resource Records Reports¹	yes ☐ / no ☐	yes ☐ / no ☐
"Other" Reports²	yes ☐ / no ☐	yes ☐ / no ☐

CHRIS Data Request Form

5. Eligibility Listings and Documentation:

Within project area Within 1 mi. radius**OHP Built Environment Resources Directory³:**

Directory listing only (Excel format)

yes ☐ / no ☐yes ☐ / no ☐

Associated documentation

yes ☐ / no ☐yes ☐ / no ☐**OHP Archaeological Resources Directory^{1,5}:**

Directory listing only (Excel format)

yes ☐ / no ☐yes ☐ / no ☐Associated documentation⁴yes ☐ / no ☐yes ☐ / no ☐**California Inventory of Historic Resources (1976):**

Directory listing only (PDF format)

yes ☐ / no ☐yes ☐ / no ☐Associated documentation⁴yes ☐ / no ☐yes ☐ / no ☐

6. Additional Information:

The following sources of information may be available through the Information Center. However, several of these sources are now available on the [OHP website](#) and can be accessed directly. The Office of Historic Preservation makes no guarantees about the availability, completeness, or accuracy of the information provided through these sources. Indicate below if the Information Center should review and provide documentation (if available) of any of the following sources as part of this request.

Caltrans Bridge Survey
Ethnographic Information
Historical Literature
Historical Maps
Local Inventories
GLO and/or Rancho Plat Maps
Shipwreck Inventory
Soil Survey Maps

yes ☐ / no ☐
 yes ☐ / no ☐
 yes ☐ / no ☐
 yes ☐ / no ☐
 yes ☐ / no ☐
 yes ☐ / no ☐
 yes ☐ / no ☐
 yes ☐ / no ☐

¹ In order to receive archaeological information, requestor must meet qualifications as specified in Section III of the current version of the California Historical Resources Information System Information Center Rules of Operation Manual and be identified as an Authorized User or Conditional User under an active CHRIS Access and Use Agreement.

² "Other" Reports GIS layer consists of report study areas for which the report content is almost entirely non-fieldwork related (e.g., local/regional history, or overview) and/or for which the presentation of the study area boundary may or may not add value to a record search.

³ Provided as Excel spreadsheets with no cost for the rows; the only cost for this component is IC staff time. Includes, but not limited to, information regarding National Register of Historic Places, California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and historic building surveys. Previously known as the HRI and then as the HPD, it is now known as the Built Environment Resources Directory (BERD). The Office of Historic Preservation compiles this documentation and it is the source of the official status codes for evaluated resources.

⁴ Associated documentation will vary by resource. Contact the IC for further details.

⁵ Provided as Excel spreadsheets with no cost for the rows; the only cost for this component is IC staff time. Previously known as the Archaeological Determinations of Eligibility, now it is known as the Archaeological Resources Directory (ARD). The Office of Historic Preservation compiles this documentation and it is the source of the official status codes for evaluated resources.



3/10/2025

Robert Ramirez
ECORP Consulting, Inc.
111 Academy Way, Suite 210
Irvine, CA 92617

Re: Sample Ranch
Records Search File No.: 25-092

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on Academy & Round Mtn. USGS 7.5' quads. The following reflects the results of the records search for the project area and the 1.0 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 ☐ Hand Drawn Maps (Inyo County Only)

Resources within project area:	None
Resources within 1.0 mile radius:	P-10-001155, 002574, 002610, 002718, 002719, 004970, 004971, 004993, 005801
Reports within project area:	FR-00661, 01130, 01588, 01590, 02658
Reports within 1.0 mile radius:	FR-00284, 00523, 00524, 00548, 00795, 01140, 01589, 01876, 02414, 02660

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.glorerecords.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.

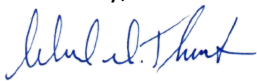
The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained 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

Report List

SSJVIC Record Search 25-092

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-00284		1992	Bissonnette, Linda Dick	Cultural Resources Assessment: Rural Residential Development, Shepherd, Academy, and SR 168, Fresno County	Cultural Resources Consultant	

Report List

SSJVIC Record Search 25-092

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-00523	NADB-R - 1140205	1992	Kus, James S., Wren, Donald G., and Mader, Claudia A.	Archaeological Survey of the Academy Specific Plan Area, Fresno County, California	California State University, Fresno	10-002666, 10-002667, 10-002668, 10-002669, 10-002670, 10-002671, 10-002672, 10-002673, 10-002674, 10-002675, 10-002676, 10-002677, 10-002678, 10-002679, 10-002680, 10-002681, 10-002682, 10-002683, 10-002684, 10-002685, 10-002686, 10-002687, 10-002688, 10-002689, 10-002690, 10-002691, 10-002692, 10-002693, 10-002694, 10-002695, 10-002696, 10-002697, 10-002698, 10-002699, 10-002700, 10-002701, 10-002702, 10-002703, 10-002704, 10-002705, 10-002706, 10-002707, 10-002708, 10-002709, 10-002710, 10-002711, 10-002712, 10-002713, 10-002714, 10-002715, 10-002716, 10-002717, 10-002718, 10-002719, 10-002720, 10-002721, 10-002722, 10-002723, 10-002724, 10-002725, 10-002726, 10-002727, 10-002728, 10-002729, 10-002730, 10-002731, 10-002732, 10-002733, 10-002734, 10-002735, 10-002736, 10-002737, 10-002738, 10-002739, 10-002740, 10-002741, 10-002742, 10-002743, 10-002744, 10-002745, 10-002746, 10-002747, 10-002748, 10-002749, 10-002750, 10-002751, 10-002752, 10-002753, 10-002754, 10-002755, 10-002756, 10-002757, 10-002758, 10-002759, 10-002760, 10-002761, 10-002762, 10-002763, 10-002764, 10-002765, 10-002770, 10-002771, 10-002772, 10-002773, 10-002774, 10-002775, 10-002776, 10-002777, 10-002778, 10-002779, 10-002780, 10-002781, 10-002782, 10-002783, 10-002784, 10-002785, 10-002786, 10-002787, 10-002788, 10-002789, 10-002790, 10-002791, 10-002792, 10-002793, 10-002794, 10-002795, 10-002796, 10-002797, 10-002798, 10-002799, 10-002800, 10-002801, 10-002802, 10-002803, 10-002804, 10-002805, 10-002806, 10-002807,

Report List

SSJVIC Record Search 25-092

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
						10-002808, 10-002809, 10-002810, 10-002811, 10-002812, 10-002813, 10-002814, 10-002815, 10-002816, 10-002817, 10-002818, 10-002819, 10-002820, 10-002821, 10-002822, 10-002823, 10-002824, 10-002825, 10-002826, 10-002827, 10-002828, 10-002829, 10-002830, 10-002831, 10-002832, 10-002833, 10-002834, 10-002835, 10-002836, 10-002837, 10-002838, 10-002839, 10-004435, 10-004436, 10-004438, 10-004439

Report List

SSJVIC Record Search 25-092

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-00524		1992	Kus, James S., Wren, Donald G., and Mader, Claudia A.	Archaeological Survey of the Academy Specific Plan Area, Fresno County, California	California State University, Fresno	10-002666, 10-002667, 10-002668, 10-002669, 10-002670, 10-002671, 10-002672, 10-002673, 10-002674, 10-002675, 10-002676, 10-002677, 10-002678, 10-002679, 10-002680, 10-002681, 10-002682, 10-002683, 10-002684, 10-002685, 10-002686, 10-002687, 10-002688, 10-002689, 10-002690, 10-002691, 10-002692, 10-002693, 10-002694, 10-002695, 10-002696, 10-002697, 10-002698, 10-002699, 10-002700, 10-002701, 10-002702, 10-002703, 10-002704, 10-002705, 10-002706, 10-002707, 10-002708, 10-002709, 10-002710, 10-002711, 10-002712, 10-002713, 10-002714, 10-002715, 10-002716, 10-002717, 10-002718, 10-002719, 10-002720, 10-002721, 10-002722, 10-002723, 10-002724, 10-002725, 10-002726, 10-002727, 10-002728, 10-002729, 10-002730, 10-002731, 10-002732, 10-002733, 10-002734, 10-002735, 10-002736, 10-002737, 10-002738, 10-002739, 10-002740, 10-002741, 10-002742, 10-002743, 10-002744, 10-002745, 10-002746, 10-002747, 10-002748, 10-002749, 10-002750, 10-002751, 10-002752, 10-002753, 10-002754, 10-002755, 10-002756, 10-002757, 10-002758, 10-002759, 10-002760, 10-002761, 10-002762, 10-002763, 10-002764, 10-002765, 10-002766, 10-002767, 10-002768, 10-002769, 10-002770, 10-002771, 10-002772, 10-002773, 10-002774, 10-002775, 10-002776, 10-002777, 10-002778, 10-002779, 10-002780, 10-002781, 10-002782, 10-002783, 10-002784, 10-002785, 10-002786, 10-002787, 10-002788, 10-002789, 10-002790, 10-002791, 10-002792, 10-002793, 10-002794, 10-002795, 10-002796, 10-002797, 10-002798, 10-002799, 10-002800, 10-002801, 10-002802, 10-002803,

Report List

SSJVIC Record Search 25-092

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
						10-002804, 10-002805, 10-002806, 10-002807, 10-002808, 10-002809, 10-002810, 10-002811, 10-002812, 10-002813, 10-002814, 10-002815, 10-002816, 10-002817, 10-002818, 10-002819, 10-002820, 10-002821, 10-002822, 10-002823, 10-002824, 10-002825, 10-002826, 10-002827, 10-002828, 10-002829, 10-002830, 10-002831, 10-002832, 10-002833, 10-002834, 10-002835, 10-002836, 10-002837, 10-002838, 10-002839
FR-00548		1987	Meighan, Clement, Dillon, Brian, Verano, John, and Indermill, Roc	Redbank and Fancher Creeks Intensive Cultural Resources Survey, Fresno County, California	UCLA	10-001154, 10-001155, 10-001693, 10-001829
FR-00661	Caltrans - 06-FRE-168 P.M. R8.8/R27.4 06255-342700	1992	Price, Barry A., Moratto, Michael J., and Lebow, C.G.	Archaeological Survey Report of Route 168 Study Areas, Fresno County, California	INFOTEC Research, Inc.	10-000622, 10-000721, 10-001152, 10-001172, 10-002574, 10-002575, 10-002576, 10-002577, 10-002578, 10-002579, 10-002584, 10-002585, 10-002586, 10-002587, 10-002588, 10-002589, 10-002590, 10-002591, 10-002592, 10-002593, 10-002594, 10-002595, 10-002596, 10-002597, 10-002598, 10-002599, 10-002600, 10-002601, 10-002602, 10-002603, 10-002605, 10-002606, 10-002607, 10-002608, 10-002610, 10-002611, 10-002612, 10-002613, 10-002614, 10-002615, 10-002616, 10-002617, 10-002618, 10-002619, 10-002620, 10-002622, 10-002623, 10-002624, 10-002625, 10-002626, 10-002627, 10-002628, 10-002629, 10-002630, 10-002654, 10-002655, 10-002656, 10-002657, 10-002658, 10-002659, 10-002660, 10-002661, 10-002662, 10-002993, 10-004437
FR-00795		1978	Varner, Dudley M.	Archaeological Reconnaissance of the Easterbrook Property, Fresno County, California	California State University, Fresno	
FR-01130		1975	Wren, Donald G. and Crist, Michael	Archaeological Reconnaissance of the Redbank and Fancher Creek Investigation Area	Individual Consultant	10-000632, 10-000633, 10-001154, 10-001155

Report List

SSJVIC Record Search 25-092

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-01140		1988	Fenenga, Franklin, Barros, Philip de, and Langenwalter, Paul	Redbank and Fancher Creeks Archaeological Data Recovery Program (FRE-632, -633, -1154, and -1155), Fresno County, California	MITECH	10-000632, 10-000633, 10-001154, 10-001155
FR-01588	Caltrans - 06-FRE-168 R9.0/14.75 EA #06-342700	1991	Smith, Ephraim K.	Historical Architectural Survey Report for Route 168 Rural Project	California State University, Fresno	10-004993, 10-004994, 10-005014, 10-005015, 10-005017, 10-005303
FR-01589	Caltrans - 06-FRE-168 PM R8.8 - PM R27.4 06254-342700	1989	Dondero, Steven B.	An Archaeological Survey Report for A Portion of the Adopted Route 06-FRE-168 PM R8.8 - PM R27.4 06254-342700	California Department of Transportation	10-000489, 10-000490, 10-000491, 10-000494, 10-000623, 10-001157, 10-001684, 10-002197, 10-002198, 10-002199, 10-002200, 10-002201, 10-002202, 10-002203, 10-002204, 10-002205, 10-002206, 10-002207, 10-002208, 10-002209, 10-002210, 10-002211, 10-002212, 10-002216, 10-002217, 10-002230, 10-002231, 10-002235
FR-01590	Caltrans - 06-FRE-168 R9.0/R28.1	1991	Corbett, Michael R.	Route 168 Temperance Avenue to Lodge Road 06-FRE-168-R9.0/R28.1	Dames and Moore	10-004958
FR-01876		2002	Kus, James S.	Negative Archaeological Survey Report for the Sale Escrow Process for a 40 Acre Parcel Near Academy, Northeast of Clovis, California	James S. Kus & Associates	
FR-02414	Submitter - Contract No. 06A1106; Submitter - Expenditure Authorization No. 06-0A7408	2010	Leach-Palm, Laura, Brandy, Paul, King, Jay, Mikkelson, Pat, Seil, Libby, Hartman, Lindsay, and Bradeen, Jill	Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways in Fresno, Western Kern, Kings, Madera, and Tulare Counties Summary of Methods and Findings	Far Western Anthrpological Research Group, Inc., Davis and JRP Historical Consulting, LLC, Davis	10-004703, 10-005795, 10-005796, 10-005797, 10-005809, 10-005810, 10-006207
FR-02658	Submitter - Contract No. 06SFP8805	1992	Price, Barry A, Moratto, M.J., and Lebow, C.G.	Archaeological Survey Report of Route 168 Study Areas, Fresno County, California	INFOTEC Research, Inc.	10-002611, 10-002612, 10-002613, 10-002614, 10-002615, 10-002616, 10-002617, 10-002618, 10-002619, 10-002620, 10-002622, 10-002623, 10-002624, 10-002625, 10-002626, 10-002627, 10-002628, 10-002629, 10-002655, 10-002656, 10-002658, 10-002659, 10-002660, 10-002661, 10-002662, 10-002993, 10-004437
FR-02660	Caltrans - 06-FRE-168 PM 14.2/15.0 CU 896 EA 0H940	2009	Byers, Todd	Historic Property Survey Report for the State Route 168 Curve Correction at Shepherd Avenue, Northeast of Clovis in Fresno County, California	California Department of Transportation	

Report List

SSJVIC Record Search 25-092

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-02660A		2009	Byers, Todd	Archaeological Survey Report for the State Route 168 Curve Correction at Shepherd Avenue Northeast of Clovis in Fresno County, California	California Department of Transportation	

Resource List

SSJVIC Record Search 25-092

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-10-001155	CA-FRE-001155	Resource Name - CSUF-439; Resource Name - FCC-55	Site	Prehistoric	AP02; AP03; AP04; AP11; AP15	1975 (D. Wren, M. Crist, CSU, Fresno); 1984 (Dr. Brian, D. Dillon party, UCLA Archaeological Survey)	FR-00548, FR-01130, FR-01140, FR-01173
P-10-002574	CA-FRE-002574/H	Resource Name - IRI-66-2/3; Resource Name - Stevenson Orchard	Site	Prehistoric, Historic	AH04; AP03; AP15	1990 (Price, Crisson, Riddell, Whitesell, INFOTEC Research, Inc.); 2009 (K. Ross, et al., Far Western)	FR-00661
P-10-002610	CA-FRE-002610	Resource Name - IRI-66-1	Site	Prehistoric	AP02	1990 (Price, Crisson, Riddell, Whitesell, INFOTEC Research, Inc.)	FR-00661
P-10-002718	CA-FRE-002718	Resource Name - C34 Ridge Site; Resource Name - ASP 54	Site	Prehistoric	AP04	1991 (D. Forrest, J. Kus, C. Mader, CSU Fresno)	FR-00523, FR-00524
P-10-002719	CA-FRE-002719	Resource Name - Bovine Site C#3; Resource Name - ASP 55	Site	Prehistoric	AP04	1991 (D. Forrest, J. Kus, C. Mader, CSU Fresno)	FR-00523, FR-00524
P-10-004970		Resource Name - Sample House	Building	Historic	HP02	1991 (Michael R. Corbett, Dames & Moore)	
P-10-004971		Resource Name - T.J. Ockenden Ranch Site	Structure	Historic	HP32; HP39	1991 (Michael R. Corbett, Dames & Moore)	
P-10-004993		Resource Name - Sample Ranch; Resource Name - D.C. Sample - Harry M. Sample Ranch	Building	Historic	HP02	1990 (E.K. Smith, N.L. Pennington, California State University, Fresno Foundation)	FR-01588
P-10-005801	CA-FRE-003519H	Other - JFR-009; Resource Name - Friant-Kern Canal; OTIS Resource Number - 534628; OHP Property Number - 163703	Structure	Historic	HP20	1991 (Unknown, Unknown); 2001 (Lex Palmer, Applied EarthWorks); 2008 (Mark Beason, Rebecca Flores, JRP Historical Consulting, LLC.); 2016 (Randy Baloian, Applied Earthworks)	FR-02846



March 26, 2025

Fresno County Historical Society
7160 W. Kearney Boulevard
Fresno, CA 93706

RE: *Cultural Resources Identification Effort for the Sample Ranch Project, Fresno County, California*

Dear Fresno County Historical Society:

ECORP Consulting, Inc. has been retained to assist in the planning of the development on the project indicated above. The proposed project consists of approximately 119 acres located in Sections 20 and 21 of Township 12 South, Range 22 East, as depicted on the enclosed map. The Project Area is bounded on the west by the Friant Kern Canal and Tollhouse Road on the south in Fresno County. As part of the identification effort, we are seeking information from all parties that may have knowledge of or concerns with historic properties or cultural resources in the Project Area.

Included is a map showing the project area outlined. We would appreciate input on this undertaking from the historical society with concerns about possible cultural properties or potential impacts within or adjacent to the area of potential effect. If you have any questions, please contact me at (559) 368-1978 or rramirez@ecorpconsulting.com.

Thank you in advance for your assistance in our cultural resource management study.

Sincerely,

Robert Ramirez

Robert Ramirez, RPA
Senior Archaeologist/Principal Investigator

Attachment(s)
Project Location and Vicinity Map

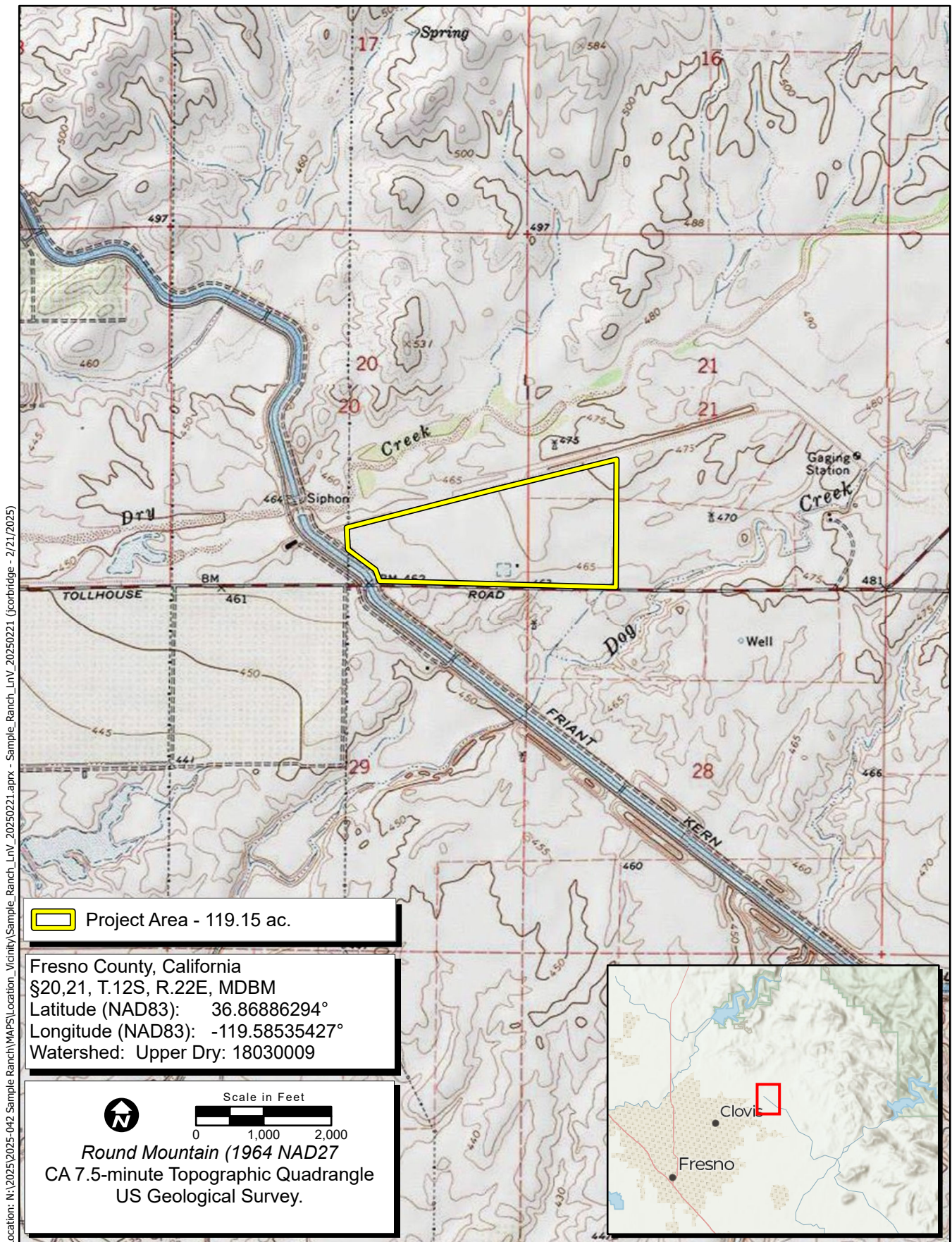


Figure 1. Project Location and Vicinity

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission

1550 Harbor Blvd, Suite 100

West Sacramento, CA 95691

916-373-3710

916-373-5471 – Fax

nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Sample Ranch

County: Fresno

USGS Quadrangle Name: Round Mountain 1964

Township: 12S **Range:** 22E **Section(s):** 20,21

Company/Firm/Agency: ECORP Consulting, Inc.

Street Address: 111 Academy Way, Suite 210

City: Irvine **Zip:** 92617

Phone: (559) 368-1978

Fax: (714) 648-0935

Email: rramirez@ecorpconsulting.com

Project Description:

Project proposes to construct a residential development on 119 acres in Fresno County.

Please reference the project number 2025-042 on all correspondence.



NATIVE AMERICAN HERITAGE COMMISSION

February 24, 2025

Robert Ramirez
ECORP Consulting, Inc.

Via Email to: rramirez@ecorpconsulting.com

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
Reid Milanovich
Cahuilla

COMMISSIONER
Bennae Calac
Pauma-Yuima Band of
Luiseño Indians

Commissioner
Vacant

ACTING EXECUTIVE
SECRETARY
STEVEN QUINN

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov

Re: Sample Ranch Project, Fresno County

To Whom It May Concern:

As requested, a record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed based on information submitted for the above referenced project. The results were negative. Please note that tribes do not always record their sacred sites in the SLF, nor are they required to do so. As such, a SLF search is not a substitute for consultation with all tribes that are traditionally and culturally affiliated with a project's geographic area.

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. Please contact all of those listed; if they cannot supply information, they may recommend others with specific knowledge. If within two weeks of notification, a response has not been received, the Commission requests that you follow-up with a telephone call or email to ensure that the project information was received.

If you receive notification of a change of address or phone number from a tribe, please notify the NAHC so that we can assure that our lists contain current information.

In addition to engaging in tribal consultation, you should consult the appropriate regional California Historical Research Information System (CHRIS) archaeological Information Center to determine whether it has information regarding the presence of recorded archaeological sites within the project area.

If you have any questions or need additional information, please contact me at melina.carlos@nahc.ca.gov.

Sincerely,

Melina Carlos

Melina Carlos
Cultural Resources Analyst

Attachment

County	Tribal Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Fresno	Anah Mutsun Tribal Band	N	Valentin Lopez, Chairperson	P.O. Box 5272 Galt, CA, 95632	(916) 743-5833		vjlleslingcenter@aol.com	Costanoan Northern Valley Yokut	Alameda,Calaveras, Contra Costa,Fresno,Madera,Mariposa,Merced,Monterey,San Benito,San Francisco, San	7/20/2023
	Anah Mutsun Tribal Band	N	Ed Ketchum, Vice-Chairperson		(530) 578-3864		aerneways@aol.com	Costanoan	Alameda,Calaveras, Contra	7/20/2023
	Klamemuk & Yowlumne Tejon Indians	N	Della Dominguez, Chairperson	115 Radio Street Bakersfield, CA, 93305	(626) 339-6785		2deedominguez@gmail.com	Northern Valley Yokut Klamemuk Southern Valley Yokut	Costa,Fresno,Madera,Mariposa,Merced,Monterey,Kern,Kings,Los Angeles,Madera,Monterey, San Benito,San Luis Obispo, Tulare	
	Northern Valley Yokut / Ohlone Tribe	N	Katherine Perez, Chairperson	P.O. Box 717 Linden, CA, 95236	(209) 649-8972		caruties@verizon.net	Costanoan Northern Valley Yokut	Alameda,Calaveras, Contra Costa,Fresno,Madera,Mariposa,Merced,Sacramento,San Benito,San Joaquin,Santa	4/30/2024
	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,Madera,Mariposa,Merced,Sacramento,San Benito,San Joaquin,Santa	11/21/2023
	Picayune Rancheria of the Chukchansi Indians	F	Tracey Hopkins, Chairperson	P.O. Box 2226 Oakhurst, CA, 93644	(559) 412-5590		councili@chukchansi-nsn.gov	Foothill Yokut	Fresno,Madera,Mariposa,Merced,Tuolumne	12/12/2023
	Picayune Rancheria of the Chukchansi Indians	F	Heather Airey, Tribal Historic Preservation Officer	P.O. Box 2226 Oakhurst, CA, 93644	(559) 795-5986		hailey@chukchansi-nsn.gov	Foothill Yokut	Fresno,Madera,Mariposa,Merced,Tuolumne	6/20/2023
	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 Obispo,Tulare	12/21/2023
	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 Obispo,Tulare	
	Traditional Chohnumni Tribe	N	David Alvarez, Chairperson	2415 E. Houston Avenue Fresno, CA, 93720	(559) 217-0396	(559) 292-5057	davealvarez@sbglobai.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,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	
	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,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	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,Inyo,Kings,Madera,Marin,Mariposa,Merced,Mono,Monterey,San Benito,San	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 Resources Code and 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 Sample Ranch Project, Fresno County.

Record: PR01-2025-001009
Report Type: List of Tribes
Counties: Fresno
MAHC Group: All

APPENDIX C

Project Area Photographs

PHOTOGRAPH RECORD

Trinomial

Page 1 of 1

Resource/Project Name: Sample Ranch

Year 2025

Camera: Samsung Galaxy

Lens Size:

Film Type and Speed: Digital

Negatives Kept at: ECORP Consulting, Inc.

[illegible]



07-17-55



07-18-03



07-40-31



07-45-00



08-05-42



08-30-01



08-31-55



08-35-54



09-35-00



09-40-36



09-41-31



09-41-49



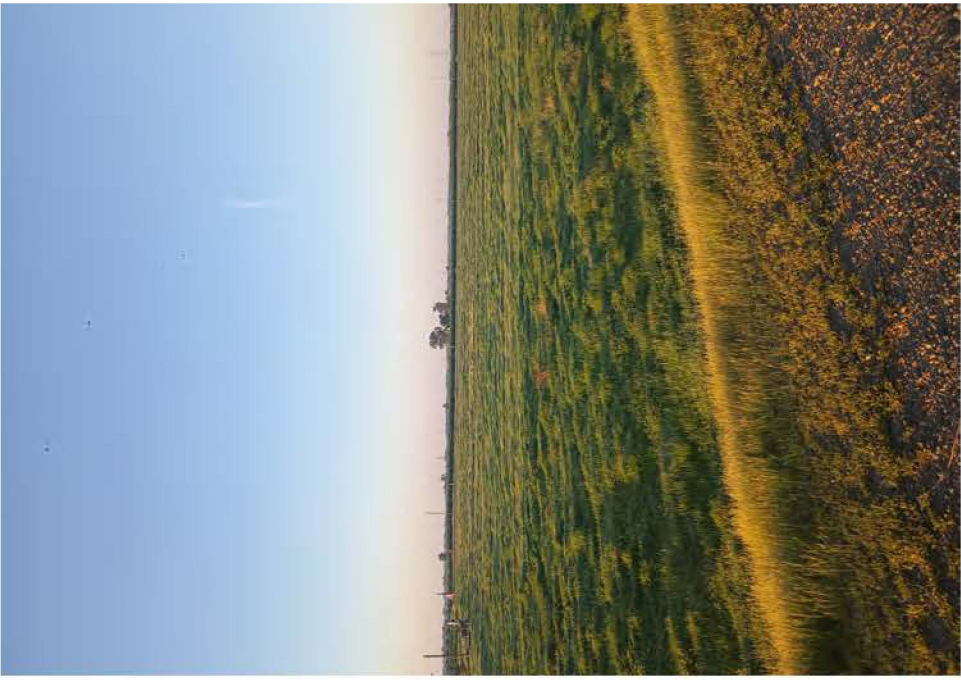
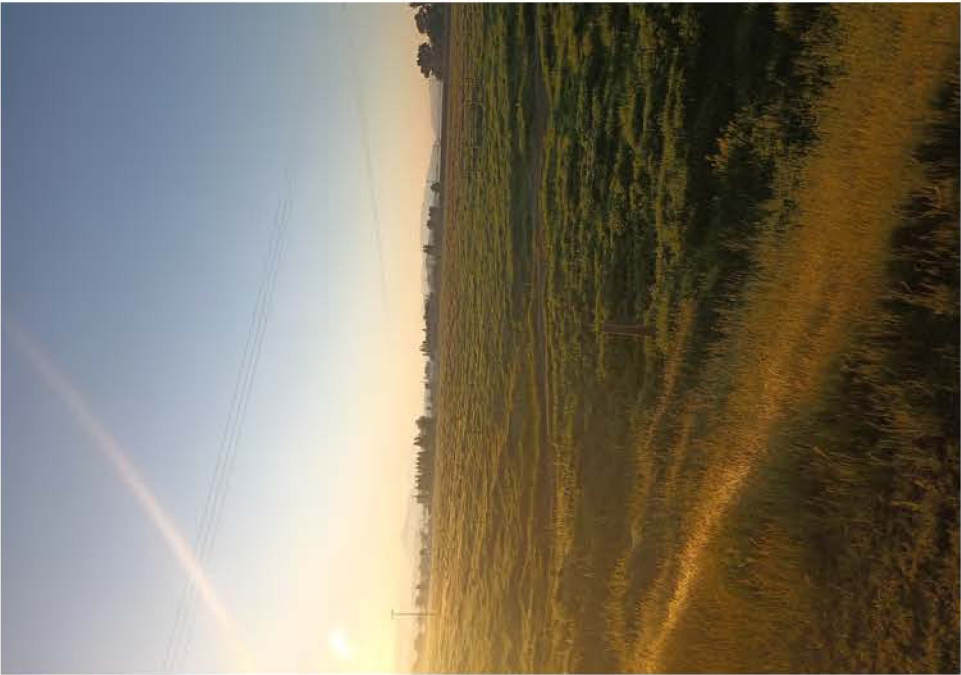
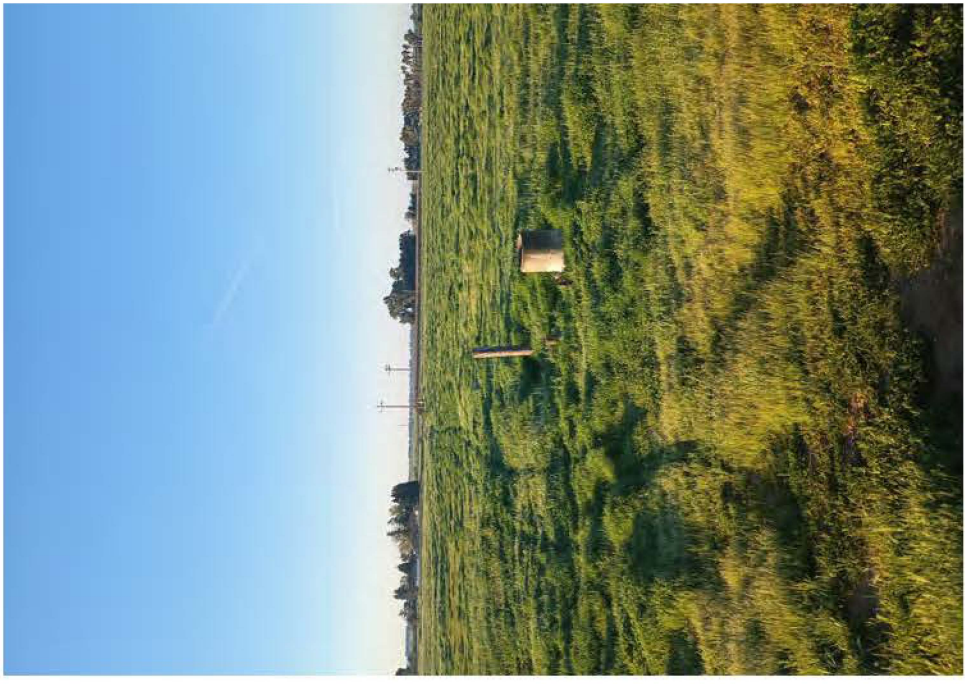
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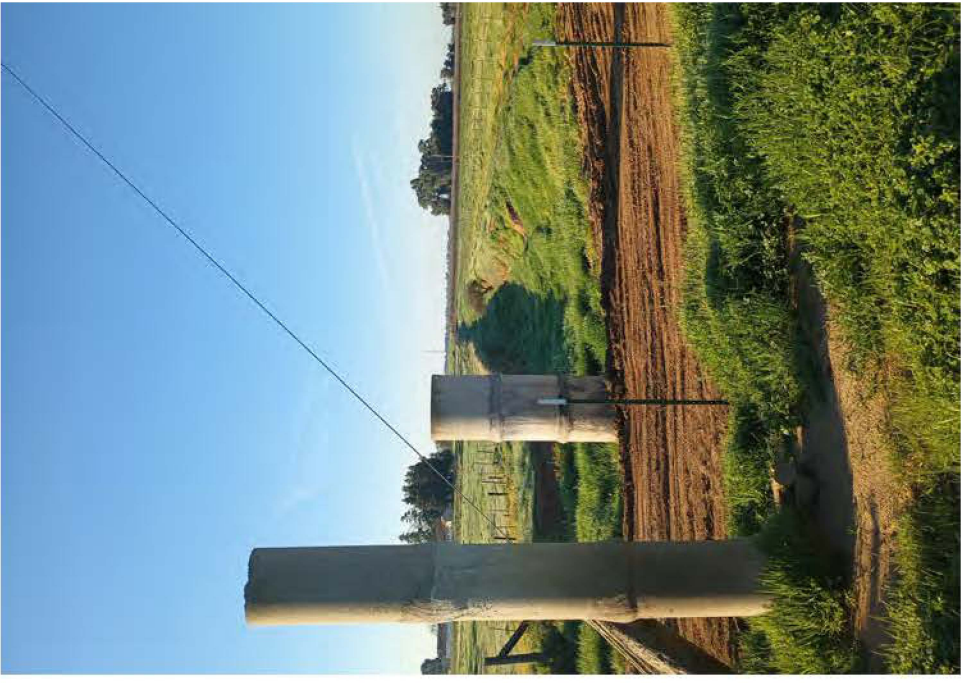
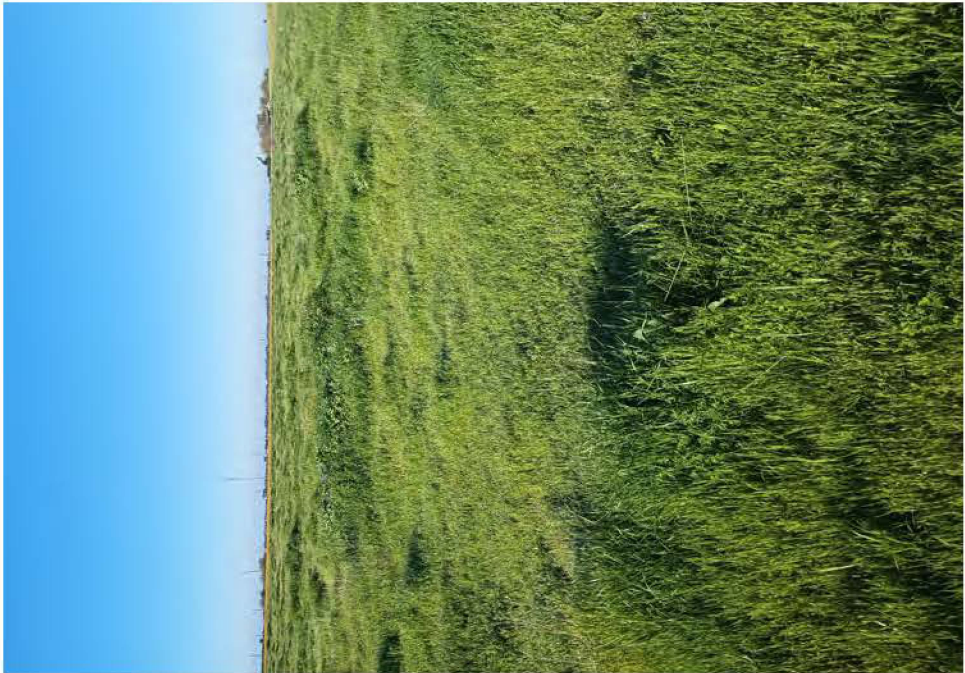


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Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

May 4, 2012

Project No. 013-12149

Christine Lingenfelter
Grantor Real Estate Investments, LLC
1396 West Herndon Avenue, Suite 101
Fresno, CA 93711

RE: Phase I Environmental Site Assessment
Sample Property
11000 Tollhouse Road
Clovis, California 93619

Dear Ms. Lingenfelter,

Krazan & Associates, Inc., (Krazan) completed a Phase I Environmental Site Assessment at the referenced site, summarized in a report dated May 4, 2012. We appreciate the opportunity to serve your environmental due diligence needs. During the course of this assessment, Krazan identified the following evidence of recognized environmental conditions (RECs) in connection with the subject site:

- According to Mr. Bonner Sample, the owner of the subject site, an approximately 500-gallon gasoline underground storage tank (UST) was removed from an area to the north of the on-site dwelling several years prior. According to Mr. Sample, no evidence of a petroleum release was noted at the time of the UST removal, and no indication of holes was identified on the UST; however, no soil testing was apparently conducted as part of the UST removal. Therefore, the condition of the subsurface in the area of the former gasoline UST is unknown. Although no holes were identified on the UST by Krazan at the time of this assessment (the UST was observed to be placed upon the ground surface to the north of a shed), based on the absence of soil testing within the former UST excavation at the time of removal, the presence or absence of subsurface petroleum contamination in the former operating area of the UST is currently unknown.

Krazan recommends that soil sampling and analysis be conducted in the owner-reported former location of the UST to assess the current condition of the subsurface soil.

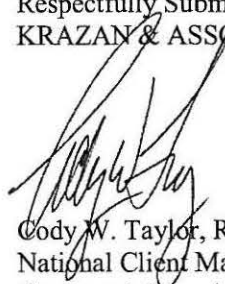
Additionally, the following ASTM Non-Scope Issues were identified in connection with the subject site:

- The structure located on the subject site was reportedly constructed in approximately 1952. It is unknown if the on-site structure contains asbestos containing materials (ACMs) or lead-based paint (LBP). An ACM/LBP survey and sampling of the on-site structure was not included within the scope of this assessment. However, based on the date of construction, ACMs/LBP may be present at the subject site. During Krazan's site recon date site reconnaissance, no damaged building materials or friable suspect ACMs or peeling paint which appeared to be posing a health

hazard were noted in the on-site structure. Prior to the disturbance of any of the suspect ACMs/LBP at this facility via demolition, a comprehensive ACM/LBP survey designed to determine if the suspect ACM/LBP is a regulated material is recommended. If such materials are identified and need to be disturbed, repaired, or removed, a licensed abatement contractor should be consulted. Suspect ACMs/LBP can also be managed under the auspices of an Operations and Maintenance (O&M) plan.

If you have any questions regarding the information presented in this report, please call me at (559) 348-2200.

Respectfully Submitted:
KRAZAN & ASSOCIATES, INC.



Cody W. Taylor, REA
National Client Manager
Commercial Services Division

CWT/apl



**PHASE I ENVIRONMENTAL
SITE ASSESSMENT
SAMPLE PROPERTY
11000 TOLLHOUSE ROAD
CLOVIS, CALIFORNIA 93619**

Pursuant to ASTM E 1527-05

Project No. 013-12149
May 4, 2012

Prepared for:
Grantor Real Estate Investments, LLC
1396 West Herndon Avenue, Suite 101
Fresno, CA 93711

Prepared by:
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TABLE OF CONTENTS

Project No. 013-12149

1.0	EXECUTIVE SUMMARY.....	1
2.0	PURPOSE AND SCOPE OF ASSESSMENT	2
2.1	Purpose	2
2.2	Scope of Work.....	2
3.0	SITE DESCRIPTION.....	3
3.1	Geology and Hydrogeology	3
4.0	SITE RECONNAISSANCE	4
4.1	Observations.....	4
4.2	Adjacent Streets and Property Usage	5
4.3	Asbestos-Containing Building Materials.....	5
4.4	Lead-Based Paint.....	6
4.5	Radon.....	6
4.6	Potable Water Source	7
4.7	Sewage Disposal System.....	7
5.0	USER-PROVIDED INFORMATION.....	7
5.1	Title Report and Environmental Lien Search	7
5.2	Phase I Environmental Site Assessment User Questionnaire.....	7
6.0	SITE USAGE SURVEY	8
6.1	Site History.....	8
6.2	Agricultural Chemicals.....	10
6.3	Regulatory Agency Interface.....	11
6.4	Regulatory Agency Lists Review	12
7.0	DISCUSSION OF FINDINGS	14
7.1	Evaluation of Data Gaps/Data Failure.....	14
8.0	CONCLUSIONS/OPINIONS.....	15
9.0	RELIANCE.....	16
10.0	LIMITATIONS	16
11.0	QUALIFICATIONS.....	17
	REFERENCES.....	19

Maps

Vicinity Map	following References
Site Map	following Vicinity Map
Topographic Map.....	following Site Map

Color Photographs

Photographs.....	following Topographic Map
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TABLE OF CONTENTS (CONT.)
Project No. 013-12149

Appendices

Environmental FirstSearch (EFS) Historical Fire Insurance Map *No Maps Available* Report and
Regulatory Database Report A



GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

May 4, 2012

Project No. 013-12149

**PHASE I ENVIRONMENTAL SITE ASSESSMENT
SAMPLE PROPERTY
11000 TOLLHOUSE ROAD
CLOVIS, CALIFORNIA 93619**

1.0 EXECUTIVE SUMMARY

Krazan & Associates, Inc. (Krazan) has conducted a Phase I Environmental Site Assessment (ESA) of the Sample Property located at 11000 Tollhouse Road in Clovis, Fresno County, California 93619 (subject site). Krazan conducted the Phase I ESA of the subject site in conformance with the American Society for Testing and Materials (ASTM) E 1527-05 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. This Phase I ESA constitutes all appropriate inquiry (AAI) designed to identify recognized environmental conditions (RECs) in connection with the previous ownership and uses of the subject site as defined by ASTM E 1527-05.

ASTM E 1527-05 Section 1.1.1 *Recognized Environmental Conditions* – The term *recognized environmental conditions* means the presence or likely presence of any *hazardous substances* or *petroleum products* on a *property* under conditions that indicate an existing release, a past release, or a *material threat* of a release of any *hazardous substances* or *petroleum products* into structures on the *property* or into the ground, groundwater, or surface water on the *property*. The term includes *hazardous substances* or *petroleum products* even under conditions in compliance with laws. The term is not intended to include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* are not *recognized environmental conditions*.

During the course of this assessment, Krazan identified the following evidence of recognized environmental conditions (RECs) in connection with the subject site:

- According to Mr. Bonner Sample, the owner of the subject site, an approximately 500-gallon gasoline underground storage tank (UST) was removed from an area to the north of the on-site dwelling several years prior. According to Mr. Sample, no evidence of a petroleum release was noted at the time of the UST removal, and no indication of holes was identified on the UST; however, no soil testing was apparently conducted as part of the UST removal. Therefore, the condition of the subsurface in the area of the former gasoline UST is unknown. Although no holes were identified on the UST by Krazan at the time of this assessment (the UST was observed

to be placed upon the ground surface to the north of a shed), based on the absence of soil testing within the former UST excavation at the time of removal, the presence or absence of subsurface petroleum contamination in the former operating area of the UST is currently unknown.

Krazan recommends that soil sampling and analysis be conducted in the owner-reported former location of the UST to assess the current condition of the subsurface soil.

Additionally, the following ASTM Non-Scope Issues were identified in connection with the subject site:

- The structure located on the subject site was reportedly constructed in approximately 1952. It is unknown if the on-site structure contains asbestos containing materials (ACMs) or lead-based paint (LBP). An ACM/LBP survey and sampling of the on-site structure was not included within the scope of this assessment. However, based on the date of construction, ACMs/LBP may be present at the subject site. During Krazan's site recon date site reconnaissance, no damaged building materials or friable suspect ACMs or peeling paint which appeared to be posing a health hazard were noted in the on-site structure. Prior to the disturbance of any of the suspect ACMs/LBP at this facility via demolition, a comprehensive ACM/LBP survey designed to determine if the suspect ACM/LBP is a regulated material is recommended. If such materials are identified and need to be disturbed, repaired, or removed, a licensed abatement contractor should be consulted. Suspect ACMs/LBP can also be managed under the auspices of an Operations and Maintenance (O&M) plan.

2.0 PURPOSE AND SCOPE OF ASSESSMENT

2.1 Purpose

According to ASTM E 1527-05, the purpose of this practice is to define good commercial and customary practice in the United States of America for conducting an *environmental site assessment* of a parcel of *commercial real estate* with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) and *petroleum products*. As such, this practice is intended to permit a *user* to satisfy one of the requirements to qualify for the *innocent landowner, contiguous property owner, or bona fide prospective purchaser* limitation on CERCLA liability (hereinafter, the *landowner liability protections*, or *LLPs*): that is, the practice that constitutes "*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B).

2.2 Scope of Work

The Phase I ESA includes the following scope of work: a) a site reconnaissance of existing on-site conditions and observations of adjacent property uses, b) a review of user-provided documents c) a review of historical aerial photographs, a review of pertinent building permit records, city directories, historical fire insurance maps, and interview(s) with person(s) knowledgeable of the previous and current

ownership and uses of the subject site d) a review of local regulatory agency records and e) a review of local, state, and federal regulatory agency lists compiled by Environmental FirstSearch (EFS). The scope of work for this Phase I ESA conforms to ASTM E 1527-05. Krazan was provided written authorization to conduct the Phase I ESA by Ms. Christine Lingenfelter with Grantor Real Estate Investments, LLC via Krazan's Proposal/Cost Estimate No. CTP12-188R.

3.0 SITE DESCRIPTION

The subject site comprises 352 acres of rural property occupied by a dwelling and a shop with the associated Fresno County Assessor's Parcel Numbers (APNs) of 150-060-81, 88, 89, and 90, previously 150-060-62 (295.95 acres) and 150-060-28 (93.56 acres).

General property information and property use are summarized in Table I. Refer to the Vicinity and Topographic Maps (Figures No. 1 and 3) located after the Reference Section.

TABLE I
Summary of Property Information

Topographic Map:	U.S. Geological Survey, 7.5 minute Round Mountain, California topographic quadrangle map, dated 1964 and Academy, California topographic quadrangle map, dated 1964
Latitude/Longitude:	36.866727, -119.580798
Topography:	Relatively flat with mild elevation increase to the north, approximately 460 feet above mean sea level
General Location:	North of Tollhouse Road (Highway 168), east of the Friant-Kern Canal
Assessor's Parcel Numbers:	150-060-81, 88, 89, and 90
Approximate Depth to Groundwater:	Approximately 80 feet below ground surface (bgs), State of California Department of Water Resources (DWR)*
Regional Groundwater Flow Direction:	Southwest, DWR*
Existing Use:	Rural Residential/Agricultural Property

* State of California, Department of Water Resources, *Lines of Equal Elevation of Water in Wells Unconfined Aquifer, San Joaquin Valley, Spring 2009*.

3.1 **Geology and Hydrogeology**

The subject site is located within the San Joaquin Valley, a broad structural trough bound by the Sierra Nevada and Coast Ranges of California. The San Joaquin Valley, which comprises the southern portion of the Great Valley of California, has been filled with several thousand feet of sedimentary deposits. Sediments in the eastern valley, derived from the erosion of the Sierra Nevada, have been deposited by major to minor west-flowing drainages and their tributaries. Near-surface sediments are dominated by sands and silty sands with lesser silts, minor clays, and gravel. The sedimentary deposits in the region

form large coalescing alluvial fans with gentle slopes. The groundwater in the area is reported to be first encountered at a depth of approximately 80 feet bgs. The groundwater flow direction in the area of the subject site is generally to the southwest.

4.0 SITE RECONNAISSANCE

A site reconnaissance, which included a visual observation of the subject site and surrounding properties, was conducted by Mr. Cody W. Taylor, Krazan's Environmental Professional on April 16, 2012. Mr. Bonner and Scott Sample, the owners of the subject site accompanied Krazan's Environmental Professional during the site reconnaissance. The objective of the site reconnaissance is to obtain information indicating the likelihood of identifying recognized environmental conditions, including hazardous substances and petroleum products, in connection with the property (including soils, surface waters, and groundwater).

4.1 Observations

Table II summarizes conditions encountered during our site reconnaissance. A discussion of visual observations follows Table II. Refer to the Site Map (Figure No. 2) and color photographs following the text for the locations of items discussed in this section of the report.

TABLE II
Summary of Site Reconnaissance

Feature	Observed	Not Observed
Structures (existing)	X	
Evidence of past uses (foundations, debris)		X
Hazardous substances and/or petroleum products (including containers)	X	
Aboveground storage tanks (ASTs)		X
Underground storage tanks (USTs) or evidence of USTs	X	
Evidence of Underground Pipelines		X
Strong, pungent, or noxious odors		X
Pools of liquid likely to be hazardous materials or petroleum products		X
Drums		X
Unidentified substance containers		X
Potential polychlorinated biphenyl (PCB) containing equipment		X
Subsurface hydraulic equipment		X
Heating/ventilation/air conditioning (HVAC)		X
Stains or corrosion on floors, walls, or ceilings		X
Floor drains, sumps, or oil/water clarifiers		X
Storm Drains		X
Pits, ponds, or lagoons		X
Stained soil and/or pavement		X
Soil Piles		X

TABLE II (cont.)
Summary of Site Reconnaissance

Feature	Observed	Not Observed
Stressed vegetation		X
Waste or wastewater discharges to surface or surface waters on subject site (including stormwater)		X
Wells (irrigation, domestic, dry, injection, abandoned, monitoring wells)	X	
Septic Systems	X	

The subject site comprises 352 acres of rural property occupied by a dwelling and a shop with the associated Fresno County APNs of 150-060-81, 88, 89, and 90. Refer to Figure No. 2, Site Map, for reference.

- According to Mr. Bonner Sample, the approximately 2,500-square-foot, wood-frame dwelling was constructed in 1952 when the property was purchased. Mr. Sample stated that there are five active agricultural water wells and one inactive agricultural water well located on the subject site. Mr. Sample stated that water provided to the dwelling is provided by an agricultural water well. A shop was observed to the north of the dwelling. No obvious evidence of significant hazardous materials was observed in the shop. An approximately 500-gallon UST placed on the ground surface was observed to the north of the shop. According to Mr. Sample, the UST was removed from an area to the north of the on-site dwelling several years prior. According to Mr. Sample, no evidence of a petroleum release was noted at the time of the UST removal, and no indication of holes was identified on the UST; however, no soil testing was apparently conducted as part of the UST removal. No holes were observed on the UST by Krazan.
- The remainder of the subject site was observed to be open range land occupied by cattle.

4.2 Adjacent Streets and Property Usage

The following Table III summarizes the current adjacent roads and adjacent property uses observed during the site reconnaissance.

TABLE III
Adjacent Streets and Property Use

Direction	Adjacent Street	Adjacent Property Use
North	None	Range Land/Dry Creek
South	Tollhouse Road (Highway 168)	Agriculture/Residential
East	None	Agriculture/Residential
West	None	Agriculture/Residential

Based on Krazan's research and review of regulatory records on file with Fresno County, significant quantities of hazardous materials are not stored at the adjacent properties. Therefore, the adjacent properties do not appear to be an environmental concern to the subject site.

4.3 Asbestos-Containing Building Materials

Asbestos is a group of naturally occurring mineral fibers that have been used commonly in a variety of building construction materials for insulation and as a fire-retardant. Because of its fiber strength and

heat resistant properties, asbestos has been used for a wide range of manufactured goods, mostly in building materials, vehicle brakes, and heat-resistant fabrics, packaging, gaskets, and coatings. When asbestos-containing materials (ACMs) are damaged or disturbed by repair, remodeling, or demolition activities, microscopic asbestos fibers may become airborne and can be inhaled into the lungs, where they can cause significant health problems.

The structure located on the subject site was reportedly constructed in approximately 1952. It is unknown if the on-site structure contains ACMs. An asbestos survey and sampling of the on-site structure was not included within the scope of this assessment. However, based on the date of construction, ACMs may be present at the subject site. During Krazan's site recon date site reconnaissance, no damaged building materials or friable suspect ACMs which appeared to be posing a health hazard were noted in the on-site structure. Prior to the disturbance of any of the suspect ACMs at this facility via demolition, a comprehensive asbestos survey designed to determine if the suspect ACM is a regulated material is recommended. If such materials are identified and need to be disturbed, repaired, or removed, a licensed abatement contractor should be consulted. Suspect ACMs can also be managed under the auspices of an Operations and Maintenance (O&M) plan.

4.4 Lead-Based Paint

Although lead-based paint (LBP) was banned in 1978, many building constructed prior to 1978 have paint that contains lead. Lead from paint, chips, and dust can pose serious health hazards if not addressed properly.

The structure located on the subject site was reportedly constructed in 1952. It is unknown if the on-site structure contains LBP. A LBP survey and sampling of the on-site structure was not included within the scope of this assessment. However, based on the date of construction, LBP may be present at the subject site. During Krazan's site recon date site reconnaissance, no evidence of chipped or peeling paint was observed in association with the on-site structure. Prior to the disturbance of any of the suspect LBP at this facility via demolition, a comprehensive asbestos survey designed to determine if the suspect LBP is a regulated material is recommended. If such materials are identified and need to be disturbed, repaired, or removed, a licensed abatement contractor should be consulted. Suspect LBP can also be managed under the auspices of an O&M plan.

4.5 Radon

Radon is a radioactive gas that is found in certain geologic environments and is formed by the natural breakdown of radium, which is found in the earth's crust. A radon survey was not included within the

scope of this investigation; however, the U.S. Environmental Protection Agency (USEPA) conducted a statewide radon survey during 1986-1992 which entailed testing of radon in homes in designated geographic areas. Radon detection devices were placed in homes throughout the study region to determine geographic regions with elevated radon concentrations. The U.S. EPA has set the safety standard for radon gas in homes to be 4.0 pico Curies per liter (pCi/l). According to the US EPA's Radon Zone Map, the subject site is classified as being located in Zone 2 with radon concentrations existing between 2.0 and 4.0 pCi/l, therefore, radon is not considered an environmental concern.

4.6 Potable Water Source

Mr. Sample stated that there are five active agricultural water wells and one inactive agricultural water well located on the subject site. Mr. Sample stated that water provided to the dwelling is provided by an agricultural water well. No information regarding analytical testing or construction specifications of the on-site wells was found during the course of this assessment. Drinking water produced by the wells should be routinely tested for compliance with State and Federal drinking water standards. Additionally, if the water wells are not planned for reuse as part of any proposed redevelopment of the subject site, they should be properly abandoned/destroyed in accordance with state and local guidelines.

4.7 Sewage Disposal System

Mr. Sample stated that the on-site dwelling is connected to a septic system. Based on the use of the septic system for domestic purposes, the on-site septic system is not considered an environmental concern.

5.0 USER-PROVIDED INFORMATION

A review of User-provided information was conducted in order to help identify pertinent information regarding potential environmental impacts associated with the subject site.

5.1 Title Report and Environmental Lien Search

A Title Report or Environmental Lien Search was not prepared by, or provided to Krazan during the course of this assessment. The absence of a Title Report and Environmental Lien Search represents a data gap.

5.2 Phase I Environmental Site Assessment User Questionnaire

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the *Brownfields Amendments*), the *user* must

provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that *all appropriate inquiry* is not complete. The user is asked to provide information or knowledge of the following:

1. Environmental cleanup liens that are filed or recorded against the site.
2. Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry.
3. Specialized knowledge or experience of the person seeking to qualify for the LLPs.
4. Relationship of the purchase price to the fair market value of the *property* if it were not contaminated.
5. Commonly known or *reasonably ascertainable* information about the *property*.
6. The degree of obviousness of the presence or likely presence of contamination at the *property*, and the ability to detect the contamination by appropriate investigation.
7. The reason for preparation of this Phase I ESA.

A completed Phase I ESA user questionnaire was not provided to Krazan. However, an owner questionnaire was completed by Mr. Bonner Sample, the owner of the subject site which is discussed in Section 6.1 of this report.

6.0 SITE USAGE SURVEY

The property usage survey included assessing property history, and reviewing local, state, and federal regulatory agency records.

6.1 Site History

A review of historical aerial photographs, contacts with the City of Clovis Development Department, a review of reasonably ascertainable city directories, a search for historical fire insurance maps, and an interview with the owner were utilized to assess the history of the subject site.

Previous Environmental Assessment

A previous environmental assessment of the subject site was not provided to Krazan for review.

Aerial Photograph Interpretation

Historical aerial photographs dated 1937, 1950, 1961, 1967, 1973, 1987, 1998, and 2010 were reviewed to assess the history of the subject site. The photographs were obtained from CSUF Henry Madden Map

Library and Google Earth™. The aerial photograph summary is provided in Table IV below. Due to the size of the property, copies of aerial photographs were not included.

TABLE IV
Summary of Topographic Map and Aerial Photograph Review

Year/Scale	Site Use	Site and Adjacent Property Observation
1937 1" = 660'	Vacant Land	The subject site is depicted as vacant range land traversed by Dry Creek. Adjacent properties are depicted as being vacant.
1950 1" = 660'	Vacant Land	Conditions on the subject site and the adjacent properties appear relatively similar to those noted in previous aerial photographs. Friant-Kern Canal is located to the southwest of the subject site.
1961 1" = 660'	Rural Residential Agriculture	The subject site is depicted as being occupied by a rural farm dwelling located within the southern-central portion with agricultural row crops to the west of the dwelling, and range land beyond dry creek to the north. Friant-Kern Canal is located to the southwest of the subject site. Adjacent properties are depicted as being undeveloped.
1967 1" = 660'	Rural Residential Agriculture	Conditions on the subject site and the adjacent properties appear relatively similar to those noted in previous aerial photographs except for orchards to the southwest.
1973 1" = 660'	Rural Residential Agriculture	Conditions on the subject site and the adjacent properties appear relatively similar to those noted in previous aerial photographs except for additional row crops within the eastern-southern portion of the subject site.
1987 1" = 660'	Rural Residential Agriculture	Conditions on the subject site and the adjacent properties appear relatively similar to those noted in previous aerial photographs except for the development of dwellings to the south and east..
1998 1" = 660'	Rural Residential Agriculture	Conditions on the subject site and the adjacent properties appear relatively similar to those noted in previous aerial photographs.
2010 1" = 300'	Rural Residential	Conditions on the subject site and the adjacent properties appear relatively similar to those noted in previous aerial photographs except for the absence of on-site agricultural crops.

City of Clovis Development Department

The City of Clovis Development Department was contacted regarding building permits for the subject site address of 11000 Tollhouse Road. To date, a response has not been received from the City of Clovis Development Department. Krazan will forward any pertinent environmental information to the Client upon receipt.

City Directories

Krazan reviewed city directories for the subject site address at the Fresno County Public Library for years between 1972 to 2010. The subject site was listed as Bonner Sample from 1972 to 2010. Adjacent properties were noted as residential.

Historical Fire Insurance Maps

Krazan reviews historical fire insurance maps to evaluate prior land use of the subject site and the adjacent properties. Historical fire insurance maps typically exist for cities with populations of 2,000 or more, the coverage dependent on the location of the subject site within the city limits. Krazan contracted with Environmental FirstSearch to provide copies of available historical fire insurance maps for the subject site and the adjacent properties as far back as 1867. Environmental FirstSearch's search of historical fire insurance maps revealed no coverage for the subject site or the adjacent properties. Please refer to Appendix A for a copy of the Environmental FirstSearch historical fire insurance map *No Maps Available Report*.

Phase I Environmental Site Assessment Interview – Owner

A Phase I ESA interview was conducted with Mr. Bonner Sample, the current owner of the subject site. According to Mr. Bonner Sample, the approximately 2,500-square-foot, wood-frame dwelling was constructed in 1952 when the property was purchased. Mr. Sample stated that there are five active agricultural water wells and one inactive agricultural water well located on the subject site. Mr. Sample stated that water provided to the dwelling is provided by an agricultural water well. According to Mr. Sample, the UST was removed from an area to the north of the on-site dwelling several years prior. According to Mr. Sample, no evidence of a petroleum release was noted at the time of the UST removal, and no indication of holes was identified on the UST; however, no soil testing was apparently conducted as part of the UST removal. Mr. Bonner stated that, only limited quantities of herbicides including Round Up have been stored/used at the property. According to Mr. Bonner, to the best of his knowledge, no disposal of hazardous materials; no hazardous materials spills, no environmental cleanups, no on-site treatment and/or discharge of waste; no environmental liens, AULs, engineering or institutional controls, no on-site dry wells, sumps, or disposal ponds; no buried materials; no monitoring wells; or any items of environmental concern are associated with the subject site.

Phase I Environmental Site Assessment Interview - Previous Owner

A Phase I ESA interview with the previous owner of the subject site was not reasonably ascertainable. However, based on the ownership and development of the subject site in 1952 by the current owner, this data gap is not considered significant.

6.2 Agricultural Chemicals

Review of historical aerial photographs indicates the subject site was utilized for agricultural purposes from at least 1961 to 1987. According to Mr. Sample, environmentally persistent pesticides and herbicides were not historically applied to the on-site crops. Generally, Krazan's sampling and analysis of surface soils from properties with similar agricultural histories has typically yielded non-detectable

results or very low concentrations for analysis of environmentally persistent pesticides. Therefore, the potential for elevated concentrations of environmentally persistent pesticides/herbicides to exist in the near-surface soils of the subject site, which would require regulatory action, is low.

6.3 Regulatory Agency Interface

A review of regulatory agency records was conducted to help determine if hazardous materials have been handled, stored, or generated on the subject site and/or the adjacent properties and businesses.

Regulatory records are reviewed based on the following criteria: 1) properties with known groundwater contamination that are located within 500 feet of the subject site; 2) properties that are adjacent or in proximity to the subject site included within the Environmental FirstSearch report or noted during the site reconnaissance to possibly handle, store, or generate hazardous materials. Applicable property records are discussed below.

Fresno County Department of Community Health, Environmental Health System

The Fresno County Department of Community Health, Environmental Health System (FCEHS) is the lead regulatory agency or Certified Unified Program Agency (CUPA) for hazardous materials handling facilities in Fresno County. Krazan's review of the FCEHS CUPA and Solid Waste Programs Resource List (CUPA List) dated January 2012 indicated no records for the subject site or the adjacent properties.

City of Clovis Fire Department

The Fresno County Fire Protection District was contacted regarding potential hazardous materials records including ASTs, USTs, leaking USTs (LUSTs), hazardous materials business plans (HMBPs), hazardous material releases, and/or environmental cleanup records for the subject site. No records were identified for the subject site.

Fresno County Fire Protection District

The Fresno County Fire Protection District was contacted regarding potential hazardous materials records including ASTs, USTs, LUSTs, HMBPs, hazardous material releases, and/or environmental cleanup records for the subject site. The Fresno County Fire Protection District referred Krazan to the FCEHS previously discussed above.

State of California Regional Water Quality Control Board - Geotracker

Krazan's review of the State of California Regional Water Quality Control Board (RWQCB) Geotracker database available via the RWQCB Internet Website indicated that no cleanup sites including LUST sites,

cleanup program sites, land disposal sites, military sites, or permitted UST sites were listed for the subject site or the adjacent properties.

State of California Department of Toxic Substances Control - Envirostor

Krazan's review of the State of California Department of Toxic Substances Control (DTSC) Envirostor database available via the DTSC's Internet Website indicated that no records of cleanup sites including State response sites, voluntary cleanup sites, school cleanup sites, or military or school evaluation sites are on file with the DTSC for the subject site, the adjacent properties, or properties located within 500 feet of the subject site. Additionally, no Federal Superfund – National Priorities List (NPL) sites were determined to be located within a one-mile radius of the subject site.

California Department of Conservation, Division of Oil, Gas and Geothermal Resources

Krazan's review of the State of California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) online map database available via the DOGGR Internet Website indicated that no plugged and abandoned or producing oil wells are located on or adjacent to the subject site.

Local Area Tribal Records

No Indian reservations, USTs on Indian land, or LUSTs on Indian land were reported on the subject site, adjacent properties, or vicinity properties in the Environmental FirstSearch-provided database report.

6.4 Regulatory Agency Lists Review

Several agencies have published documents that list businesses or properties which have handled hazardous materials or waste or may have experienced site contamination. The lists consulted in the course of our assessment were compiled by Environmental FirstSearch and Krazan and represent reasonably ascertainable current listings. Krazan did not verify the locations and distances of every property listed by Environmental FirstSearch. Krazan verified the location and distances of the properties Krazan deemed as having the potential to adversely impact the subject site. The actual location of the listed properties may differ from the Environmental FirstSearch listing. Refer to Table V below for a summary of the listed properties located within the specified ASTM Search Radii. The actual distances of the listed properties (which are summarized below) are based on observations during Krazan's site reconnaissance. No Environmental FirstSearch-listed unmapped (orphan) sites were determined to be located on or adjacent to the subject site. The Environmental FirstSearch database report is included in Appendix A.

REFERENCES

Aerial photographs obtained from CSUF Henry Madden Library.

American Society for Testing and Materials, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment (ESA) Process, ASTM Designation: E 1527-05.

City of Clovis Development Department

EFS Database Report.

EFS, Historical Fire Insurance Maps Search.

Haines Criss-Cross Directories for the Central San Joaquin Valley, Fresno County Public Library, Fresno, California.

Fresno County Environmental Health Department.

Sample, Mr. Bonner and Mr. Scott, the owners of the subject site.

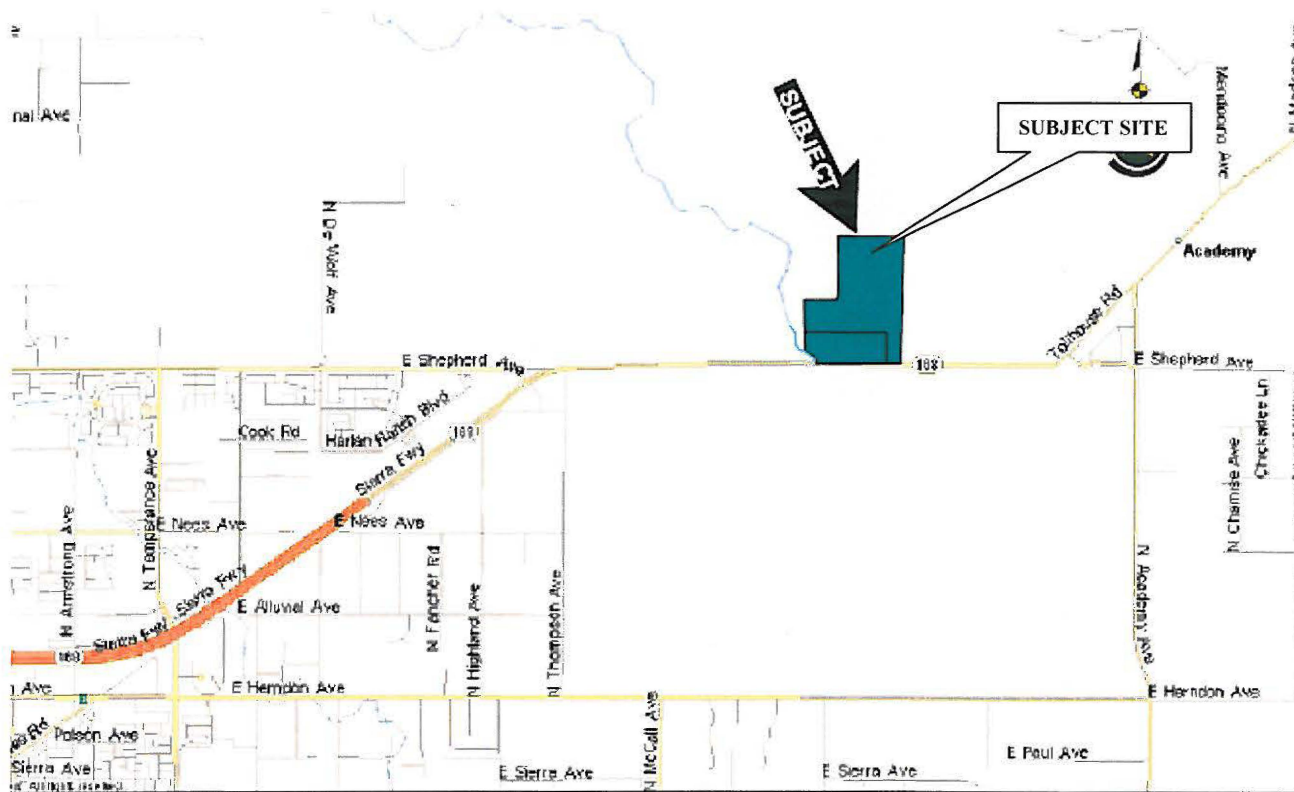
State of California Department of Conservation, Division of Oil, Gas and Geothermal Resources Online Mapping System (DOMS): http://www.conservation.ca.gov/dog/maps/Pages/index_map.aspx

State of California Department of Toxic Substances Control (DTSC), Envirostor Website: <http://www.envirostor.dtsc.ca.gov/public>

State of California Regional Water Quality Control Board (RWQCB), Geotracker Website: <http://geotracker.swrcb.ca.gov>

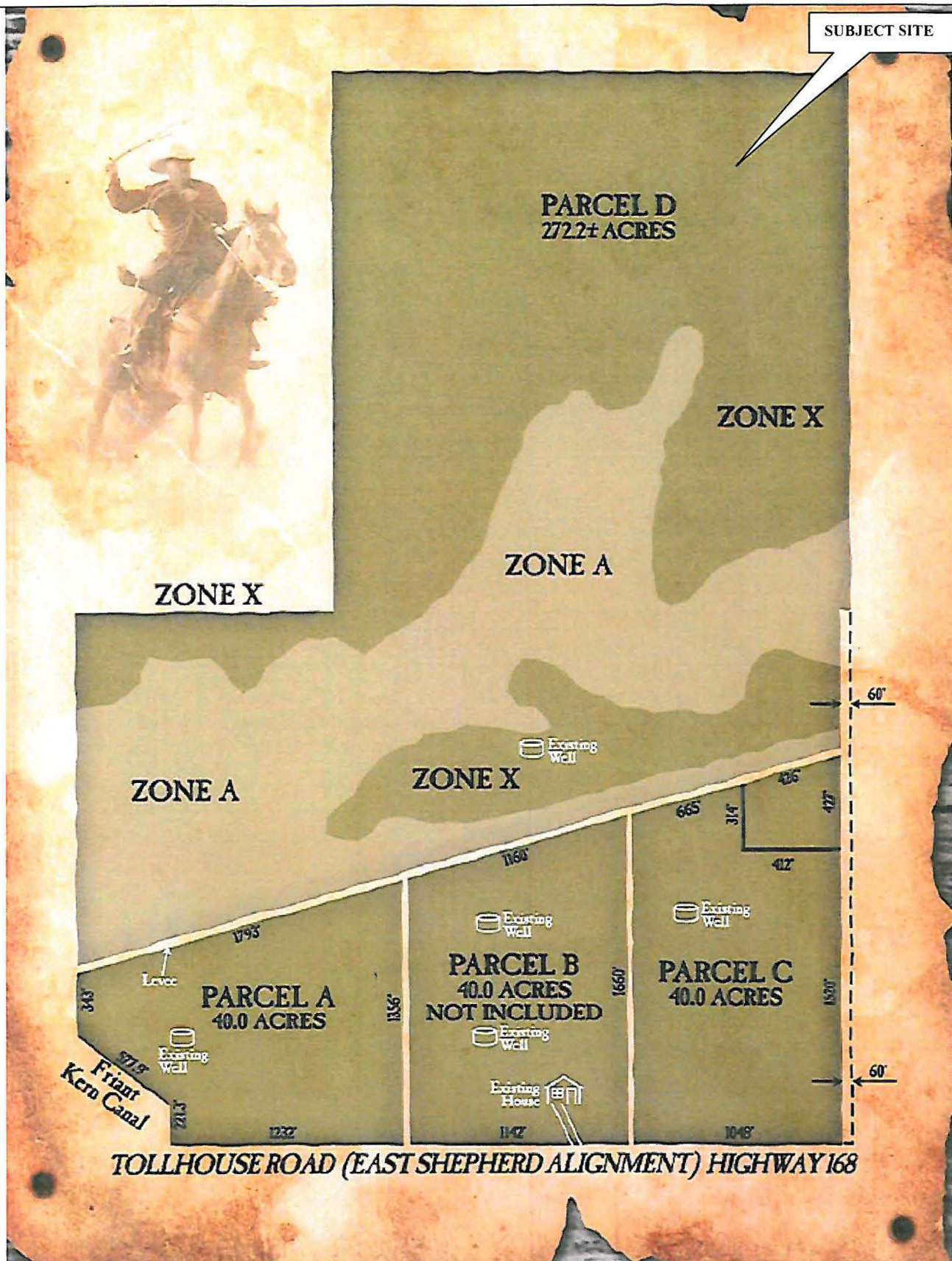
US EPA's Radon Zone Map

U.S. Geological Survey, 7.5 minute Round Mountain, California topographic quadrangle map, dated 1964 and Academy, California topographic quadrangle map, dated 1964.



VICINITY MAP	Scale:	Date:	
	NTS	May 2012	
SAMPLE PROPERTY	Drawn By:	Approved by:	
11000 TOLLHOUSE ROAD	CWT	CWT	SITE DEVELOPMENT ENGINEERS <i>Conducting Assessments Nationwide</i>
CLOVIS, CALIFORNIA 93619	Project No.	Figure No.	
	013-12149	1	

SUBJECT SITE



SITE MAP

SAMPLE PROPERTY
11000 TOLLHOUSE ROAD
CLOVIS, CALIFORNIA 93619

Scale:

NTS

Drawn By:

CWT

Project No.

013-12149

Date:

May 2012

Approved by:

CWT

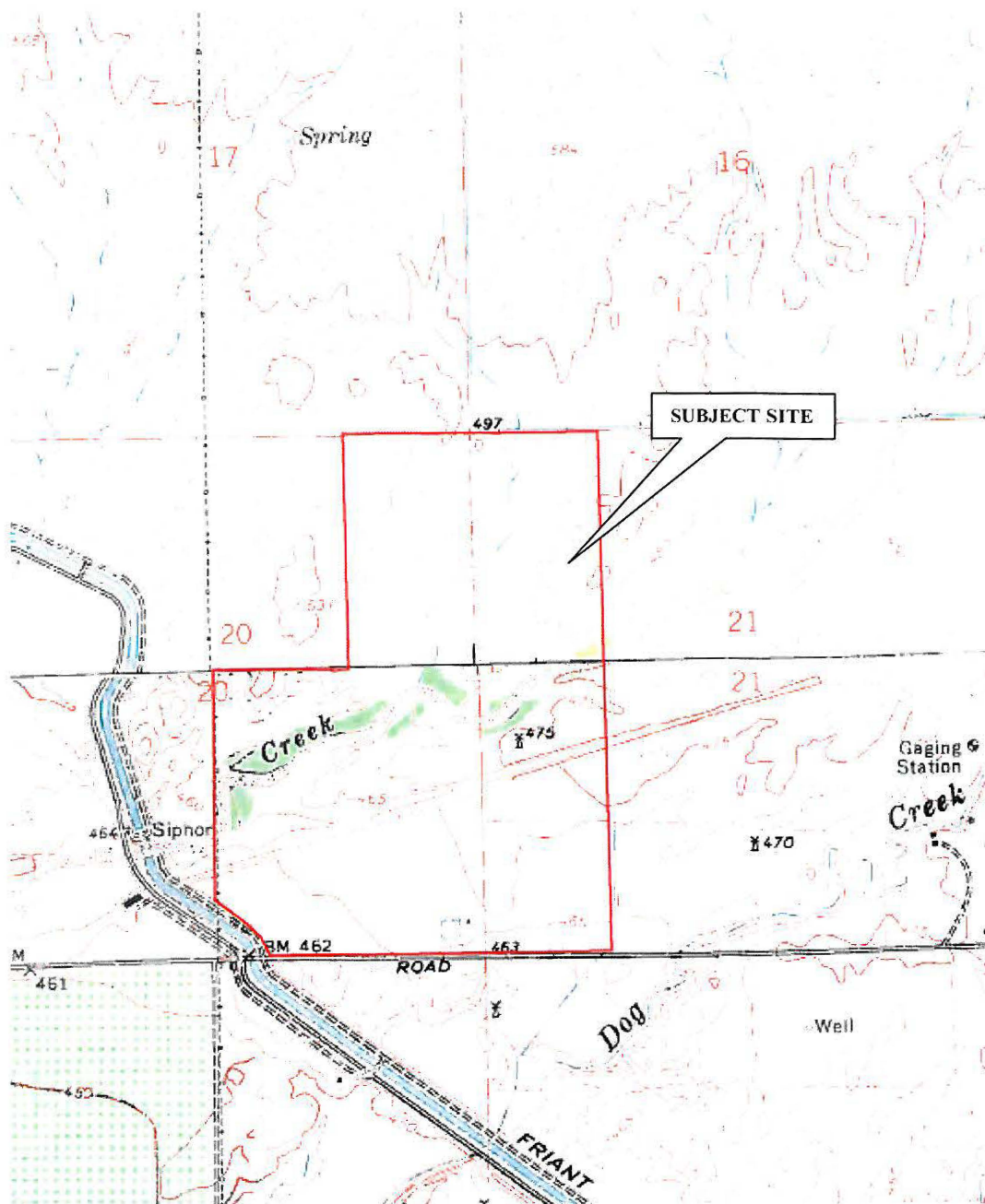
Figure No.

2



Krazan

SITE DEVELOPMENT ENGINEERS
Conducting Assessments Nationwide



U.S. Geological Survey, 7.5
minute Round Mountain,
California topographic
quadrangle map, dated 1964 and
Academy, California topographic
quadrangle map, dated 1964



TOPOGRAPHIC MAP	Scale: NTS	Date: May 2012	 Krazan SITE DEVELOPMENT ENGINEERS <i>Conducting Assessments Nationwide</i>
SAMPLE PROPERTY 11000 TOLLHOUSE ROAD CLOVIS, CALIFORNIA 93619	Drawn By: CWT	Approved by: CWT	
	Project No. 013-12149	Figure No. 3	



Photo 1: Northwestern-facing view of the subject site dwelling from Tollhouse Road (Hwy 168).



Photo 2: Northern-facing view of the western portion of the subject site.

SAMPLE PROPERTY
11000 TOLLHOUSE ROAD
CLOVIS, CALIFORNIA 93619

Project No. 013-12149

Date: May 2012

Approved by: CWT



Krazan

SITE DEVELOPMENT ENGINEERS

Conducting Assessments Nationwide



Photo 3: Northeastern-facing view of the eastern portion of the subject site.



Photo 4: Southern-facing view of the on-site dwelling.

SAMPLE PROPERTY
11000 TOLLHOUSE ROAD
CLOVIS, CALIFORNIA 93619

Project No. 013-12149

Date: May 2012

Approved by: CWT

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SITE DEVELOPMENT ENGINEERS
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Photo 5: Interior view of the on-site dwelling.



Photo 6: Southwestern-facing view of the owner-directed location of the former gasoline underground storage tank.

SAMPLE PROPERTY
11000 TOLLHOUSE ROAD
CLOVIS, CALIFORNIA 93619

Project No. 013-12149

Date: May 2012

Approved by: CWT



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Conducting Assessments Nationwide



Photo 7: Southeastern-facing view of the former gasoline underground storage tank.

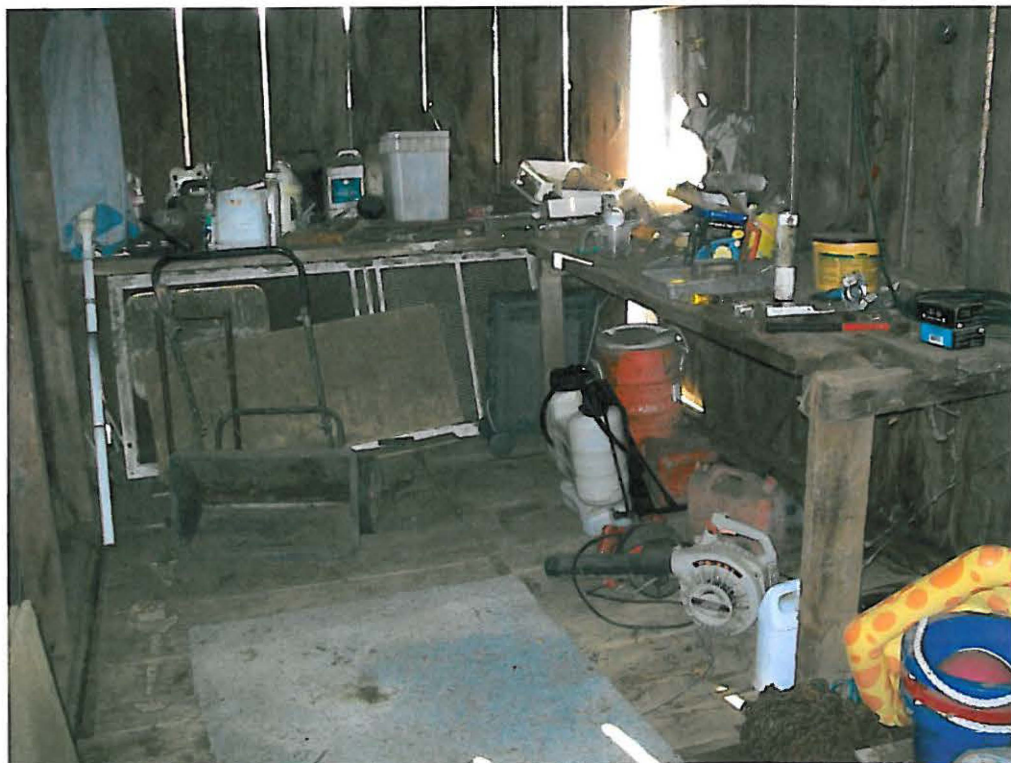


Photo 8: Interior view of the on-site shop.

SAMPLE PROPERTY
11000 TOLLHOUSE ROAD
CLOVIS, CALIFORNIA 93619

Project No. 013-12149

Date: May 2012

Approved by: CWT



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Photo 9: Southern-facing view of a representative on-site agricultural water well.



Photo 10: Northern-facing view of the northern portion of the subject site.

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Project No. 013-12149

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Photo 11: Northern-facing view of the northern portion of the subject site.



Photo 12: Southern-facing view of southeastern portion of the subject site.

SAMPLE PROPERTY
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CLOVIS, CALIFORNIA 93619

Project No. 013-12149

Date: May 2012

Approved by: CWT



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Photo 13: Southern-facing view of southwestern portion of the subject site.



Photo 14: Northeastern-facing view of the central portion of the subject site.

SAMPLE PROPERTY
11000 TOLLHOUSE ROAD
CLOVIS, CALIFORNIA 93619

Project No. 013-12149

Date: May 2012

Approved by: CWT



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SITE DEVELOPMENT ENGINEERS

Conducting Assessments Nationwide



HISTORICAL FIRE INSURANCE MAPS

NO MAPS AVAILABLE

04-13-12

013-12149

11000 TOLLHOUSE RD

CLOVIS CA 93612

A search of FirstSearch Technology Corporation's proprietary database of historical fire insurance map availability confirmed that there are NO MAPS AVAILABLE for the Subject Location as shown above.

FirstSearch Technology Corporation's proprietary database of historical fire insurance map availability represents abstracted information from the Sanborn® Map Company obtained through online access to the U.S. Library of Congress via local libraries.

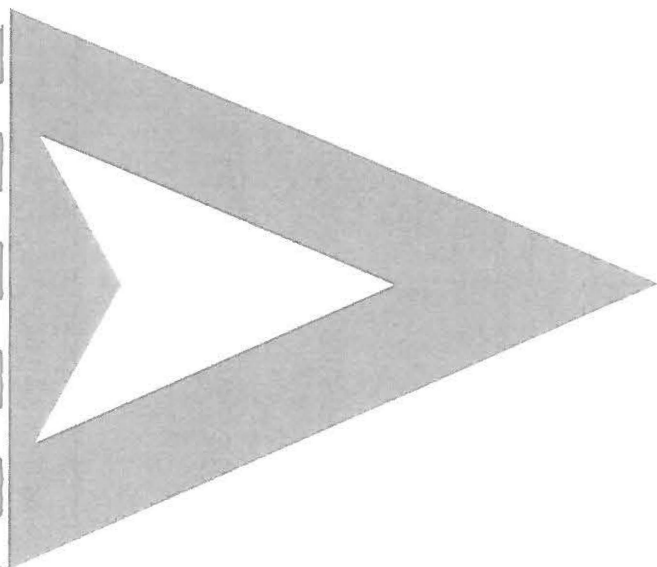
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Appendix A



ENVIRONMENTAL FIRSTSEARCH REPORT



TARGET PROPERTY:

11000 TOLLHOUSE RD

CLOVIS, CA 93612

JOB NUMBER: 013-12149

PREPARED FOR:

Krazan & Associates

215 West Dakota Avenue

Clovis, CA 93612

April 16, 2012

Environmental FirstSearch

Site Information Report

Request Date: 04-13-12
Requestor Name: ANGIE LOZANO
Standard: AAI

Search Type: COORD
Job Number: 013-12149
Filtered Report

Target Site: 11000 TOLLHOUSE RD
CLOVIS, CA 93612

Demographics

Sites:	2	Non-Geocoded:	2	Population:	NA
Radon:	-0.3 - 2.2 PCI/L				

Site Location

	<u>Degrees (Decimal)</u>	<u>Degrees (Min/Sec)</u>		<u>UTMs</u>
Longitude:	-119.580798	-119:34:51	Easting:	269938.882
Latitude:	36.866727	36:52:0	Northing:	4082995.031
Elevation:	460		Zone:	11

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes:	Services:																																								
<table><thead><tr><th>ZIP Code</th><th>City Name</th><th>ST</th><th>Dist/Dir</th><th>Sel</th></tr></thead><tbody><tr><td colspan="5"></td></tr></tbody></table>	ZIP Code	City Name	ST	Dist/Dir	Sel						<table><thead><tr><th></th><th>Requested?</th><th>Date</th></tr></thead><tbody><tr><td>Fire Insurance Maps</td><td>Yes</td><td>04-13-12</td></tr><tr><td>Aerial Photographs</td><td>No</td><td></td></tr><tr><td>Historical Topos</td><td>No</td><td></td></tr><tr><td>City Directories</td><td>No</td><td></td></tr><tr><td>Title Search</td><td>No</td><td></td></tr><tr><td>Municipal Reports</td><td>No</td><td></td></tr><tr><td>Liens</td><td>No</td><td></td></tr><tr><td>Historic Map Works</td><td>No</td><td></td></tr><tr><td>Online Topos</td><td>No</td><td></td></tr></tbody></table>		Requested?	Date	Fire Insurance Maps	Yes	04-13-12	Aerial Photographs	No		Historical Topos	No		City Directories	No		Title Search	No		Municipal Reports	No		Liens	No		Historic Map Works	No		Online Topos	No	
ZIP Code	City Name	ST	Dist/Dir	Sel																																					
	Requested?	Date																																							
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City Directories	No																																								
Title Search	No																																								
Municipal Reports	No																																								
Liens	No																																								
Historic Map Works	No																																								
Online Topos	No																																								

Environmental FirstSearch

Sites Summary Report

Target Property: 11000 TOLLHOUSE RD
CLOVIS, CA 93612

JOB: 013-12149

TOTAL: 2 GEOCODED: 0 NON GEOCODED: 2 SELECTED: 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Page No.
	UST	ROSSI PROPERTY FRESNOCO5957/CLOSED UST FACILITY/DATA VAULT	TOLLHOUSE W OF ACADEMY ACADEMY CA 93612	NON GC	N/A	2
	TRIBALLA	BUREAU OF INDIAN AFFAIRS CONTACT I BIA-93612/	UNKNOWN CA 93612	NON GC	N/A	3

Environmental FirstSearch

Site Detail Report

Target Property: 11000 TOLLHOUSE RD
CLOVIS, CA 93612

JOB: 013-12149

UST

SEARCH ID:	1	DIST/DIR:	NON GC	ELEVATION:	MAP ID:
------------	---	-----------	--------	------------	---------

NAME: ROSSI PROPERTY
ADDRESS: TOLLHOUSE W OF ACADEMY
ACADEMY CA 93612
FRESNO

REV: 04/17/2001
ID1: FRESNOCO5957
ID2:
STATUS: CLOSED UST FACILITY/DATA VAULT
PHONE:

CONTACT:
SOURCE:

DETAILS NOT AVAILABLE

Environmental FirstSearch Descriptions

NPL: EPA NATIONAL PRIORITY LIST - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money. A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment. FINAL - Currently on the Final NPL PROPOSED - Proposed for NPL

NPL DELISTED: EPA NATIONAL PRIORITY LIST Subset - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate. DELISTED - Deleted from the Final NPL

CERCLIS: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. PART OF NPL- Site is part of NPL site DELETED - Deleted from the Final NPL FINAL - Currently on the Final NPL NOT PROPOSED - Not on the NPL NOT VALID - Not Valid Site or Incident PROPOSED - Proposed for NPL REMOVED - Removed from Proposed NPL SCAN PLAN - Pre-proposal Site WITHDRAWN - Withdrawn

NFRAP: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site. NFRAP - No Further Remedial Action Plan P - Site is part of NPL site D - Deleted from the Final NPL F - Currently on the Final NPL N - Not on the NPL O - Not Valid Site or Incident P - Proposed for NPL R - Removed from Proposed NPL S - Pre-proposal Site W - Withdrawn

RCRA COR ACT: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984. RCRAInfo facilities that have reported violations and subject to corrective actions.

RCRA TSD: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM TREATMENT, STORAGE, and DISPOSAL FACILITIES. - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984. Facilities that treat, store, dispose, or incinerate hazardous waste.

RCRA GEN: EPA/MA DEP/CT DEP RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM

used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The SMBRPD displays information in six categories, two of which are found in ST. The categories listed under ST are: 1. State Response Sites. 2. School Property Evaluation Program Properties (SCH) Please Note: Our reports list the above sites as DB Type (STATE). Other categories found in the SMBRPD are listed in our reports in the DB Types OT and VC. Each Category contains information on properties based upon the type of work taking place at the site. State Response Sites contains only known and potential hazardous substance release sites considered as posing the greatest threat to the public. School sites included in ST will be found within the SMBRPD's School Property Evaluation Program. CORTESE LIST-Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program to provide information about the location of hazardous materials release sites. Cortese List sites that fall under DTSC's guidelines for State Response sites are included in our reports in the ST category as are qualifying sites from the Annual Work Plan (formerly Bond Expenditure Plan) and the historic ASPIS databases.

State Spills 90: CA EPA SLIC REGIONS 1 - 9- The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups.

State/Tribal SWL: CA IWMB/SWRCB/COUNTY SWIS SOLID WASTE INFORMATION SYSTEM-The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed in the source field.. Please Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in our reports. WMUDS-The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's. Note: This database contains poor site location information for many sites in our reports; therefore, it may not be possible to locate or plot some sites in reports. ORANGE COUNTY LANDFILLS LIST- A list maintained by the Orange County Health Department.

State/Tribal LUST: CA SWRCB/COUNTY LUSTIS- The State Water Resources Control Board maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database. SAN DIEGO COUNTY LEAKING TANKS- The San Diego County Department of Environmental Health maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed in the source information field.

State/Tribal UST/AST: CA EPA/COUNTY/CITY ABOVEGROUND STORAGE TANKS LISTING-The Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation. SWEEPS / FIDS STATE REGISTERED UNDEGROUND STORAGE TANKS- Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. We have included the UST information from the FIDS database in our reports for historical

generate hazardous waste. SACRAMENTO COUNTY MASTER HAZMAT LIST-Master list of facilities within Sacramento County with potentially hazardous materials. SACRAMENTO COUNTY TOXIC SITE CLEANUPS-A list of sites where unauthorized releases of potentially hazardous materials have occurred.

Federal IC / EC: EPA FEDERAL ENGINEERING AND INSTITUTIONAL CONTROLS- Superfund sites that have either an engineering or an institutional control. The data includes the control and the media contaminated. RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES (RCRA) – RCRA site the have institutional controls.

State/Tribal HW: CA EPA DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY-Records maintained by the CA DTSC of Hazardous Waste Manifests used to track and document the transport of hazardous waste from a generator's site to the site of its final disposition.

State/Tribal Sites: CA EPA The CAL EPA, Depart. Of Toxic Substances Control Phone: (916) 323-3400 For Cortese List information contact The CAL EPA, Department of Toxic Substances Control at (916) 445-6532

Updated quarterly/when available

State Spills 90: CA EPA The California State Water Resources Control Board For phone number listings of departments within each region visit their web sites at: <http://www.swrcb.ca.gov/regions.html>

Updated when available

State/Tribal SWL: CA IWMB/SWRCB/COUNTY The California Integrated Waste Management Board
Phone:(916) 255-2331
The State Water Resources Control Board
Phone:(916) 227-4365
Orange County Health Department
Phone:(714) 834-3536

Updated quarterly/when available

State/Tribal LUST: CA SWRCB/COUNTY The California State Water Resources Control Board Phone:(916) 227-4416 San Diego County Department of Environmental Health Phone:(619) 338-2242

Updated quarterly/when available

State/Tribal UST/AST: CA EPA/COUNTY/CITY The State Water Resources Control Board
Phone:(916) 227-4364
CAL EPA Department of Toxic Substances Control
Phone:(916)227-4404
US EPA Region 9 Underground Storage Tank Program
Phone: (415) 972-3372
ALAMEDA COUNTY CUPAS:
* County of Alameda Department of Environmental Health
* Cities of Berkeley, Fremont, Hayward, Livermore / Pleasanton, Newark, Oakland, San Leandro, Union
ALPINE COUNTY CUPA:
* Health Department (Only updated by agency sporadically)
AMADOR COUNTY CUPA:
* County of Amador Environmental Health Department
BUTTE COUNTY CUPA
* County of Butte Environmental Health Division (Only updated by agency biannually)
CALAVERAS COUNTY CUPA:
* County of Calaveras Environmental Health Department
COLUSA COUNTY CUPA:
* Environmental Health Dept.
CONTRA COSTA COUNTY CUPA:
* Hazardous Materials Program
DEL NORTE COUNTY CUPA:
* Department of Health and Social Services
EL DORADO COUNTY CUPAS:
* County of El Dorado Environmental Health - Solid Waste Div (Only updated by agency annually)

- * Cities of Anaheim, Fullerton, Orange, Santa Ana
- * County of Orange Environmental Health Department

PLACER COUNTY CUPAS:

- * County of Placer Division of Environmental Health Field Office
- * Tahoe City
- * City of Roseville Roseville Fire Department

PLUMAS COUNTY CUPA:

- * Environmental Health Department

RIVERSIDE COUNTY CUPA:

- * Environmental Health Department

SACRAMENTO COUNTY CUPA:

- * County Environmental Mgmt Dept, Haz. Mat. Div.

SAN BENITO COUNTY CUPA:

- * City of Hollister Environmental Service Department

SAN BERNARDINO COUNTY CUPAS:

- * County of San Bernardino Fire Department, Haz. Mat. Div.
- * City of Hesperia Hesperia Fire Prevention Department
- * City of Victorville Victorville Fire Department

SAN DIEGO COUNTY CUPA:

- * The San Diego County Dept. of Environmental Health HE 17/58

SAN FRANCISCO COUNTY CUPA:

- * Department of Public Health

SAN JOAQUIN COUNTY CUPA:

- * Environmental Health Division

SAN LUIS OBISPO COUNTY CUPAS:

- * County of San Luis Obispo Environmental Health Division
- * City of San Luis Obispo City Fire Department

SAN MATEO COUNTY CUPA:

- * Environmental Health Department

SANTA BARBARA COUNTY CUPA:

- * County Fire Dept Protective Services Division

SANTA CLARA COUNTY CUPAS:

- * County of Santa Clara Hazardous Materials Compliance Division
- * Santa Clara County Central Fire Protection District (Covers Campbell, Cupertino, Los Gatos, & Morgan Hill)
- * Cities of Gilroy, Milpitas, Mountain View, Palo Alto, San Jose Fire, Santa Clara, Sunnyvale

SANTA CRUZ COUNTY CUPA:

- * Environmental Health Department

SHASTA COUNTY CUPA:

- * Environmental Health Department

SIERRA COUNTY CUPA:

- * Health Department

SISKIYOU COUNTY CUPA:

- * Environmental Health Department

SONOMA COUNTY CUPAS:

- * County of Sonoma Department Of Environmental Health
- * Cities of Healdsburg / Sebastopol, Petaluma, Santa Rosa

STANISLAUS COUNTY CUPA:

- * Department of Environmental Resources Haz. Mat. Division

SUTTER COUNTY CUPA:

Environmental FirstSearch
Street Name Report for Streets within .25 Mile(s) of Target Property

Target Property: 11000 TOLLHOUSE RD
CLOVIS, CA 93612

JOB: 013-12149

Street Name	Dist/Dir	Street Name	Dist/Dir
TOLLHOUSE RD	0.00--		



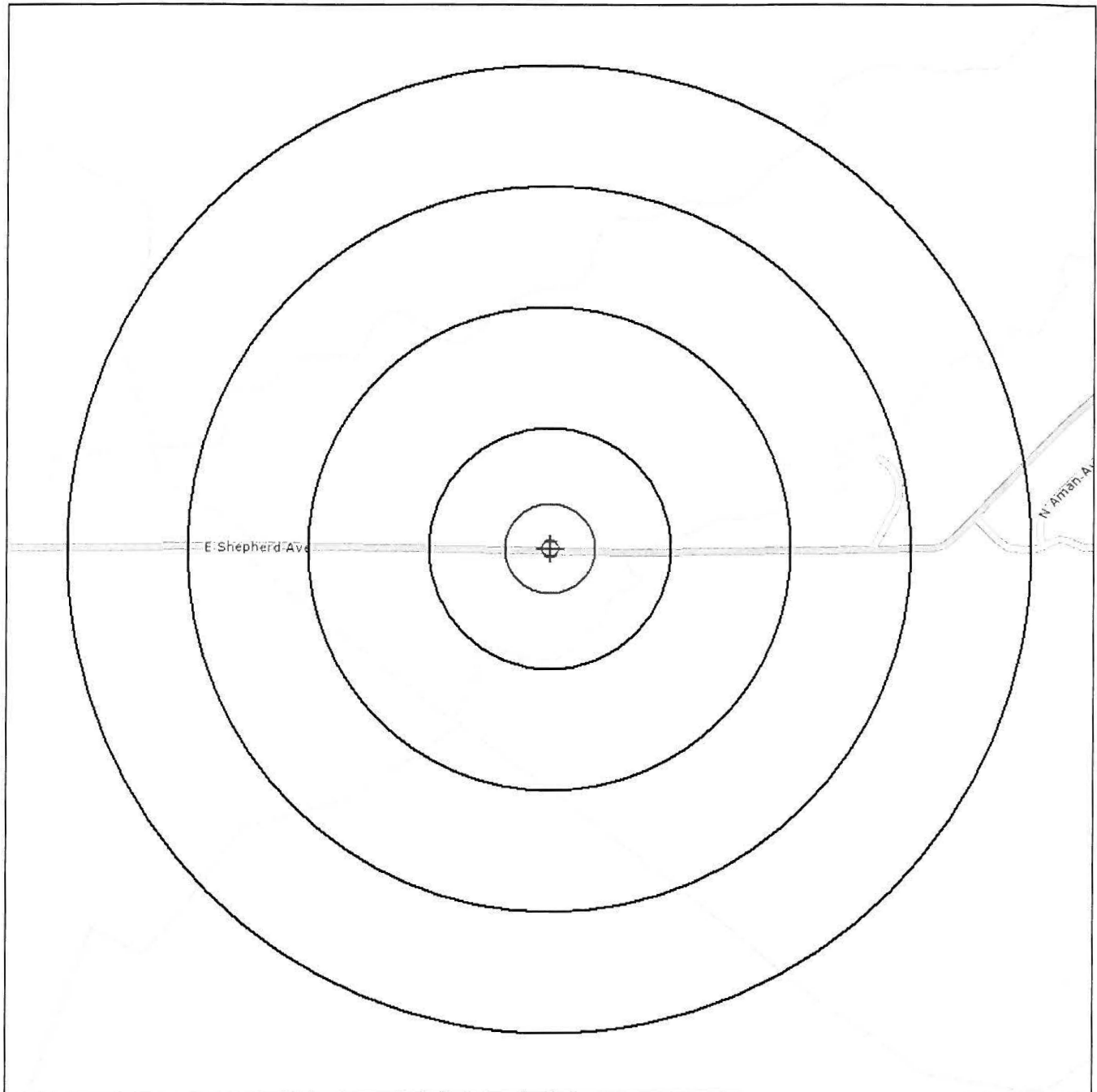
Environmental FirstSearch

1 Mile Radius

AAI: NPL, RCRACOR, STATE

FIRSTSEARCH

11000 TOLLHOUSE RD, CLOVIS, CA 93612



Source: Tele Atlas

- | | |
|--|--|
| Target Site (Latitude: 36.866727 Longitude: -119.580798) | |
| Identified Site, Multiple Sites, Receptor | |
| NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste | |
| Triballand | |
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius



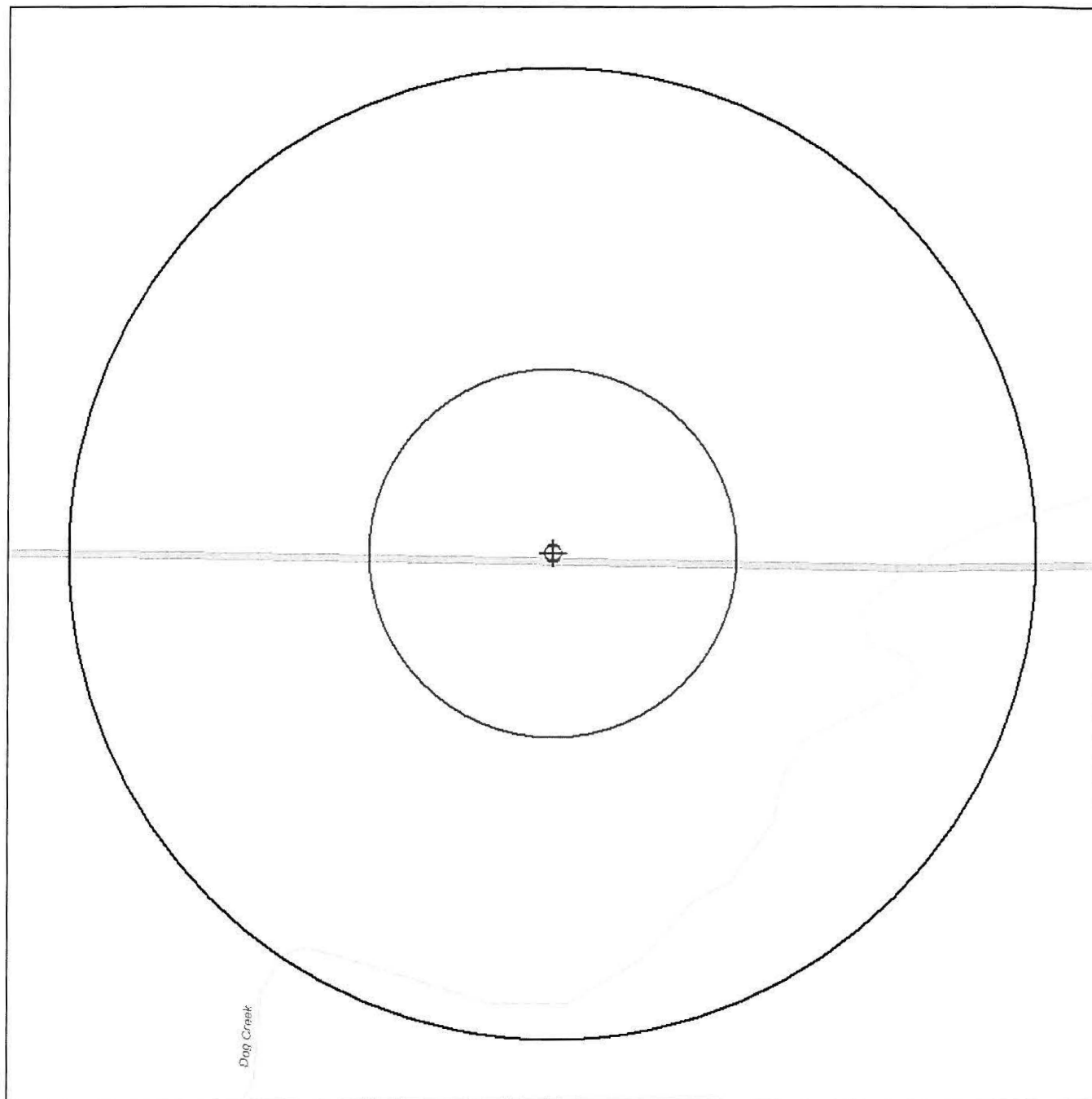
Environmental FirstSearch

.25 Mile Radius

AAI: RCRA GEN, UST, OTHER, FEDIC/EC

FIRSTSEARCH

11000 TOLLHOUSE RD, CLOVIS, CA 93612



Source: Tele Atlas

- | | |
|--|--|
| Target Site (Latitude: 36.866727 Longitude: -119.580798) | |
| Identified Site, Multiple Sites, Receptor | |
| NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste | |
| Triballand | |
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Sample Ranch Residential Development

Air Quality & Greenhouse Gas Impact Assessment April 21, 2025

Prepared by:

VRPA Technologies, Inc.
4630 W. Jennifer, Suite 105
Fresno, CA 93722
Project Manager: Georgiena Vivian



Table of Contents

Section	Description	Page
1.0	Introduction	1
1.1	Description of the Region/Project	1
1.2	Regulatory	1
1.2.1	Federal Agencies	1
1.2.2	Federal Regulations	5
1.2.3	State Agencies	6
1.2.4	State Regulations	11
1.2.5	Regional Agencies	14
1.2.6	Regional Regulations	16
1.2.7	Local Plans	17
2.0	Environmental Setting	18
2.1	Geographical Locations	18
2.2	Topographic Conditions	18
2.3	Climate Conditions	18
2.4	Anthropogenic (Man-made) Sources	20
2.4.1	Motor Vehicles	21
2.4.2	Agricultural and Other Miscellaneous	22
2.4.3	Industrial Plants	22
2.5	San Joaquin Valley Air Basin Monitoring	22
2.6	Air Quality Standards	24
2.6.1	Ozone (1-hour and 8-hour)	25
2.6.2	Suspended PM (PM10 and PM2.5)	27
2.6.3	Carbon Monoxide (CO)	28
2.6.4	Nitrogen Dioxide (NO2)	29
2.6.5	Sulfur Dioxide (SO2)	30
2.6.6	Lead (Pb)	31
2.6.7	Toxic Air Contaminants (TAC)	31
2.6.8	Odors	33
2.6.9	Naturally Occurring Asbestos (NOA)	35
2.6.10	Greenhouse Gas Emissions	35

3.0	Air Quality Impacts	37
3.1	Methodology	37
3.1.1	CalEEMod	37
3.2	Short-Term Impacts	38
3.3	Long Term Emissions	39
3.3.1	Localized Operational Emissions	39
	Ozone/Particulate Matter	39
3.3.2	Other Localized Operational Emissions	39

4.0	Impact Determinations and Recommended Mitigation	46
4.1	Air Quality	46
4.1.1	Conflict with or obstruct implementation of the applicable air quality plan	46
4.1.2	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	47
4.1.3	Expose sensitive receptors to substantial pollutant concentrations	47
4.1.4	Result in other emissions such as those leading to odors adversely affecting a substantial number of people	49
4.2	Greenhouse Gas Emissions	50
4.2.1	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment	50
4.2.2	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases	53

Appendices

Appendix A – CalEEMod Worksheets

List of Tables

1	Ambient Air Quality Standards	9
2	Maximum Pollutant Levels at Fresno Garland Monitoring Station	23
3	Fresno County Attainment Status	24
4	Recommendations on Siting New Sensitive Land Uses Such As Residences, Schools, Daycare Centers, Playgrounds, or Medical Facilities	33
5	Screening Levels for Potential Odor Sources	35
6	SJVAPCD Air Quality Thresholds of Significance	37
7	Project Construction Emissions (tons/year)	39
8	Project Operational Emissions (tons/year)	39
9	2005/2020 Operational Greenhouse Gas Emissions (tons/year)	45
10	Project Operational Greenhouse Gas Emissions (tons/year)	45

List of Figures

1	Regional Location	3
2	Project Location	4
3	San Joaquin Valley Air Basin	8

1.0 Introduction

1.1 Description of the Region/Project

The proposed project aims to develop 44 single-family residential units in the County of Fresno on the north side of Tollhouse Rd/SR 168 approximately 2 miles east of the E. Shepherd intersection.

This Air Quality & Greenhouse Gas Impact Assessment has been prepared for the purpose of identifying potential project-specific or site-specific air quality impacts that may result from the Project. Figures 1 and 2 show the location of the Project along with major roadways and highways.

Fresno County one of the most polluted air basins in the country – the San Joaquin Valley Air Basin (SJVAB). The surrounding topography includes foothills and mountains to the east and west. These mountain ranges direct air circulation and dispersion patterns. Temperature inversions can trap air within the Valley, thereby preventing the vertical dispersal of air pollutants. In addition to topographic conditions, the local climate can also contribute to air quality problems. The climate in Fresno County is characterized by hot, dry summers and cool winters with the notable presence of Tule fog.

1.2 Regulatory

Air quality within the Project area is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policymaking, education, and a variety of programs. The agencies primarily responsible for improving the air quality within the Fresno County are discussed below along with their individual responsibilities.

1.2.1 Federal Agencies

✓ U.S. Environmental Protection Agency (EPA)

The Federal Clean Air Bill first adopted in 1967 and periodically amended since then, established federal ambient air quality standards. A 1987 amendment to the Bill set a deadline for the attainment of these standards. That deadline has since passed. The other Clean Air Act (CAA) Bill Amendments, passed in 1990, share responsibility with the State in reducing emissions from mobile sources. The U.S. Environmental Protection Agency (EPA) is responsible for enforcing the 1990 amendments.

The CAA and the national ambient air quality standards identify levels of air quality for six “criteria” pollutants, which are considered the maximum levels of ambient air pollutants considered safe, with an adequate margin of safety, to protect public health and welfare. The six criteria pollutants include ozone, carbon monoxide (CO), nitrogen dioxide, sulfur dioxide,

particulate matter, and lead.

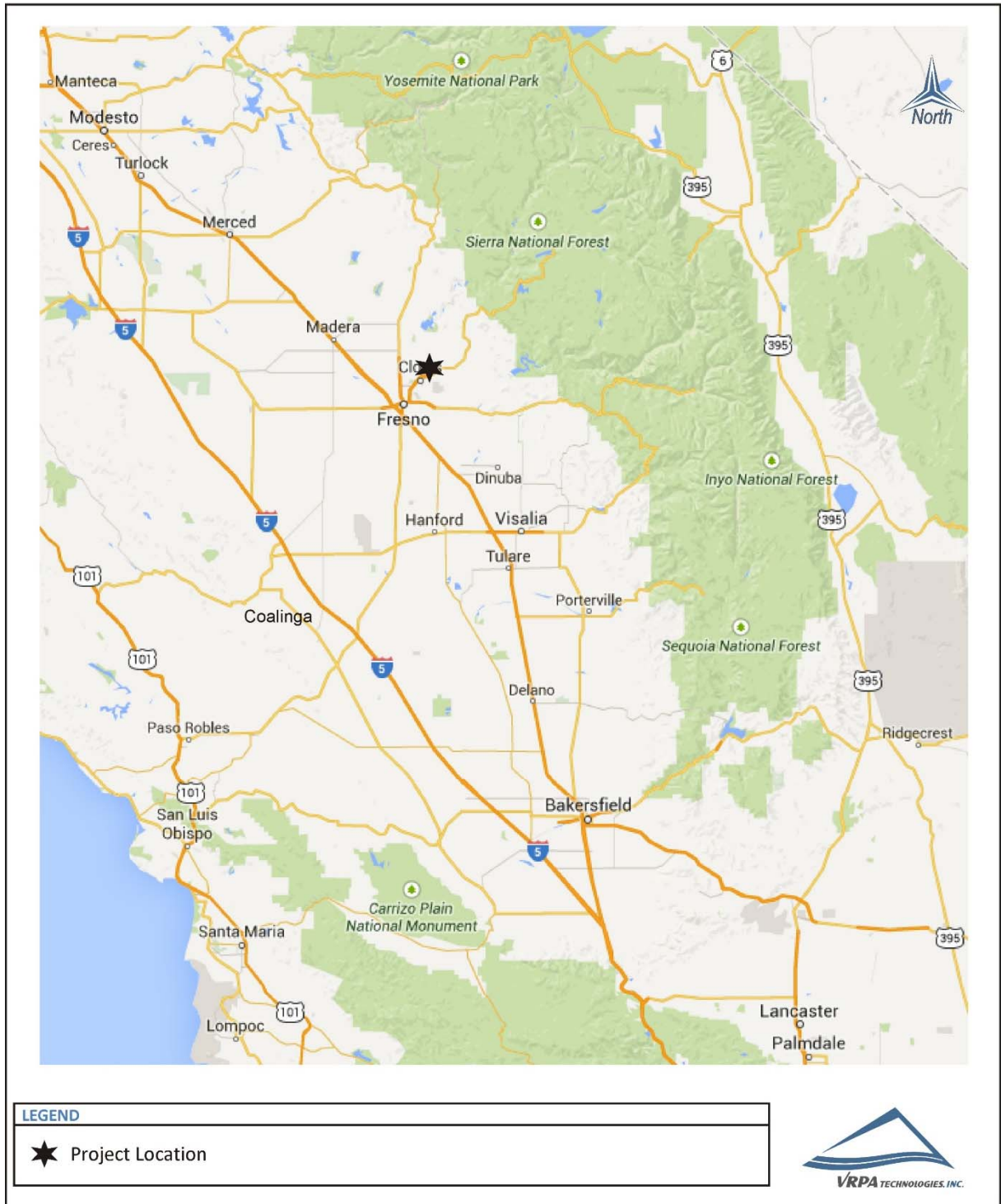
CAA Section 176(c) (42 U.S.C. 7506(c)) and EPA transportation conformity regulations (40 CFR 93 Subpart A) require that each new RTP and Transportation Improvement Program (TIP) be demonstrated to conform to the State Implementation Plan (SIP) before the RTP and TIP are approved by the Metropolitan planning organization (MPO) or accepted by the U.S. Department of Transportation (DOT). The conformity analysis is a federal requirement designed to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS). However, because the State Implementation Plan (SIP) for particulate matter 10 microns or less in diameter (PM₁₀), particulate matter 2.5 microns or less in diameter (PM_{2.5}), and Ozone address attainment of both the State and federal standards, for these pollutants, demonstrating conformity to the federal standards is also an indication of progress toward attainment of the State standards. Compliance with the State air quality standards is provided on the pages following this federal conformity discussion.

The EPA approved San Joaquin Valley reclassification of the ozone (8-hour) designation to extreme nonattainment in the Federal Register on May 5, 2010, even though the San Joaquin Valley was initially classified as serious nonattainment for the 1997 8-hour ozone standard. In accordance with the CAA, EPA uses the design value at the time of standard promulgation to assign nonattainment areas to one of several classes that reflect the severity of the nonattainment problem; classifications range from marginal nonattainment to extreme nonattainment. In the Federal Register on October 26, 2015, the EPA revised the primary and secondary standard to 0.070 parts per million (ppm) to provide increased public health protection against health effects associated with long- and short-term exposures. The previous ozone standard was set in 2010 at 0.075 ppm.

Fresno County is located in a nonattainment area for the 8-hour ozone standard, PM_{2.5} standard, and PM₁₀ standard.

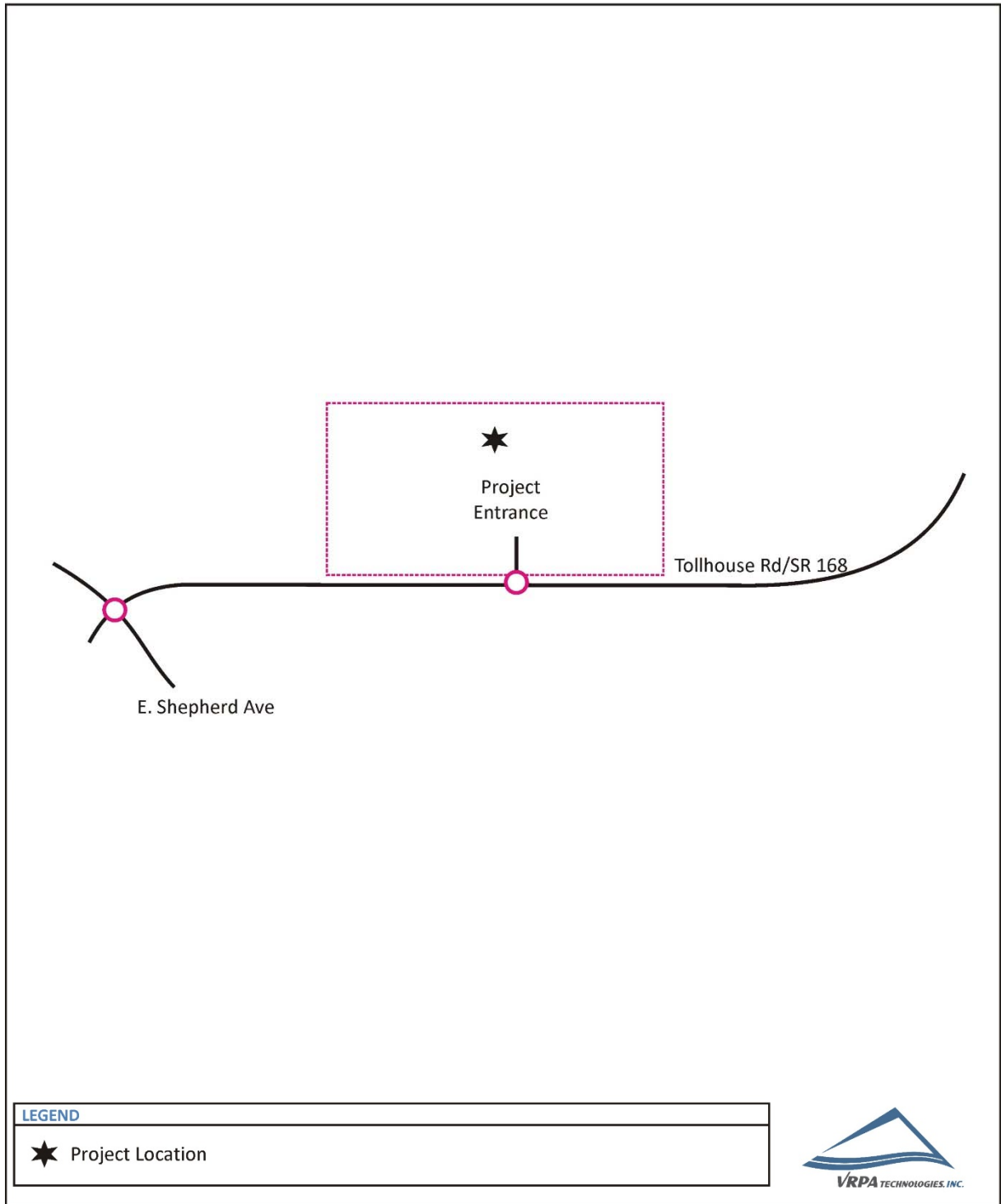
**Sample Ranch Residential Development
Regional Location**

**Figure
1**



Sample Ranch Residential Development
Project Location

Figure
2



1.2.2 Federal Regulations

✓ **National Environmental Policy Act (NEPA)**

NEPA provides general information on the effects of federally funded projects. The Act was implemented by regulations included in the Code of Federal Regulations (40CFR6). The code requires careful consideration concerning environmental impacts of federal actions or plans, including projects that receive federal funds. The regulations address impacts on land uses and conflicts with state, regional, or local plans and policies, among others. They also require that projects requiring NEPA review seek to avoid or minimize adverse effects of proposed actions and to restore and enhance environmental quality as much as possible.

✓ **State Implementation Plan (SIP)/ Air Quality Management Plans (AQMPs)**

To ensure compliance with the NAAQS, EPA requires states to adopt SIP aimed at improving air quality in areas of nonattainment or a Maintenance Plan aimed at maintaining air quality in areas that have attained a given standard. New and previously submitted plans, programs, district rules, state regulations, and federal controls are included in the SIPs. Amendments made in 1990 to the federal CAA established deadlines for attainment based on an area's current air pollution levels. States must enact additional regulatory programs for nonattainment's areas in order to adhere with the CAA Section 172. In California, the SIPs must adhere to both the NAAQS and the California Ambient Air Quality Standards (CAAQS).

To ensure that State and federal air quality regulations are being met, Air Quality Management Plans (AQMPs) are required. AQMPs present scientific information and use analytical tools to identify a pathway towards attainment of NAAQS and CAAQS. The San Joaquin Valley Air Pollution Control District (SJVAPCD) develops the AQMPs for the region where the Fresno Council of Governments (Fresno COG) operates. The regional air districts begin the SIP process by submitting their AQMPs to the California Air Resources Board (CARB). CARB is responsible for revising the SIP and submitting it to EPA for approval. EPA then acts on the SIP in the Federal Register. The items included in the California SIP are listed in the Code of Federal Regulations Title 40, Chapter 1, Part 52, Subpart 7, Section 52.220.

✓ **Transportation Control Measures**

One particular aspect of the SIP development process is the assessment of available transportation control measures (TCMs) as a part of making progress towards clean air goals. TCMs are defined in Section 108(f)(1) of the CAA and are strategies designed to reduce vehicle miles traveled, vehicle idling, and associated air pollution. These goals are generally achieved by developing attractive and convenient alternatives to single-occupant vehicle use. Examples of TCMs include ridesharing programs, transportation infrastructure improvements such as adding bicycle and carpool lanes, and expansion of public transit.

✓ **Energy Policy Act of 1992 (EPAcT)**

The Energy Policy Act of 1992 (EPAcT) was passed to reduce the country's dependence on foreign petroleum and improve air quality. EPAcT includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. EPAcT requires certain federal, state, and local government and private fleets to purchase a percentage of light duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are included in EPAcT. Federal tax deductions will be allowed for businesses and individuals to cover the incremental cost of alternative fueled vehicles (AFVs). States are also required by the act to consider a variety of incentive programs to help promote AFVs.

1.2.3 *State Agencies*

✓ **California Air Resources Board (CARB)**

CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California and for implementing its own air quality legislation called the California Clean Air Act (CCAA), adopted in 1988. CARB was created in 1967 from the merging of the California Motor Vehicle Pollution Control Board and the Bureau of Air Sanitation and its Laboratory.

CARB has primary responsibility in California to develop and implement air pollution control plans designed to achieve and maintain the NAAQS established by the EPA. Whereas CARB has primary responsibility and produces a major part of the SIP for pollution sources that are statewide in scope, it relies on the local air districts to provide additional strategies for sources under their jurisdiction. CARB combines its data with all local district data and submits the completed SIP to the EPA. The SIP consists of the emissions standards for vehicular sources and consumer products set by CARB, and attainment plans adopted by the Air Pollution Control Districts (APCDs) and Air Quality Management District's (AQMDs) and approved by CARB.

States may establish their own standards, provided the State standards are at least as stringent as the NAAQS. California has established California Ambient Air Quality Standards (CAAQS) pursuant to California Health and Safety Code (CH&SC) [§39606(b)] and its predecessor statutes.

The CH&SC [§39608] requires CARB to "identify" and "classify" each air basin in the State on a pollutant-by-pollutant basis. Subsequently, CARB designated areas in California as nonattainment based on violations of the CAAQSS. Designations and classifications specific to the SJVAB can be found in the next section of this document. Areas in the State were also classified based on severity of air pollution problems. For each nonattainment class, the CCAA specifies air quality management strategies that must be adopted. For all nonattainment categories, attainment plans are required to demonstrate a five percent-per-

year reduction in nonattainment air pollutants or their precursors, averaged every consecutive three-year period, unless an approved alternative measure of progress is developed. In addition, air districts in violation of CAAQS are required to prepare an Air Quality Attainment Plan (AQAP) that lays out a program to attain and maintain the CCAA mandates.

CARB, in consultation with MPOs, has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. For the Fresno COG region, CARB set targets at six(6) percent per capita decrease in 2020 and a thirteen (13) percent per capita decrease in 2035 from a base year of 2005. Fresno COG's 2022 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which was adopted in July 2022, projects that the Fresno County region would achieve the prescribed emissions targets.

Other CARB duties include monitoring air quality. CARB has established and maintains, in conjunction with local APCDs and AQMDs, a network of sampling stations (called the State and Local Air Monitoring [SLAMS] network), which monitor the present pollutant levels in the ambient air.

Fresno County is in the CARB-designated, SJVAB. A map of the SJVAB is provided in Figure 3. In addition to Fresno County, the SJVAB includes Kings, Kern, Madera, Merced, San Joaquin, Stanislaus, and Tulare Counties. Federal and State standards for criteria pollutants are provided in Table 1.

Sample Ranch Residential Development
San Joaquin Valley Air Basin

Figure
3

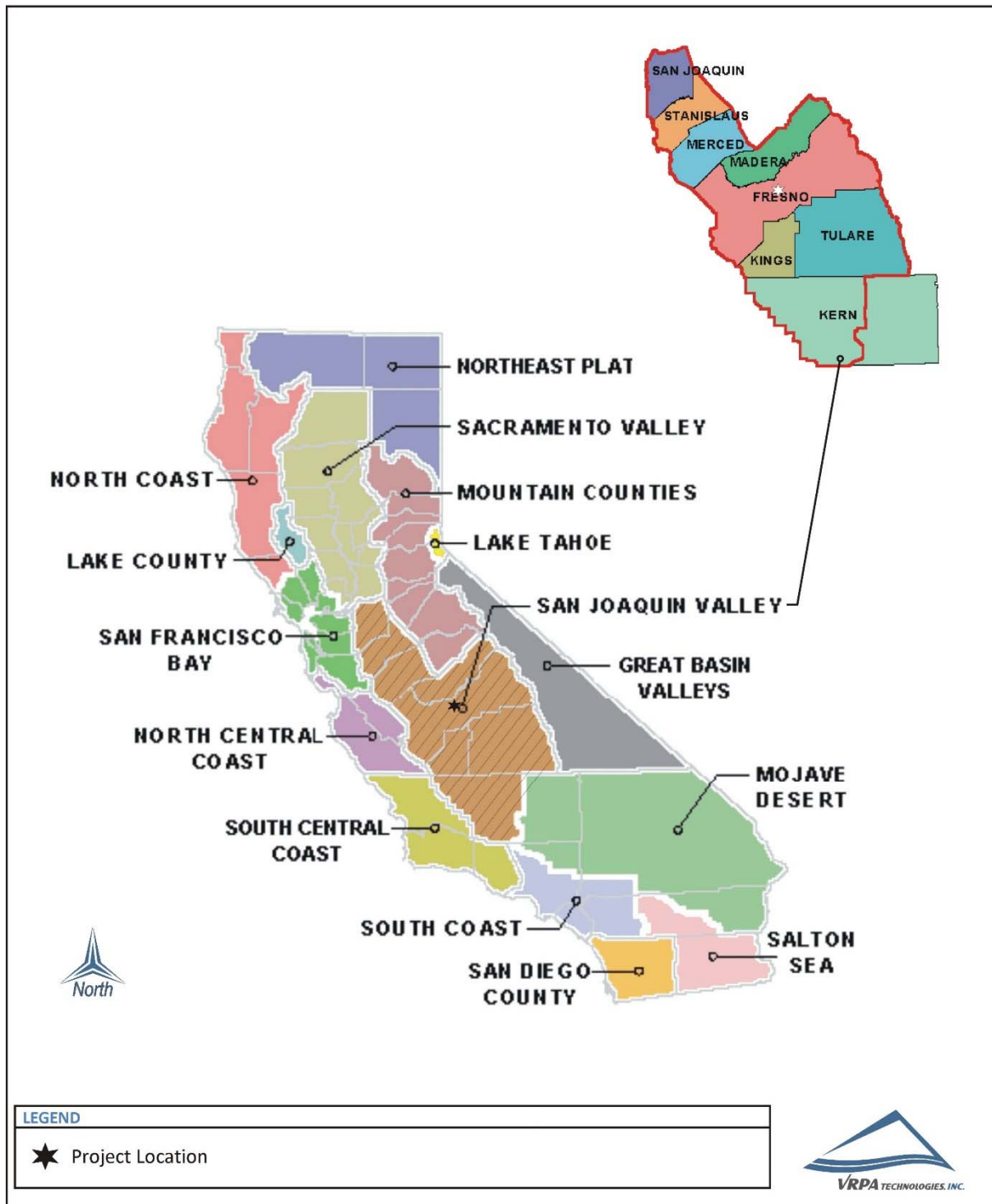


Table 1
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards ¹		National Standards ²		
		Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷
Ozone (O ₃) ⁸	1 Hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m ³)		0.070 ppm (137 µg/m ³)		
Respirable Particulate Matter (PM10) ⁹	24 Hour	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m ³		--		
Fine Particulate Matter (PM2.5) ⁹	24 Hour	--	--	35 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m ³	Gravimetric or Beta Attenuation	12.0 µg/m ³	15 µg/m ³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m ³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m ³)	--	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m ³)		9 ppm (10 mg/m ³)	--	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)		--	--	
Nitrogen Dioxide (NO ₂) ¹⁰	1 Hour	0.18 ppm (339 µg/m ³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m ³)	--	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)		0.053 ppm (100 µg/m ³)	Same as Primary Standard	
Sulfur Dioxide (SO ₂) ¹¹	1 Hour	0.25 ppm (655 µg/m ³)	Ultraviolet Fluorescence	75 ppb (196 µg/m ³)	--	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	--		--	0.5 ppm (1300 µg/m ³)	
	24 Hour	0.04 ppm (105 µg/m ³)		0.14 ppm (for cetain areas) ¹¹	--	
	Annual Arithmetic Mean	--		0.030 ppm (for cetain areas) ¹¹	--	
Lead ^{12,13}	30 Day Average	1.5 µg/m ³	Atomic Absorption	--	--	High Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 µg/m ³ (for certain areas) ¹¹	Same as Primary Standard	
	Rolling 3-Month Average	--		0.15 µg/m ³		
Visibility Reducing Particles ¹⁴	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m ³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence			
Vinyl Chloride ¹²	24 Hour	0.01 ppm (26 µg/m ³)	Gas Chromatography			

See footnotes on next page ...

Footnotes:

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM₁₀, PM_{2.5}, 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 PM_{2.5}, 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. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
 9. On December 14, 2012, the national annual PM_{2.5} primary standard was lowered from 15 µg/m³ to 12.0 µg/m³. The existing national 24-hour PM_{2.5} standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour PM₁₀ standards (primary and secondary) of 150 µg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
 10. 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 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
 11. 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.
12. 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.
 13. 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.
 14. 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.

1.2.4 State Regulations

✓ CARB Mobile-Source Regulation

The State of California is responsible for controlling emissions from the operation of motor vehicles in the State. Rather than mandating the use of specific technology or the reliance on a specific fuel, CARB's motor vehicle standards specify the allowable grams of pollutant per mile driven. In other words, the regulations focus on the reductions needed rather than on the manner in which they are achieved.

✓ California Clean Air Act

The CCAA was first signed into law in 1988. The CCAA provides a comprehensive framework for air quality planning and regulation, and spells out, in statute, the state's air quality goals, planning and regulatory strategies, and performance. The CCAA establishes more stringent ambient air quality standards than those included in the Federal CAA. CARB is the agency responsible for administering the CCAA. CARB established ambient air quality standards pursuant to the CH&SC [§39606(b)], which are similar to the federal standards. The SJVAPCD is one of 35 AQMDs that have prepared air quality management plans to accomplish a five percent (5%) annual reduction in emissions documenting progress toward the State ambient air quality standards.

✓ Tanner Air Toxics Act

California regulates Toxic Air Contaminants (TACs) primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and has adopted EPA's list of Hazardous Air Pollutants (HAPs) as TACs. Once a TAC is identified, CARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate Best Available Control Technology (BACT) to minimize emissions.

AB 2588 requires that existing facilities that emit toxic substances above a specified level prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures. CARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses and off-road diesel equipment (e.g., tractors, generators).

These rules and standards provide for:

- More stringent emission standards for some new urban bus engines, beginning with 2002 model year engines.
- Zero-emission bus demonstration and purchase requirements applicable to transit agencies
- Reporting requirements under which transit agencies must demonstrate compliance with the urban transit bus fleet rule.

✓ **AB 1493 (Pavley)**

AB 1493 (Pavley) enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. Regulations adopted by CARB would apply to 2009 and later model year vehicles. CARB estimated that the regulation would reduce climate change emissions from light duty passenger vehicles by an estimated 18 percent in 2020 and by 27 percent in 2030 [Association of Environmental Professionals (AEP) 2007)]. In 2005, the CARB requested a waiver from U.S. EPA to enforce the regulation, as required under the CAA. Despite the fact that no waiver had ever been denied over a 40-year period, the then Administrator of the EPA sent Governor Schwarzenegger a letter in December 2007, indicating he had denied the waiver. On March 6, 2008, the waiver denial was formally issued in the Federal Register. Governor Schwarzenegger and several other states immediately filed suit against the federal government to reverse that decision. On January 21, 2009, CARB requested that EPA reconsider denial of the waiver. EPA scheduled a re-hearing on March 5, 2009. On June 30, 2009, EPA granted a waiver of CAA preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year.

✓ **Assembly Bill 32 (California Global Warming Solutions Act of 2006)**

California passed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in greenhouse gas (GHG) emissions and establishes a cap on statewide GHG emissions. AB 32 has achieved the goal of reducing statewide GHG emissions to 1990 levels by 2020. Now, the goal under AB 32 is to further reduce GHG emissions to 40% below 1990 levels by 2030. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires CARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrived at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state reduces GHG emissions enough to meet the cap. AB 32 also includes guidance on

instituting emissions reductions in an economically efficient manner, along with conditions to ensure that businesses and consumers are not unfairly affected by the reductions. Using these criteria to reduce statewide GHG emissions to 1990 levels by 2030 would represent an approximate 40 percent reduction in current emissions levels. However, CARB has discretionary authority to seek greater reductions in more significant and growing GHG sectors, such as transportation, as compared to other sectors that are not anticipated to significantly increase emissions.

CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan adopted in December of 2008. The current plan has identified new policies and actions to accomplish the State's 2030 GHG limit.

✓ **Senate Bill 375**

SB 375, signed in September 2008 (Chapter 728, Statutes of 2008), aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a sustainable communities strategy (SCS) or alternative planning strategy (APS) that will prescribe land use allocation in that MPO's regional transportation plan. CARB, in consultation with MPOs, has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. For the Fresno COG region, CARB set targets at six (6) percent per capita decrease in 2020 and a thirteen (13) percent per capita decrease in 2035 from a base year of 2018. The Fresno COG 2022 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which was adopted in July 2022, projects that the Fresno County region would achieve the prescribed emissions targets.

This law also extends the minimum time period for the regional housing needs allocation cycle from five years to eight years for local governments located within an MPO that meets certain requirements. County land use policies (including general plans) are not required to be consistent with the regional transportation plan (and associated SCS or APS). However, new provisions of CEQA incentivize (through streamlining and other provisions) qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

✓ **Executive Order B-30-15**

Executive Order B-30-15, which was signed by Governor Brown in 2016, establishes a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050. Executive Order B-30-15 requires MPO's to implement measures that will achieve reductions of greenhouse gas emissions to meet the 2030 and 2050 greenhouse gas emissions reductions targets.

✓ **California Global Warming Solutions Act of 2006: emissions limit, or SB 32**

SB 32 is a California Senate bill expanding upon AB 32 to reduce greenhouse gas (GHG) emissions. SB 32 was signed into law on September 8, 2016, by Governor Brown. SB 32 sets into law the mandated reduction target in GHG emissions as written into Executive Order B-30-15. SB 32 requires that there be a reduction in GHG emissions to 40% below the 1990 levels by 2030. Greenhouse gas emissions include carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons. The California Air Resources Board (CARB) is responsible for ensuring that California meets this goal. The provisions of SB 32 were added to Section 38566 of the Health and Safety Code subsequent to the bill's approval. The bill went into effect January 1, 2017. SB 32 builds onto Assembly Bill (AB) 32 written by Senator Fran Pavley and Assembly Speaker Fabian Nunez passed into law on September 27, 2006. AB 32 required California to reduce greenhouse gas emissions to 1990 levels by 2020 and SB 32 continues that timeline to reach the targets set in Executive Order B-30-15. SB 32 provides another intermediate target between the 2020 and 2050 targets set in Executive Order S-3-05.

1.2.5 Regional Agencies

✓ **San Joaquin Valley Air Pollution Control District**

The SJVAPCD is the agency responsible for monitoring and regulating air pollutant emissions from stationary, area, and indirect sources within Fresno County and throughout the SJVAB. The District also has responsibility for monitoring air quality and setting and enforcing limits for source emissions. CARB is the agency with the legal responsibility for regulating mobile source emissions. The District is precluded from such activities under State law.

The District was formed in mid-1991 and prepared and adopted the San Joaquin Valley Air Quality Attainment Plan (AQAP), dated January 30, 1992, in response to the requirements of the State CCAA. The CCAA requires each non-attainment district to reduce pertinent air contaminants by at least five percent (5%) per year until new, more stringent, 1988 State air quality standards are met.

Activities of the SJVAPCD include the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, issuance of permits for stationary sources of air pollution, inspection of stationary sources of air pollution and response to citizen complaints, monitoring of ambient air quality and meteorological conditions, and implementation of programs and regulations required by the FCAA and CCAA.

The SJVAPCD has prepared the following State Implementation Plans to address ozone, PM-10 and PM2.5 that currently apply to non-attainment areas:

- The 2022 Plan for the 2015 8-Hour Ozone Standard (2022 Ozone Plan) was adopted by SJVAPCD on December 15, 2022. The 2022 Ozone Plan was developed to ensure

attainment of the 70 parts per billion (ppb) 8-hour ozone standard.

- The 2016 Ozone Plan (2008 standard) was adopted by SJVAPCD on June 16, 2016 and subsequently adopted by ARB on July 21, 2016.
- The 2013 1-Hour Ozone Plan (revoked 1997 standard) was adopted by the SJVAPCD on September 19, 2013. EPA withdrew its approval of the plan due to litigation. The District plans to submit a “redesignation substitute” to EPA to maintain its attainment status for this revoked ozone standard.
- The 2024 Plan for the 2012 Annual PM_{2.5} Standard was adopted by SJVAPCD on June 20, 2024. The Plan was developed to ensure attainment of the federal health-based 2012 national ambient air quality standard (standard, or NAAQS) for fine particulate matter (PM_{2.5}).
- The 2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standard was adopted by the SJVAPCD on November 15, 2018.
- The 2012 PM_{2.5} Plan (as revised in 2015) was approved by EPA on August 16, 2016 (effective September 30, 2016).
- The 2007 PM₁₀ Maintenance Plan (as revised in 2015) was approved by EPA on July 8, 2016 (effective September 30, 2016).
- The 2006 PM₁₀ Plan, adopted by SJVAPCD on February 16, 2006, is a continuation of the Air Districts strategy for achieving the PM₁₀ NAAQS.

The SJVAPCD Plans identified above represent SJVAPCD’s plan to achieve both state and federal air quality standards. The regulations and incentives contained in these documents must be legally enforceable and permanent. These plans break emissions reductions and compliance into different emissions source categories.

The SJVAPCD also prepared the *Guide for Assessing and Mitigation Air Quality Impacts* (GAMAQI), dated March 19, 2015. The GAMAQI is an advisory document that provides Lead Agencies, consultants, and project applicants with analysis guidance and uniform procedures for addressing air quality impacts in environmental documents. Local jurisdictions are not required to utilize the methodology outlined therein. This document describes the criteria that SJVAPCD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for determining whether or not projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts.

1.2.6 Regional Regulations

The SJVAPCD has adopted numerous rules and regulations to implement its air quality plans. Following, are significant rules that will apply to the Project.

✓ Regulation VIII – Fugitive PM₁₀ Prohibitions

Regulation VIII is comprised of District Rules 8011 through 8081, which are designed to reduce PM₁₀ emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and track out, landfill operations, etc. The proposed Project will be required to comply with this regulation. Regulation VIII control measures are provided below:

1. *All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.*
2. *All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.*
3. *All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.*
4. *When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.*
5. *All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.*
6. *Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.*
7. *Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.*

✓ Rule 8021 – Construction, Demolition, Excavation, and Other Earthmoving Activities

District Rule 8021 requires owners or operators of construction projects to submit a Dust Control Plan to the District if at any time the project involves non-residential developments of five or more acres of disturbed surface area or moving, depositing, or relocating of more than 2,500 cubic yards per day of bulk materials on at least three days of the project or residential projects which include 10 or more acres of disturbed surface area. The proposed Project will meet these criteria and will be required to submit a Dust Control Plan to the District in order to comply with this rule.

✓ **Rule 4641 – Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations**

If asphalt paving will be used, then paving operations of the proposed Project will be subject to Rule 4641. This rule applies to the manufacture and use of cutback asphalt, slow cure asphalt and emulsified asphalt for paving and maintenance operations.

✓ **Rule 9510 – Indirect Source Review (ISR)**

The purpose of this rule is to fulfill the District’s emission reduction commitments in the PM10 and Ozone Attainment Plans, achieve emission reductions from construction activities, and to provide a mechanism for reducing emissions from the construction of and use of development projects through off-site measures. The rule is expected to reduce nitrogen oxides and particulates throughout the San Joaquin Valley by more than 10 tons per day.

1.2.7 Local Plans

✓ **County of Fresno General Plan**

California State Law requires every city and county to adopt a comprehensive General Plan to guide its future development. The General Plan essentially serves as a “constitution for development”— the document that serves as the foundation for all land use decisions. The adopted Fresno County General Plan (2000) includes various elements, including air quality and greenhouse gases, that address local concerns and provides goals and policies to achieve its development goals.

2.0 Environmental Setting

This section describes existing air quality within the San Joaquin Valley Air Basin and in Fresno County, including the identification of air pollutant standards, meteorological and topological conditions affecting air quality, and current air quality conditions. Air quality is described in relation to ambient air quality standards for criteria pollutants such as, ozone, carbon monoxide, and particulate matter. Air quality can be directly affected by the type and density of land use change and population growth in urban and rural areas.

2.1 Geographical Location

The SJVAB is comprised of eight counties: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare. Encompassing 24,840 square miles, the San Joaquin Valley is the second largest air basin in California. Cumulatively, counties within the Air Basin represent approximately 16 percent of the State's geographic area. The Air Basin is bordered by the Sierra Nevada Mountains on the east (8,000 to 14,492 feet in elevation), the Coastal Range on the west (4,500 feet in elevation), and the Tehachapi Mountains on the south (9,000 feet elevation). The San Joaquin Valley is open to the north extending to the Sacramento Valley Air Basin.

2.2 Topographic Conditions

Fresno County is located within the San Joaquin Valley Air Basin [as determined by the California Air Resources Board (CARB)]. Air basins are geographic areas sharing a common "air shed." A description of the Air Basin in the County, as designated by CARB, is provided in the paragraph below. Air pollution is directly related to the region's topographic features, which impact air movement within the Basin.

Wind patterns within the SJVAB result from marine air that generally flows into the Basin from the San Joaquin River Delta. The Coastal Range hinders wind access into the Valley from the west, the Tehachapi's prevent southerly passage of airflow, and the high Sierra Nevada Mountain Range provides a significant barrier to the east. These topographic features result in weak airflow that becomes restricted vertically by high barometric pressure over the Valley. As a result, the SJVAB is highly susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal height of summer inversion layers (1,500-3,000 feet).

2.3 Climate Conditions

Fresno is located in one of the most polluted air basins in the country. Temperature inversions can trap air within the Valley, thereby preventing the vertical dispersal of air pollutants. In addition to topographic conditions, the local climate can also contribute to air quality problems. Climate in Fresno is characterized by warm, dry summers and cool winters with significant Tule fog.

Ozone, classified as a “regional” pollutant, often afflicts areas downwind of the original source of precursor emissions. Ozone can be easily transported by winds from a source area. Peak ozone levels tend to be higher in the southern portion of the Valley, as the prevailing summer winds sweep precursors downwind of northern source areas before concentrations peak. The separate designations reflect the fact that ozone precursor transport depends on daily meteorological conditions.

Other primary pollutants, carbon monoxide (CO), for example, may form high concentrations when wind speed is low. During the winter, Fresno experiences cold temperatures and calm conditions that increase the likelihood of a climate conducive to high CO concentrations.

Precipitation and fog tend to reduce or limit some pollutant concentrations. Ozone needs sunlight for its formation, and clouds and fog block the required radiation. CO is slightly water-soluble, so precipitation and fog tends to “reduce” CO concentrations in the atmosphere. PM10 is somewhat “washed” from the atmosphere with precipitation. Precipitation in the San Joaquin Valley is strongly influenced by the position of the semi-permanent subtropical high-pressure belt located off the Pacific coast. In the winter, this high- pressure system moves southward, allowing Pacific storms to move through the San Joaquin Valley. These storms bring in moist, maritime air that produces considerable precipitation on the western, upslope side of the Coast Ranges. Significant precipitation also occurs on the western side of the Sierra Nevada. On the valley floor, however, there is some down slope flow from the Coast Ranges and the resultant evaporation of moisture from associated warming results in a minimum of precipitation. Nevertheless, the majority of the precipitation falling in the San Joaquin Valley is produced by those storms during the winter. Precipitation during the summer months is in the form of convective rain showers and is rare. It is usually associated with an influx of moisture into the San Joaquin Valley through the San Francisco area during an anomalous flow pattern in the lower layers of the atmosphere. Although the hourly rates of precipitation from these storms may be high, their rarity keeps monthly totals low.

Precipitation on the San Joaquin Valley floor and in the Sierra Nevada decreases from north to south. Stockton in the north receives about 20 inches of precipitation per year, Fresno in the center, receives about 10 inches per year, and Bakersfield at the southern end of the valley receives less than 6 inches per year. This is primarily because the Pacific storm track often passes through the northern part of the state while the southern part of the state remains protected by the Pacific High. Precipitation in the San Joaquin Valley Air Basin (SJVAB) is confined primarily to the winter months with some also occurring in late summer and fall. Average annual rainfall for the entire San Joaquin Valley is approximately 5 to 16 inches. Snowstorms, hailstorms, and ice storms occur infrequently in the San Joaquin Valley and severe occurrences of any of these are very rare.

The winds and unstable air conditions experienced during the passage of storms result in periods of low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the San Joaquin Valley floor. This creates strong

low-level temperature inversions and very stable air conditions. This situation leads to the San Joaquin Valley's famous Tule Fogs. The formation of natural fog is caused by local cooling of the atmosphere until it is saturated (dew point temperature). This type of fog, known as radiation fog, is more likely to occur inland. Cooling may also be accomplished by heat radiation losses or by horizontal movement of a mass of air over a colder surface. This second type of fog, known as advection fog, generally occurs along the coast.

Conditions favorable to fog formation are also conditions favorable to high concentrations of CO and PM₁₀. Ozone levels are low during these periods because of the lack of sunlight to drive the photochemical reaction. Maximum CO concentrations tend to occur on clear, cold nights when a strong surface inversion is present and large numbers of fireplaces are in use. A secondary peak in CO concentrations occurs during morning commute hours when a large number of motorists are on the road and the surface inversion has not yet broken.

The water droplets in fog, however, can act as a sink for CO and nitrogen oxides (NO_x), lowering pollutant concentrations. At the same time, fog could help in the formation of secondary particulates such as ammonium sulfate. These secondary particulates are believed to be a significant contributor of winter season violations of the PM₁₀ and PM_{2.5} standards.

2.4 Anthropogenic (Man-made) Sources

In addition to climatic conditions (wind, lack of rain, etc.), air pollution can be caused by anthropogenic or man-made sources. Air pollution in the SJVAB can be directly attributed to human activities, which cause air pollutant emissions. Human causes of air pollution in the Valley consist of population growth, urbanization (gas-fired appliances, residential wood heaters, etc.), mobile sources (i.e., cars, trucks, airplanes, trains, etc.), oil production, agriculture, and other socioeconomic activities. The most significant factors, which are accelerating the decline of air quality in the SJVAB, are the Valley's rapid population growth and its associated increases in traffic, urbanization, and industrial activity.

Carbon monoxide emissions overwhelmingly come from mobile sources in the San Joaquin Valley; on-road vehicles contributed 38 percent, while other mobile vehicles, such as trains, planes, and off-road vehicles, contribute another 20 percent in 2021 according to emission projections from the CARB. Motor vehicles account for significant portions of regional gaseous and particulate emissions. Local large employers such as industrial plants can also generate substantial regional gaseous and particulate emissions. In addition, construction and agricultural activities can generate significant temporary gaseous and particulate emissions (dust, ash, smoke, etc.).

Ozone is the result of a photochemical reaction between Oxides of nitrogen (NO_x) and Reactive Organic Gases (ROG). Mobile sources contribute 84 percent of all NO_x emitted from anthropogenic sources based on data provided in Appendix B of the Air District's 2016 Ozone

Plan. In addition, mobile sources contribute 26 percent of all the ROG emitted from sources within the San Joaquin Valley.

The principal factors that affect air quality in and around Fresno are:

1. The sink effect, climatic subsidence and temperature inversions and low wind speeds
2. Automobile and truck travel
3. Increases in mobile and stationary pollutants generated by local urban growth

Automobiles, trucks, buses and other vehicles using hydrocarbon (HC) fuels release exhaust products into the air. Each vehicle by itself does not release large quantities; however, when considered as a group, the cumulative effect is significant.

Other sources may not seem to fit into any one of the major categories or they may seem to fit in a number of them. These could include agricultural uses, dirt roads, animal shelters; animal feed lots, chemical plants and industrial waste disposal, which may be a source of dust, odors, or other pollutants. For Fresno County, this category includes several agriculturally related activities, such as plowing, harvesting, dusting with herbicides and pesticides and other related activities. Finally, industrial contaminants and their potential to produce various effects depend on the size and type of industry, pollution controls, local topography, and meteorological conditions. Major sources of industrial emissions in Fresno County consist of agricultural production and processing operations.

The primary contributors of PM₁₀ emissions in the San Joaquin Valley are farming activities (22%) and road dust, both paved and unpaved (35%) in 2020 according to emission projections from the CARB. Fugitive windblown dust from “open” fields contributed 14 percent of the PM₁₀.

The four major sources of air pollutant emissions in the SJVAB include industrial plants, motor vehicles, construction activities, and agricultural activities. Industrial plants account for significant portions of regional gaseous and particulate emissions. Motor vehicles, including those from large employers, generate substantial regional gaseous and particulate emissions. Finally, construction and agricultural activities can generate significant temporary gaseous and particulate emissions (dust, ash, smoke, etc.). In addition to these primary sources of air pollution, urban areas upwind from Fresno County including areas north and west of the San Joaquin Valley, can cause or generate emissions that are transported into Fresno County. All four of the major pollutant sources affect ambient air quality throughout the Air Basin.

2.4.1 Motor Vehicles

Automobiles, trucks, buses and other vehicles using hydrocarbon fuels release exhaust products into the air. Each vehicle by itself does not release large quantities; however, when considered as a group, the cumulative effect is significant.

2.4.2 Agricultural and Other Miscellaneous Activities

Other sources may not seem to fit into any one of the major categories or they may seem to fit in a number of them. These could include agricultural uses, dirt roads, animal shelters, animal feed lots, chemical plants and industrial waste disposal, which may be a source of dust, odors, or other pollutants. For Fresno, this category includes several agriculturally related activities, such as plowing, harvesting, dusting with herbicides and pesticides and other related activities.

2.4.3 Industrial Plants

Industrial contaminants and their potential to produce various effects depend on the size and type of industry, pollution controls, local topography, and meteorological conditions. Major sources of industrial emissions in Fresno County consist of agricultural production and processing operations.

2.5 San Joaquin Valley Air Basin Monitoring

SJVAPCD and the CARB maintain numerous air quality monitoring sites throughout each County in the Air Basin to measure ozone, PM_{2.5}, and PM₁₀. It is important to note that the federal ozone 1-hour standard was revoked by the EPA and is no longer applicable for federal standards. The closest monitoring station to the Project is located at Fresno-Garland Monitoring Station. The station monitors particulates, ozone, carbon monoxide, and nitrogen dioxide. Monitoring data for the past three years is summarized in Table 2.

Table 3 identifies Fresno County's attainment status. As indicated, the SJVAB is nonattainment for Ozone (1 hour and 8 hour) and PM. In accordance with the FCAA, EPA uses the design value at the time of standard promulgation to assign nonattainment areas to one of several classes that reflect the severity of the nonattainment problem; classifications range from marginal nonattainment to extreme nonattainment. The FCAA contains provisions for changing the classifications using factors such as clean air progress rates and requests from States to move areas to a higher classification.

On April 16, 2004 EPA issued a final rule classifying the SJVAB as extreme nonattainment for Ozone, effective May 17, 2004 (69 FR 20550). The (federal) 1-hour ozone standard was revoked on June 6, 2005. However, many of the requirements in the 1-hour attainment plan (SIP) continue to apply to the SJVAB. The current ozone plan is the (federal) 8-hour ozone plan adopted in 2007. The SJVAB was reclassified from a "serious" nonattainment area for the 8-hour ozone standard to "extreme" effective June 4, 2010.

Table 2
Maximum Pollutant Levels at Clovis Ave – N. Villa Ave
Monitoring Station

Pollutant	Time Averaging	2021	2022	2023	Standards	
		Maximums	Maximums	Maximums	National	State
Ozone (O ₃)	1 hour	0.123 ppm	0.109 ppm	0.102 ppm	0.113 ppm	0.114 ppm
Ozone (O ₃)	8 hour	0.100 ppm	0.084 ppm	0.083 ppm	0.070 ppm	0.070 ppm
Nitrogen Dioxide (NO ₂)	1 hour	49.4 ppm	51.8 ppm	47.9 ppm	46 ppm	54 ppm
Nitrogen Dioxide (NO ₂)	Annual Average	7 ppm	8 ppm	7 ppm	8 ppm	9 ppm
Particulates (PM ₁₀)	24 hour	208.8 µg/m ³	120.0 µg/m ³	103.1 µg/m ³	42 µg/m ³	48 µg/m ³
Particulates (PM ₁₀)	Federal Annual Arithmetic Mean	37.6 µg/m ³	35.5 µg/m ³	30.3 µg/m ³	-	18 µg/m ³
Particulates (PM _{2.5})	24 hour	104.6 µg/m ³	41.9 µg/m ³	34.7 µg/m ³	15.5 µg/m ³	-
Particulates (PM _{2.5})	Federal Annual Arithmetic Mean	15.1 µg/m ³	10.5 µg/m ³	8.5 µg/m ³	-	18 µg/m ³

Source: California Air Resources Board (ADAM) Air Pollution Summaries

"-"represents insufficient data available to determine the value.

Table 3
Fresno County Attainment Status

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone - 1 Hour	Revoked in 2005	Nonattainment
Ozone - 8 Hour	Nonattainment/Extreme	No State Standard
PM10	Attainment	Nonattainment
PM2.5	Nonattainment	Nonattainment
Carbon Monoxide	Unclassified/Attainment	Unclassified
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Sulfur Dioxide	Unclassified/Attainment	Attainment
Lead (Particulate)	Unclassified/Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified

Source: CARB Website, 2025

a. 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).

Notes:

National Designation Categories

Non-Attainment Area: Any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.

Unclassified/Attainment Area: Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant or meets the national primary or secondary ambient air quality standard for the pollutant.

State Designation Categories

Unclassified: A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or non-attainment.

Attainment: A pollutant is designated attainment if the State standard for that pollutant was not violated at any site in the area during a three-year period.

Non-attainment: A pollutant is designated non-attainment if there was at least one violation of a State standard for that pollutant in the area.

Non-Attainment/Transitional: A subcategory of the non-attainment designation. An area is designated non-attainment/transitional to signify that the area is close to attaining the standard for the pollutant.

2.6 Air Quality Standards

The FCAA, first adopted in 1963, and periodically amended since then, established National Ambient Air Quality Standards (NAAQS). A set of 1977 amendments determined a deadline for the attainment of these standards. That deadline has passed. Other CAA amendments, passed in 1990, share responsibility with the State in reducing emissions from mobile sources.

In 1988, the State of California passed the CCAA (State 1988 Statutes, Chapter 568), which set forth a program for achieving more stringent California Ambient Air Quality Standards. The CARB implements State ambient air quality standards, as required in the CCAA, and cooperates with the federal government in implementing pertinent sections of the FCAA Amendments (FCAAA). Further, CARB regulates vehicular emissions throughout the State. The SJVAPCD regulates stationary sources, as well as some mobile sources. Attainment of the more stringent State PM10 Air Quality Standards is not currently required.

The EPA uses six "criteria pollutants" as indicators of air quality and has established for each of them a maximum concentration above which adverse effects on human health may occur. These threshold concentrations are called the NAAQS.

The SJVAPCD operates regional air quality monitoring networks that provide information on average concentrations of pollutants for which State or federal agencies have established ambient air quality standards. Descriptions of nine pollutants of importance in Fresno County follow.

2.6.1 Ozone (1-hour and 8-hour)

The most severe air quality problem in the Air Basin is the high level of ozone. Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. Here, ground level, or "bad" ozone, is an air pollutant that damages human health, vegetation, and many common materials. It is a key ingredient of urban smog. The troposphere extends to a level about 10 miles up, where it meets the second layer, the stratosphere. The stratospheric, or "good" ozone layer, extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

"Bad" ozone is what is known as a photochemical pollutant. It needs reactive organic gases (ROG), NOx, and sunlight. ROG and NOx are emitted from various sources throughout Fresno County. In order to reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors.

Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

Ozone is a regional air pollutant. It is generated over a large area and is transported and spread by wind. Ozone, the primary constituent of smog, is the most complex, difficult to control, and pervasive of the criteria pollutants. Unlike other pollutants, ozone is not emitted directly into the air by specific sources. Ozone is created by sunlight acting on other air pollutants (called precursors), specifically NOx and ROG. Sources of precursor gases to the photochemical reaction

that form ozone number in the thousands. Common sources include consumer products, gasoline vapors, chemical solvents, and combustion products of various fuels. Originating from gas stations, motor vehicles, large industrial facilities, and small businesses such as bakeries and dry cleaners, the ozone-forming chemical reactions often take place in another location, catalyzed by sunlight and heat. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins. Approximately 50 million people lived in counties with air quality levels above the EPA's health-based national air quality standard in 1994. The highest levels of ozone were recorded in Los Angeles, closely followed by the San Joaquin Valley. High levels also persist in other heavily populated areas, including the Texas Gulf Coast and much of the Northeast.

While the ozone in the upper atmosphere absorbs harmful ultraviolet light, ground-level ozone is damaging to the tissues of plants, animals, and humans, as well as to a wide variety of inanimate materials such as plastics, metals, fabrics, rubber, and paints. Societal costs from ozone damage include increased medical costs, the loss of human and animal life, accelerated replacement of industrial equipment, and reduced crop yields.

✓ **Health Effects**

While ozone in the upper atmosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems, such as: forests and foothill communities; agricultural crops; and some man-made materials, such as rubber, paint, and plastic. High levels of ozone may negatively affect immune systems, making people more susceptible to respiratory illnesses, including bronchitis and pneumonia. Ozone accelerates aging and exacerbates pre-existing asthma and bronchitis and, in cases with high concentrations, can lead to the development of asthma in active children. Active people, both children and adults, appear to be more at risk from ozone exposure than those with a low level of activity. Additionally, the elderly and those with respiratory disease are also considered sensitive populations for ozone.

People who work or play outdoors are at a greater risk for harmful health effects from ozone. Children and adolescents are also at greater risk because they are more likely than adults to spend time engaged in vigorous activities. Research indicates that children under 12 years of age spend nearly twice as much time outdoors daily than adults. Teenagers spend at least twice as much time as adults in active sports and outdoor activities. In addition, children inhale more air per pound of body weight than adults, and they breathe more rapidly than adults. Children are less likely than adults to notice their own symptoms and avoid harmful exposures.

Ozone is a powerful oxidant—it can be compared to household bleach, which can kill living cells (such as germs or human skin cells) upon contact. Ozone can damage the respiratory

tract, causing inflammation and irritation, and it can induce symptoms such as coughing, chest tightness, shortness of breath, and worsening of asthmatic symptoms. Ozone in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. Exposure to levels of ozone above the current ambient air quality standard leads to lung inflammation and lung tissue damage and a reduction in the amount of air inhaled into the lungs.

The CARB found ozone standards in Fresno County nonattainment of Federal and State standards.

2.6.2 Suspended PM (PM10 and PM2.5)

Particulate matter pollution consists of very small liquid and solid particles that remain suspended in the air for long periods. Some particles are large or concentrated enough to be seen as soot or smoke. Others are so small they can be detected only with an electron microscope. Particulate matter is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Particulate matter is emitted from stationary and mobile sources, including diesel trucks and other motor vehicles; power plants; industrial processes; wood-burning stoves and fireplaces; wildfires; dust from roads, construction, landfills, and agriculture; and fugitive windblown dust. PM10 refers to particles less than or equal to 10 microns in aerodynamic diameter. PM2.5 refers to particles less than or equal to 2.5 microns in aerodynamic diameter and are a subset of PM10. Particulates of concern are those that are 10 microns or less in diameter. These are small enough to be inhaled, pass through the respiratory system and lodge in the lungs, possibly leading to adverse health effects.

In the western United States, there are sources of PM10 in both urban and rural areas. Because particles originate from a variety of sources, their chemical and physical compositions vary widely. The composition of PM10 and PM2.5 can also vary greatly with time, location, the sources of the material and meteorological conditions. Dust, sand, salt spray, metallic and mineral particles, pollen, smoke, mist, and acid fumes are the main components of PM10 and PM2.5. In addition to those listed previously, secondary particles can also be formed as precipitates from chemical and photochemical reactions of gaseous sulfur dioxide (SO₂) and NO_x in the atmosphere to create sulfates (SO₄) and nitrates (NO₃). Secondary particles are of greatest concern during the winter months where low inversion layers tend to trap the precursors of secondary particulates.

The District's 2008 PM2.5 Plan built upon the aggressive emission reduction strategy adopted in the 2007 Ozone Plan and strives to bring the valley into attainment status for the 1997 NAAQS for PM2.5. The District's 2012 PM2.5 Plan provides multiple control strategies to reduce emissions of PM2.5 and other pollutants that form PM2.5. The plan's comprehensive control strategy includes regulatory actions, incentive programs, technology advancement, policy and legislative positions, public outreach, participation and communication, and additional strategies.

✓ **Health Effects**

PM10 and PM2.5 particles are small enough—about one-seventh the thickness of a human hair, or smaller—to be inhaled and lodged in the deepest parts of the lung where they evade the respiratory system’s natural defenses. Health problems begin as the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air. Non-health-related effects include reduced visibility and soiling of buildings. PM10 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body’s ability to fight infections. PM10 and PM2.5 can aggravate respiratory disease and cause lung damage, cancer, and premature death.

Although particulate matter can cause health problems for everyone, certain people are especially vulnerable to adverse health effects of PM10. These “sensitive populations” include children, the elderly, exercising adults, and those suffering from chronic lung disease such as asthma or bronchitis. Of greatest concern are recent studies that link PM10 exposure to the premature death of people who already have heart and lung disease, especially the elderly. Acidic PM10 can also damage manmade materials and is a major cause of reduced visibility in many parts of the United States.

The CARB found PM10 standards in Fresno County in attainment of Federal standards and nonattainment for State standards. The CARB found PM2.5 standards in Fresno County nonattainment of Federal and State standards.

2.6.3 Carbon Monoxide (CO)

Carbon monoxide (CO) is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. CO is an odorless, colorless, poisonous gas that is highly reactive. CO is a byproduct of motor vehicle exhaust, contributes more than two thirds of all CO emissions nationwide. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO.

✓ **Health Effects**

CO enters the bloodstream and binds more readily to hemoglobin than oxygen, reducing the

oxygen-carrying capacity of blood and thus reducing oxygen delivery to organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals are also affected but only at higher levels of exposure. At high concentrations, CO can cause heart difficulties in people with chronic diseases and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and in prolonged, enclosed exposure, death.

The adverse health effects associated with exposure to ambient and indoor concentrations of CO are related to the concentration of carboxyhemoglobin (COHb) in the blood. Health effects observed may include an early onset of cardiovascular disease; behavioral impairment; decreased exercise performance of young, healthy men; reduced birth weight; sudden infant death syndrome (SIDS); and increased daily mortality rate.

Most of the studies evaluating adverse health effects of CO on the central nervous system examine high-level poisoning. Such poisoning results in symptoms ranging from common flu and cold symptoms (shortness of breath on mild exertion, mild headaches, and nausea) to unconsciousness and death.

The CARB found CO standards in Fresno County as unclassified/attainment of Federal standards and attainment for State standards.

2.6.4 Nitrogen Dioxide (NO₂)

Nitrogen oxides (NO_x) is a family of highly reactive gases that are primary precursors to the formation of ground-level ozone and react in the atmosphere to form acid rain. NO_x is emitted from combustion processes in which fuel is burned at high temperatures, principally from motor vehicle exhaust and stationary sources such as electric utilities and industrial boilers. A brownish gas, NO_x is a strong oxidizing agent that reacts in the air to form corrosive nitric acid, as well as toxic organic nitrates. EPA regulates only nitrogen dioxide (NO₂) as a surrogate for this family of compounds because it is the most prevalent form of NO_x in the atmosphere that is generated by anthropogenic (human) activities.¹

✓ Health Effects

NO_x is an ozone precursor that combines with Reactive Organic Gases (ROG) to form ozone. See the ozone section above for a discussion of the health effects of ozone.

Direct inhalation of NO_x can also cause a wide range of health effects. NO_x can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. Short-term exposures (e.g., less than 3 hours) to low levels of nitrogen dioxide (NO₂) may lead to changes in airway responsiveness and lung function in individuals with preexisting

¹ United States Environmental Protection Agency (EPA), Nitrogen Oxides (NO_x). Why and How They Are Controlled, 456/F-99-006R, November 2019

respiratory illnesses. These exposures may also increase respiratory illnesses in children. Long-term exposures to NO₂ may lead to increased susceptibility to respiratory infection and may cause irreversible alterations in lung structure. Other health effects associated with NO_x are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO₂ may lead to eye and mucus membrane aggravation, along with pulmonary dysfunction. NO_x can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to production of particulate nitrates. Airborne NO_x can also impair visibility. NO_x is a major component of acid deposition in California. NO_x may affect both terrestrial and aquatic ecosystems. NO_x in the air is a potentially significant contributor to a number of environmental effects such as acid rain and eutrophication in coastal waters. Eutrophication occurs when a body of water suffers an increase in nutrients that reduce the amount of oxygen in the water, producing an environment that is destructive to fish and other animal life.

NO₂ is toxic to various animals as well as to humans. Its toxicity relates to its ability to combine with water to form nitric acid in the eye, lung, mucus membranes, and skin. Studies of the health impacts of NO₂ include experimental studies on animals, controlled laboratory studies on humans, and observational studies.

In animals, long-term exposure to NO_x increases susceptibility to respiratory infections, lowering their resistance to such diseases as pneumonia and influenza. Laboratory studies show susceptible humans, such as asthmatics, exposed to high concentrations of NO₂, can suffer lung irritation and, potentially, lung damage. Epidemiological studies have also shown associations between NO₂ concentrations and daily mortality from respiratory and cardiovascular causes as well as hospital admissions for respiratory conditions.

NO_x contributes to a wide range of environmental effects both directly and when combined with other precursors in acid rain and ozone. Increased nitrogen inputs to terrestrial and wetland systems can lead to changes in plant species composition and diversity. Similarly, direct nitrogen inputs to aquatic ecosystems such as those found in estuarine and coastal waters can lead to eutrophication as discussed above. Nitrogen, alone or in acid rain, also can acidify soils and surface waters. Acidification of soils causes the loss of essential plant nutrients and increased levels of soluble aluminum, which is toxic to plants. Acidification of surface waters creates conditions of low pH and levels of aluminum that are toxic to fish and other aquatic organisms.

The CARB found NO₂ standards in Fresno County as unclassified/attainment of Federal standards and attainment for State standards.

2.6.5 Sulfur Dioxide (SO₂)

The major source of sulfur dioxide (SO₂) is the combustion of high-sulfur fuels for electricity generation, petroleum refining and shipping. High concentrations of SO₂ can result in temporary breathing impairment for asthmatic children and adults who are active outdoors. Short-term

exposures of asthmatic individuals to elevated SO₂ levels during moderate activity may result in breathing difficulties that can be accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Other effects that have been associated with longer-term exposures to high concentrations of SO₂, in conjunction with high levels of PM, include aggravation of existing cardiovascular disease, respiratory illness, and alterations in the lungs' defenses. SO₂ also is a major precursor to PM_{2.5}, which is a significant health concern and a main contributor to poor visibility. In humid atmospheres, sulfur oxides can react with vapor to produce sulfuric acid, a component of acid rain.

The CARB found SO₂ standards in Fresno County as unclassified for Federal standards and attainment for State standards.

2.6.6 Lead (Pb)

Lead, a naturally occurring metal, can be a constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Lead was used until recently to increase the octane rating in automobile fuel. Since the 1980s, lead has been phased out in gasoline, reduced in drinking water, reduced in industrial air pollution, and banned or limited in consumer products. Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels; however, the use of leaded fuel has been mostly phased out. Since this has occurred the ambient concentrations of lead have dropped dramatically.

Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children. Effects on the nervous systems of children are one of the primary health risk concerns from lead. In high concentrations, children can even suffer irreversible brain damage and death. Children 6 years old and under are most at risk, because their bodies are growing quickly.

The CARB found Lead standards in Fresno County as unclassified/attainment of Federal standards and attainment for State standards.

2.6.7 Toxic Air Contaminants (TAC)

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TAC) are another group of pollutants of concern. TAC are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TAC is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TAC are regulated on the basis of risk rather than specification of safe levels of contamination. The ten TAC are acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel

particulate matter (diesel PM). Caltrans' guidance for transportation studies references the Federal Highway Administration (FHWA) memorandum titled "Interim Guidance on Air Toxic Analysis in NEPA Documents" which discusses emissions quantification of six "priority" compounds of 21 Mobile Source Air Toxics (MSAT) identified by the United States Environmental Protection Agency (USEPA). The six "priority" compounds are diesel exhaust (particulate matter and organic gases), benzene, 1,3-butadiene, acetaldehyde, formaldehyde, and acrolein.

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

Diesel PM differs from other TAC in that it is not a single substance but a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled, internal combustion engines, the composition of the emissions varies, depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TAC, however, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. The CARB has made preliminary concentration estimates based on a diesel PM exposure method. This method uses the CARB emissions inventory's PM10 database, ambient PM10 monitoring data, and the results from several studies to estimate concentrations of diesel PM. Table 4 depicts the CARB Handbook's recommended buffer distances associated with various types of common sources.

Existing air quality concerns within Fresno and the entire SJVAB are related to increases of regional criteria air pollutants (e.g., ozone and particulate matter), exposure to toxic air contaminants, odors, and increases in greenhouse gas emissions contributing to climate change. The primary source of ozone (smog) pollution is motor vehicles. Particulate matter is caused by dust, primarily dust generated from construction and grading activities, and smoke which is emitted from fireplaces, wood-burning stoves, and agricultural burning.

TABLE 4
Recommendations on Siting New Sensitive Land Uses Such As Residences, Schools, Daycare Centers, Playgrounds, or Medical Facilities*

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

1: The recommendation to avoid siting new sensitive land uses within 500 feet of a freeway was identified in CARB's Air Quality and Land Use Handbook published in 2005. CARB recently published a technical advisory to the Air Quality and Land Use Handbook indicating that new research has demonstrated promising strategies to reduce pollution exposure along transportation corridors.

***Notes:**

- These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.
- Recommendations are based primarily on data showing that the air pollution exposures addressed here (i.e., localized) can be reduced as much as 80% with the recommended separation.
- The relative risk for these categories varies greatly (see Table 1-2). To determine the actual risk near a particular facility, a site-specific analysis would be required. Risk from diesel PM will decrease over time as cleaner technology phases in.
- These recommendations are designed to fill a gap where information about existing facilities may not be readily available and are not designed to substitute for more specific information if it exists. The recommended distances take into account other factors in addition to available health risk data (see individual category descriptions).
- Site-specific project design improvements may help reduce air pollution exposures and should also be considered when siting new sensitive land uses.
- This table does not imply that mixed residential and commercial development in general is incompatible. Rather it focuses on known problems like dry cleaners using perchloroethylene that can be addressed with reasonable preventative actions.
- A summary of the basis for the distance recommendations can be found in the ARB Handbook: Air Quality and Land Use Handbook: A Community Health Perspective.

Source: SJVAPCD 2025

2.6.8 Odors

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same

sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word “strong” to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air.

When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

The intensity of an odor source’s operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJVAB. The types of facilities that are known to produce odors are shown in Table 5 along with a reasonable distance from the source within which, the degree of odors could possibly be significant. The Project does not propose any uses that would be potential odor sources; however, the information presented in Table 5 will be used as a screening level analysis to determine if the Project would be impacted by existing odor sources in the study area. Such information is presented for informational purposes, but it is noted that the environment’s effect on the Project, including exposure to potential odors, would not be an impact for CEQA purposes.

TABLE 5
Screening Levels for Potential Odor Sources

Type of Facility	Distance
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	2 miles
Transfer Station	2 miles
Compositing Facility	2 miles
Petroleum Refinery	2 miles
Asphalt Batch Plant	2 miles
Chemical Manufacturing	2 miles
Fiberglass Manufacturing	2 miles
Painting/Coating Operations (e.g. auto body shops)	2 miles
Food Processing Facility	2 miles
Feed Lot/Dairy	2 miles
Rendering Plant	2 miles

Source: SJVAPCD 2025

2.6.9 Naturally Occurring Asbestos (NOA)

Asbestos is a term used for several types of naturally occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. Asbestos is commonly found in ultramafic rock and near fault zones. The amount of asbestos that is typically present in these rocks' ranges from less than 1% up to approximately 25% and sometimes more. It is released from ultramafic rock when it is broken or crushed. This can happen when cars drive over unpaved roads or driveways, which are surfaced with these rocks, when land is graded for building purposes, or at quarrying operations. Asbestos is also released naturally through weathering and erosion. Once released from the rock, asbestos can become airborne and may stay in the air for long periods of time. Asbestos is hazardous and can cause lung disease and cancer dependent upon the level of exposure. The longer a person is exposed to asbestos and the greater the intensity of the exposure, the greater the chances for a health problem.

The proposed Project's construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. The Project would be required to submit a Dust Control Plan under the SJVAPCD's Rule 8021.

2.6.10 Greenhouse Gas Emissions

Gases that trap heat in the atmosphere are often called greenhouse gases. Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the

atmosphere because of human activities are:

- ✓ **Carbon Dioxide (CO₂):** Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement, asphalt paving, truck trips). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- ✓ **Methane (CH₄):** Methane is 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.
- ✓ **Nitrous Oxide (N₂O):** Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- ✓ **Fluorinated Gases:** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases ("High GWP gases").

3.0 Air-Quality Impacts

3.1 Methodology

The impact assessment for air quality focuses on potential effects the Project might have on air quality within the Fresno region. The SJVAPCD has established thresholds of significance for determining environmental significance. These thresholds separate a project's short-term emissions from its long-term emissions. The short-term emissions are mainly related to the construction phase of a project, which are recognized to be short in duration. The long-term emissions are primarily related to the activities that will occur indefinitely as a result of Project operations. Impacts will be evaluated both on the basis of CEQA Appendix G criteria and SJVAPCD significance criteria. The impacts to be evaluated will be those involving construction and operational emissions of criteria pollutants. The SJVAPCD has established thresholds for certain pollutants shown in Table 6.

Table 6
SJVAPCD Air Quality Thresholds of Significance

Project Type	Ozone Precursor Emissions (tons/year)					
	CO	NO _x	ROG	SO _x	PM ₁₀	PM _{2.5}
Construction Emissions	100	10	10	27	15	15
Operational Emissions (Permitted Equipment and Activities)	100	10	10	27	15	15
Operational Emissions (Non-Permitted Equipment and Activities)	100	10	10	27	15	15

Source: SJVAPCD 2025

3.1.1 CalEEMod

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 pollutant 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 is an accurate and comprehensive tool for quantifying air quality impacts from land use projects throughout California. The model can be used for a variety of situations where an air quality analysis is necessary or desirable such as CEQA and NEPA documents, pre-project planning, compliance with local air quality rules and regulations, etc.

3.2 Short-Term Impacts

Short-term impacts are mainly related to the construction phase of a project and are recognized to be short in duration. Construction air quality impacts are generally attributable to dust and exhaust pollutants generated by equipment and vehicles. Fugitive dust is emitted both during construction activity and as a result of wind erosion over exposed earth surfaces. Clearing and earth moving activities do comprise major sources of construction dust emissions, but traffic and general disturbances of soil surfaces also generate significant dust emissions. Further, dust generation is dependent on soil type and soil moisture. Exhaust pollutants are the non-useable gaseous waste products produced during the combustion process. Engine exhaust contains CO, HC, and NO_x pollutants which are harmful to the environment.

Adverse effects of construction activities cause increased dust-fall and locally elevated levels of total suspended particulate. Dust-fall can be a nuisance to neighboring properties or previously completed developments surrounding or within the Project area and may require frequent washing during the construction period.

PM₁₀ emissions can result from construction activities of the Project. The SJVAPCD has determined that compliance with Regulation VIII and other control measures will constitute sufficient mitigation to reduce PM₁₀ impacts to a level considered less-than significant for most development projects. Even with implementation of District Regulation VIII and District Rule 9510, large development projects may not be able to reduce project specific construction impacts below District thresholds of significance.

Ozone precursor emissions are also an impact of construction activities and can be quantified through calculations. Numerous variables factored into estimating total construction emission include level of activity, length of construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and amount of materials to be transported onsite or offsite. Additional exhaust emissions would be associated with the transport of workers and materials. Because the specific mix of construction equipment is not presently known for this Project, construction emissions were estimated using CalEEMod Model defaults for construction equipment.

Table 7 shows the CalEEMod estimated construction emissions that would be generated from construction of the Project. Results of the analysis show that emissions generated from construction of the Project will not exceed the SJVAPCD emission thresholds.

Table 7
Project Construction Emissions (tons/year)

Summary Report	CO	NO _x	ROG	SO _x	PM ₁₀	PM _{2.5}	CO _{2e}
Project Construction Emissions	2.81	2.65	0.50	6.03	1.01	0.45	531.75
SJVAPCD Level of Significance	100	10	10	27	15	15	None
Does the Project Exceed Standard?	No	No	No	No	No	No	No

Source: CalEEMod 2025

3.3 Long-Term Emissions

Long-Term emissions from the Project would be generated primarily by mobile source (vehicle) emissions from the Project site and area sources such as lawn maintenance equipment.

3.3.1 Localized Operational Emissions – Ozone/Particulate Matter

The Fresno County area is nonattainment for Federal and State air quality standards for ozone, attainment of Federal standards for PM₁₀ and nonattainment for State standards, and nonattainment for Federal and State standards for PM_{2.5}. Nitrogen oxides and reactive organic gases are regulated as ozone precursors. Significant criteria have been established for criteria pollutant emissions as documented in Section 3.1. Operational emissions have been estimated for the Project using the CalEEMod Model and detailed results are included in Appendix A of this report.

Results of the CalEEMod analysis are shown in Table 8. Results indicate that the annual operational emissions from the Project will be less than the SJVAPCD emission thresholds for criteria pollutants.

Table 8
Project Operational Emissions (tons/year)

Summary Report	CO	NO _x	ROG	SO _x	PM ₁₀	PM _{2.5}	CO _{2e}
Project Operational Emissions	5.01	0.39	3.28	9.32	0.87	0.54	579.94
SJVAPCD Level of Significance	100	10	10	27	15	15	None
Does the Project Exceed Standard?	No	No	No	No	No	No	No

Source: CalEEMod 2025

3.3.2 Other Localized Operational Emissions

✓ Carbon Monoxide

The SJVAPCD is currently in unclassified/attainment for Federal standards and unclassified for State standards for CO. An analysis of localized CO concentrations is typically warranted to ensure that standards are maintained. Also, an analysis is required to ensure that localized

concentrations don't reach potentially unhealthy levels that could affect sensitive receptors (residents, school children, hospital patients, the elderly, etc.).

Typically, high CO concentrations are associated with roadways or intersections operating at an unacceptable Level of Service (LOS). CO "Hot Spot" modeling is required if a traffic study reveals that the project will reduce the LOS on one or more streets to E or F or if the project will worsen an existing LOS F.

To analyze the Cumulative Year 2046 Plus Project "worst case" CO concentrations at study roadway segments, the analysis methodology considered the highest annual maximum CO concentration reported in 2013, using 1.0 PPM as an estimate of the background concentration for the 8-hour standard and 2.2 PPM for the 1-hour standard (source: CARB annual publications). Other modeling assumptions include a wind speed of .5 m/s, flat topography, 1,000-meter mixing height, and a 5-degree wind deviation.

✓ **Toxic Air Contaminants (TAC)**

The SJVAPCD's Guidance Document, Guidance for Assessing and Mitigating Air Quality Impacts – 2015, identifies the need for projects to analyze the potential for adverse air quality impacts to sensitive receptors. Sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses that have the greatest potential to attract these types of sensitive receptors include schools, parks, playgrounds, daycare centers, nursing homes, hospitals, and residential communities. From a health risk perspective, the Project is a Type B Project in that it may potentially place sensitive receptors in the vicinity of existing sources.

The first step in evaluating the potential for impacts to sensitive receptors for TAC's from the Project is to perform a screening level analysis. For Type B Projects, one type of screening tool is found in the CARB Handbook: Air Quality and Land Use Handbook: A Community Perspective. This handbook includes a table (depicted in Table 4) with recommended buffer distances associated with various types of common sources. The screening level analysis for the Project shows that TAC's are not a concern based upon the recommendations provided in Table 4. An evaluation of nearby land uses considering CARB's Pollution Mapping Tool shows that the Project will not place sensitive receptors in the vicinity of existing toxic sources. The Project is located a 1 mile from the State Route (SR) 180 freeway. Table 4 indicates that new sensitive land uses shouldn't be sited within 500 feet of a freeway/urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day. The Project is located more than 1 miles from the SR 180 freeway. As a result, a health risk assessment is not needed at this time.

✓ **Odors**

Typically, odors are regarded as an annoyance rather than a health hazard. However,

manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air.

When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the SJVAPCD. Any project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact.

The SJVAPCD requires that an analysis of potential odor impacts be conducted for the following two situations:

- Generators – projects that would potentially generate odorous emissions proposed to be located near existing sensitive receptors or other land uses where people may congregate, and
- Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources.

The Project will not generate odorous emissions given the nature or characteristics of the Project. The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJV Air Basin. The types of facilities that are known to produce odors are shown in Table 5 above along with a reasonable distance from the source within which, the degree of odors could possibly be significant. None of the facilities shown in Table 5 are located within two (2) miles of the Project.

✓ **Naturally Occurring Asbestos (NOA)**

Asbestos is a term used for several types of naturally occurring fibrous minerals found in many parts of California. The most common type of asbestos is chrysotile, but other types are also found in California. Construction of the Project may cause asbestos to become airborne due to the construction activities that will occur on site. The Project would be

required to submit a Dust Control Plan under the SJVAPCD's Rule 8021. Compliance with Rule 8021 would limit fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities associated with the Project.

The Dust Control Plan may include the following measures:

1. Water wetting of road surfaces
2. Rinse vehicles and equipment
3. Wet loads of excavated material, and
4. Cover loads of excavated material

✓ **Greenhouse Gas Emissions**

CARB, in consultation with MPOs, has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. For the Fresno COG region, CARB set targets at six (6) percent per capita decrease in 2020 and a thirteen (13) percent per capita decrease in 2035 from a base year of 2005. Fresno COG's 2018 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which was adopted in July 2022, projects that the Fresno County region would achieve the prescribed emissions targets.

In 2009, the SJVAPCD adopted the following guidance documents applicable to projects within the San Joaquin Valley:

- ✓ Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (SJVAPCD 2009), and
- ✓ District Policy: Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency (SJVAPCD 2009).

This guidance and policy are the reference documents referenced in the SJVAPCD's Guidance for Assessing and Mitigating Air Quality Impacts adopted in March 2015 (SJVAPCD 2015). Consistent with the District Guidance and District Policy above, SJVAPCD (2015) acknowledges the current absence of numerical thresholds, and recommends a tiered approach to establish the significance of the GHG impacts on the environment:

- i. If a project complies with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, then the project would be determined to have a less than significant individual and cumulative impact for GHG emissions;
- ii. If a project does not comply with an approved GHG emission reduction plan or mitigation program, then it would be required to implement Best Performance Standards (BPS); and
- iii. If a project is not implementing BPS, then it should demonstrate that its GHG emissions would be reduced or mitigated by at least 29 percent compared to Business as Usual (BAU).

As shown in Table 9, the Project would generate 787.63 Metric Tons of Carbon Dioxide Equivalent per year (MTCO₂eq./year) using an operational year of 2005, which includes area, energy, mobile, waste, and water sources. “Business as usual” (BAU) is referenced in CARB’s AB 32 Scoping Plan as emissions projected to occur in 2020 if the average baseline emissions during the 2002-2004 period grew to 2020 levels, without control or Best Performance Standards (BPS) offsets. As a result, an estimate of the Project’s operational emissions in 2005 were compared to operational emissions in 2020 in order to determine if the Project meets the 29% emission reduction. The SJVAPCD has reviewed relevant scientific information related to GHG emissions and has determined that they are not able to determine a specific quantitative level of GHG emissions increase, above which a project would have a significant impact on the environment, and below which would have an insignificant impact. As a result, the SJVAPCD has determined that projects achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG. Results of the analysis show that the Project’s GHG emissions in the year 2020 is 664.36 MTCO₂eq./year. This represents an achievement of 15.6% GHG emission reduction on the basis of BAU, which does not meet the 29% GHG emission reduction target.

In the event that a local air district’s guidance for addressing GHG impacts does not use numerical GHG emissions thresholds, at the lead agency’s discretion, a neighboring air district’s GHG threshold may be used to determine impacts. On April 20, 2022, the Bay Area Air Quality Management District (BAAQMD) adopted new Project Level Climate Impact Thresholds of Significance which rely upon necessary design elements to achieve California’s long-term climate goal of carbon neutrality by 2045. Chapter 3 of BAAQMD’s 2022 CEQA Guidelines indicates that a land use project will have a less than significant impact related to operational GHG emissions if:

- ✓ It includes the following project design elements - **(Part A)**
 - Buildings
 - The project will not include natural gas appliances or natural gas plumbing.
 - The project will not result in any wasteful, inefficient, or unnecessary energy use as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines
 - Transportation
 - The project will achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target that reflects the recommendations provided in the Governor’s

Office of Planning and Research's *Technical Advisory on Evaluating Transportation Impacts in CEQA*:

- i. Residential projects: 15 percent below the existing VMT per capita
 - ii. Office projects: 15 percent below the existing VMT per employee
 - iii. Retail projects: no net increase in existing VMT
- o The project will achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

Project Design Elements - Buildings

Development of the Project will not include natural gas appliances or natural gas plumbing per Project representatives. In addition, the proposed Project will use energy-efficient materials, modern construction practices, and new appliances, following Appliance Efficiency Regulations (Title 20, California Code of Regulations [CCR] Sections 1601-1608). Energy consumption during construction and operation will align with typical residential usage but will vary based on personal choices and building design. The Project, located in an urban area and residential land use under the Fresno County General Plan, will comply with the County's energy efficiency policies, ensuring it does not result in wasteful or inefficient energy consumption. The Project is also subject to CCR, Title 24 building standards which would improve the Project's energy efficiency and consumption. The Title 24 California Building Standards Code is a wide-ranging set of requirements for energy conservation and green design that apply to the structural, mechanical, electrical, and plumbing systems in a building.

Project Design Elements - Transportation

Fresno COG's *Fresno County SB 743 Implementation Technical Report* (March 2021) establishes threshold of significance for CEQA transportation studies as it relates to VMT. It indicates that projects that generate a low volume of daily traffic are presumed to create a less than significant impact to VMT and GHG emissions. As noted in the Fresno COG's *Fresno County SB 743 Implementation Technical Report*, the emissions of GHG from a project with up to 500 ADT would typically be less than significant. The Project proposes to develop 44 single family dwelling units which is projected to generate 474 daily trips based upon the Institute of Transportation Engineers (ITE) Trip Generation Handbook (44 dwelling units X 9.43 [Land Use Code 210 Average Rate] = 414.92). Project design elements also include 'ready to charge' capabilities for each residential unit, to be compliant with off-street electric vehicle requirements in the most recently adopted 2022 CALGreen TIER 2 Residential Measures (A4.106.8).

The Project will meet the project specific design elements identified in **Part A** of the BAAQMD Project Level Climate Impact Thresholds of Significance. The Project will not conflict with or obstruct California's long-term climate goal of carbon neutrality by 2045. As a result, the Project would have a less than significant impact related to GHG emissions.

Alternative GHG Thresholds

CARB and the South Coast Air Quality Management District (SCAQMD) guidance identifies a numeric threshold of 7,000 and 10,000 MTCO₂eq./year, respectively, for annual GHG emissions. While existing GHG emission thresholds developed by other lead agencies were based on consistency with meeting AB 32 goals, they provide some perspective on the GHG emissions generated by the Project. Table 10 shows the yearly GHG emissions generated by the Project as determined by the CalEEMod model, which is approximately 91% less than the threshold identified by CARB and 94% less than the threshold identified by the SCAQMD.

Table 9
2005/2020 Operational greenhouse Gas Emissions

Summary Report	CO ₂ e
Operational Emissions Per Year (2005)	787.63 MT/yr
Operational Emissions Per Year (2020)	664.36 MT/yr
SJVAPCD Level of Significance	29% Reduction Compared to BAU
Does the Project Meet the Standard	No

Source: CalEEMod

Table 10
Project Operational Greenhouse Gas Emissions

Summary Report	CO ₂ e
Project Operational Emissions Per Year(Plus amortized construction emissions)	757.19 MT/yr

Source: CalEEMod

4.0 Impact Determinations and Recommended Mitigation

In accordance with CEQA, the effects of a project are evaluated to determine if it will result in project-specific significant adverse impacts on the environment. The criteria used to determine the significance of an air quality or greenhouse gas impact are based on the following thresholds of significance, which come from Appendix G of the CEQA Guidelines. Accordingly, air quality or greenhouse gas impacts resulting from the Project are considered significant if the Project would:

Air Quality

- a) Conflict with or obstruct implementation of the applicable air quality plan?
- b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?
- c) Expose sensitive receptors to substantial pollutant concentrations?
- d) Result in other emissions such as those leading to odors adversely affecting a substantial number of people?

Greenhouse Gas Emissions

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

4.1 Air Quality

4.1.1 Conflict with or obstruct implementation of the applicable air quality plan

As stated in Section 1.2.5 (Regional Agencies), the SJVAPCD is responsible for monitoring and regulating air pollutant emissions from stationary, area, and indirect sources within Fresno County. This includes monitoring air quality and setting and enforcing limits for source emissions. The SJVAPCD has adopted numerous air quality plans, including the 2022 Ozone Plan, 2016 Ozone Plan, 2013 1-Hour Ozone Plan, 2007 PM10 Maintenance Plan, and 2024 Plan for the 2012 Annual PM2.5 Standard to assure attainment of EPA Ozone, PM10 and PM2.5 standards. These air quality plans were created to bring the SJVAB into compliance with the requirements of the federal and state standards.

Consistency with the SJVAPCD's air quality plan(s) would ensure a project is not in conflict with or obstructing the implementation of the air quality plan(s). A project would be consistent with the SJVAPCD's air quality plan(s) if the pollutants emitted from construction and operation of the

project would not exceed the SJVAPCD emission thresholds or cause a significant impact on air quality. The SJVAPCD established the significance thresholds identified in Table 6 (Section 3.1) for purposes of determining if a project will have significant air quality impact.

The annual emissions from the construction phase of the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants as shown in Table 7. The construction emissions are therefore considered less than significant with the implementation of the SJVAPCD applicable Regulation VIII control measures. Furthermore, results of the analysis indicate that operational emissions from the Project will not exceed the SJVAPCD emissions threshold for any emissions as shown in Table 8. As a result, the Project will not conflict with or obstruct implementation of any air quality plans. Therefore, no mitigation is needed.

4.1.2 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

The Fresno County area is nonattainment for Federal and State air quality standards for ozone, in attainment of Federal standards and nonattainment for State standards for PM₁₀, and nonattainment for Federal and State standards for PM_{2.5}. The SJVAPCD has prepared the 2022 Ozone Plan, 2016 Ozone Plan, 2013 1-Hour Ozone Plan, 2007 PM₁₀ Maintenance Plan, and 2024 Plan for the 2012 Annual PM_{2.5} Standard to achieve Federal and State standards for improved air quality in the SJVAB regarding ozone and PM. Inconsistency with any of the plans would be considered a cumulatively adverse air quality impact. As discussed in Section 4.1.1, consistency with the SJVAPCD's air quality plan(s) would ensure a project is not in conflict with or obstructing the implementation of the air quality plan(s). The Project's annual construction and operational emissions would not exceed the SJVAPCD emissions threshold for any emissions as identified in Table 6.

Project specific emissions that exceed the thresholds of significance for criteria pollutants would be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the County is in non-attainment under applicable federal or state ambient air quality standards. It should be noted that a project is not characterized as cumulatively insignificant when project emissions fall below thresholds of significance. The Project does not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment since results of the analysis show that emissions generated from construction and operation of the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants. Therefore, no mitigation is needed.

4.1.3 Expose sensitive receptors to substantial pollutant concentrations

Sensitive receptors refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses that have the greatest potential to attract these types of sensitive receptors

include schools, parks, playgrounds, daycare centers, nursing homes, hospitals, and residential communities. From a health risk perspective, the Project is a Type B project in that it may potentially place sensitive receptors in the vicinity of existing sources.

The first step in evaluating the potential for impacts to sensitive receptors for TAC's from the Project is to perform a screening level analysis. For Type B Projects, one type of screening tool is found in the CARB Handbook: Air Quality and Land Use Handbook: A Community Perspective. This handbook includes a table (depicted in Table 4) with recommended buffer distances associated with various types of common sources. The screening level analysis for the Project shows that TAC's are not a concern based upon the recommendations provided in Table 4. An evaluation of nearby land uses considering CARB's Pollution Mapping Tool shows that the Project will not place sensitive receptors in the vicinity of existing toxic sources. The Project is located a 1 mile from the State Route (SR) 180 freeway, which is the nearest freeway that has more than 100,000 ADT. Table 4 indicates that new sensitive land uses shouldn't be sited within 500 feet of a freeway/urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day. The Project is located more than 1 mile from the SR 180 freeway. Therefore, no mitigation is needed.

Short-Term Impacts

The annual emissions from the construction phase of the Project will be less than the applicable SJVAPCD emission thresholds for criteria pollutants as shown in Table 7. The construction emissions are therefore considered less than significant with the implementation of the SJVAPCD applicable Regulation VIII control measures, which are provided below.

1. *All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.*
2. *All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.*
3. *All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.*
4. *When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.*
5. *All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.*
6. *Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.*

7. *Within urban areas, track out shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.*

Naturally Occurring Asbestos (NOA)

The proposed Project's construction phase may cause asbestos to become airborne due to the construction activities that will occur on site. In order to control naturally-occurring asbestos dust, the Project will be required to submit a Dust Control Plan under the SJVAPCD's Rule 8021. The Dust Control Plan may include the following measures:

1. Water wetting of road surfaces
2. Rinse vehicles and equipment
3. Wet loads of excavated material, and
4. Cover loads of excavated material

Long-Term Impacts

Long-Term emissions from the Project are generated primarily by mobile source (vehicle) emissions from the project site and area sources such as lawn maintenance equipment. Emissions from long-term operations generally represent a project's most substantial air quality impact. Table 8 summarizes the Project's operational impacts by pollutant. Results indicate that operational emissions from the Project will not exceed the SJVAPCD emissions threshold for any emissions, hence no mitigations are required.

4.1.4 Result in other emissions such as those leading to odors adversely affecting a substantial number of people

The SJVAPCD requires that an analysis of potential odor impacts be conducted for the following two situations:

- ✓ Generators – projects that would potentially generate odorous emissions proposed to be located near existing sensitive receptors or other land uses where people may congregate, and
- ✓ Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people located near existing odor sources.

The proposed Project will not generate odorous emissions given the nature or characteristics of residential developments. The intensity of an odor source's operations and its proximity to sensitive receptors influences the potential significance of odor emissions. The SJVAPCD has identified some common types of facilities that have been known to produce odors in the SJV Air Basin. The types of facilities that are known to produce odors are shown in Table 5 above along with a reasonable distance from the source within which, the degree of odors could possibly be

significant. None of the facilities shown in Table 5 are located within two (2) miles of the Project. Therefore, no mitigation is needed.

4.2 Greenhouse Gas Emissions

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

In 2009, the SJVAPCD adopted the following guidance documents applicable to projects within the San Joaquin Valley:

- ✓ Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (SJVAPCD 2009), and
- ✓ District Policy: Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency (SJVAPCD 2009).

This guidance and policy are the reference documents referenced in the SJVAPCD's Guidance for Assessing and Mitigating Air Quality Impacts adopted in March 2015 (SJVAPCD 2015). Consistent with the District Guidance and District Policy above, SJVAPCD (2015) acknowledges the current absence of numerical thresholds, and recommends a tiered approach to establish the significance of the GHG impacts on the environment:

- i. If a project complies with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, then the project would be determined to have a less than significant individual and cumulative impact for GHG emissions;
- ii. If a project does not comply with an approved GHG emission reduction plan or mitigation program, then it would be required to implement Best Performance Standards (BPS); and
- iii. If a project is not implementing BPS, then it should demonstrate that its GHG emissions would be reduced or mitigated by at least 29 percent compared to Business as Usual (BAU).

As shown in Table 9, the Project would generate 787.63 Metric Tons of Carbon Dioxide Equivalent per year (MTCO₂eq./year) using an operational year of 2005, which includes area, energy, mobile, waste, and water sources. "Business as usual" (BAU) is referenced in CARB's AB 32 Scoping Plan as emissions projected to occur in 2020 if the average baseline emissions during the 2002-2004 period grew to 2020 levels, without control or Best Performance Standards (BPS) offsets. As a result, an estimate of the Project's operational emissions in 2005 were compared to operational emissions in 2020 in order to determine if the Project meets the 29% emission reduction. The SJVAPCD has reviewed relevant scientific information related to GHG emissions and has determined that they are not able to determine a specific quantitative level of GHG emissions increase, above which a project would have a significant impact on the environment, and below which would have an insignificant impact. As a result, the SJVAPCD has determined

that projects achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG. Results of the analysis show that the Project's GHG emissions in the year 2020 is 664.36 MTCO₂eq./year. This represents an achievement of 15.6% GHG emission reduction on the basis of BAU, which does not meet the 29% GHG emission reduction target.

In the event that a local air district's guidance for addressing GHG impacts does not use numerical GHG emissions thresholds, at the lead agency's discretion, a neighboring air district's GHG threshold may be used to determine impacts. On April 20, 2022, the Bay Area Air Quality Management District (BAAQMD) adopted new Project Level Climate Impact Thresholds of Significance which rely upon necessary design elements to achieve California's long-term climate goal of carbon neutrality by 2045. Chapter 3 of BAAQMD's 2022 CEQA Guidelines indicates that a land use project will have a less than significant impact related to operational GHG emissions if:

- ✓ It includes the following project design elements - **(Part A)**
 - Buildings
 - The project will not include natural gas appliances or natural gas plumbing.
 - The project will not result in any wasteful, inefficient, or unnecessary energy use as determined by the analysis required under CEQA Section 2100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines
 - Transportation
 - The project will achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target that reflects the recommendations provided in the Governor's Office of Planning and Research's *Technical Advisory on Evaluating Transportation Impacts in CEQA*:
 - i. Residential projects: 15 percent below the existing VMT per capita
 - ii. Office projects: 15 percent below the existing VMT per employee
 - iii. Retail projects: no net increase in existing VMT
 - The project will achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

Project Design Elements - Buildings

Development of the Project will not include natural gas appliances or natural gas plumbing per Project representatives. In addition, the proposed Project will use energy-efficient materials, modern construction practices, and new appliances, following Appliance Efficiency Regulations (Title 20, California Code of Regulations [CCR] Sections 1601-1608). Energy consumption during construction and operation will align with typical residential usage but will vary based on personal choices and building design. The Project, located in an urban area and residential land use under the Fresno General Plan, will comply with the County's energy efficiency policies, ensuring it does not result in wasteful or inefficient energy consumption. The Project is also subject to CCR, Title 24 building standards which would improve the Project's energy efficiency and consumption. The Title 24 California Building Standards Code is a wide-ranging set of requirements for energy conservation and green design that apply to the structural, mechanical, electrical, and plumbing systems in a building.

Project Design Elements - Transportation

Fresno COG's *Fresno County SB 743 Implementation Technical Report* (March 2021) establishes threshold of significance for CEQA transportation studies as it relates to VMT. It indicates that projects that generate a low volume of daily traffic are presumed to create a less than significant impact to VMT and GHG emissions. As noted in the Fresno COG's *Fresno County SB 743 Implementation Technical Report*, the emissions of GHG from a project with up to 500 ADT would typically be less than significant. The Project proposes to develop 44 single family dwelling units which is projected to generate 474 daily trips based upon the Institute of Transportation Engineers (ITE) Trip Generation Handbook (44 dwelling units X 9.43 [Land Use Code 210 Average Rate] = 414.92). Project design elements also include 'ready to charge' capabilities for each residential unit, to be compliant with off-street electric vehicle requirements in the most recently adopted 2022 CALGreen TIER 2 Residential Measures (A4.106.8).

The Project will meet the project specific design elements identified in **Part A** of the BAAQMD Project Level Climate Impact Thresholds of Significance. The Project will not conflict with or obstruct California's long-term climate goal of carbon neutrality by 2045. As a result, the Project would have a less than significant impact related to GHG emissions.

Alternative GHG Thresholds

CARB and the South Coast Air Quality Management District (SCAQMD) guidance identifies a numeric threshold of 7,000 and 10,000 MTCO₂eq./year, respectively, for annual GHG emissions. While existing GHG emission thresholds developed by other lead agencies were based on consistency with meeting AB 32 goals, they provide some perspective on the GHG emissions generated by the Project. Table 10 shows the yearly GHG emissions generated by the Project as determined by the CalEEMod model, which is approximately 91% less than the threshold identified by CARB and 94% less than the threshold identified by the SCAQMD.

Based on the assessment above, the Project will not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. Therefore, any impacts would be less than significant.

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

California passed the California Global Warming Solutions Act of 2006. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. Under AB 32, CARB must adopt regulations by January 1, 2011 to achieve reductions in GHGs to meet the 1990 emission cap by 2020. On December 11, 2008, CARB adopted its initial Scoping Plan, which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. CARB's 2017 Climate Change Scoping Plan builds on the efforts and plans encompassed in the initial Scoping Plan. The current plan has identified new policies and actions to accomplish the State's 2030 GHG limit. Below is a list of applicable strategies in the Scoping Plan and the Project's consistency with those strategies.

- ✓ California Light-Duty Vehicle GHG Standards – Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs for long-term climate change goals.
 - The Project is consistent with this reduction measure. This measure cannot be implemented by a particular project or lead agency since it is a statewide measure. When this measure is implemented, standards would be applicable to light-duty vehicles that would access the Project. The Project would not conflict or obstruct this reduction measure.
- ✓ Energy Efficiency – Pursuit of comparable investment in energy efficiency from all retail providers of electricity in California. Maximize energy efficiency building and appliance standards.
 - The Project is consistent with this reduction measure. Though this measure applies to the State to increase its energy standards, the Project would comply with this measure through existing regulation. The Project would not conflict or obstruct this reduction measure.
- ✓ Low Carbon Fuel – Development and adoption of the low carbon fuel standard.
 - The Project is consistent with this reduction measure. This measure cannot be implemented by a particular project or lead agency since it is a statewide measure. When this measure is implemented, standards would be applicable to the fuel used by vehicles that would access the Project. The Project would not conflict or obstruct this reduction measure.

SB 375 requires MPOs to adopt a SCS or APS that will prescribe land use allocation in that MPO's regional transportation plan. CARB, in consultation with MPOs, has provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. For the Fresno COG region, CARB set targets at six (6) percent per capita decrease in 2020 and a thirteen (13) percent per capita decrease in 2035 from a base year of 2005. Fresno COG's 2022 RTP/SCS, which was adopted in July 2022, projects that the Fresno County region would achieve the prescribed emissions targets.

Executive Order B-30-15 establishes a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050. Executive Order B-30-15 requires MPO's to implement measures that will achieve reductions of greenhouse gas emissions to meet the 2030 and 2050 greenhouse gas emissions reductions targets.

If a local air district's guidance for addressing GHG impacts does not use numerical GHG emissions thresholds, at the lead agency's discretion, a neighboring air district's GHG threshold may be used to determine impacts. The BAAQMD adopted new Project Level Climate Impact Thresholds of Significance On April 20, 2022, which rely upon necessary design elements to achieve California's long-term climate goal of carbon neutrality by 2045. The Project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases since it will meet the project specific design elements identified in Part A of the BAAQMD Project Level Climate Impact Thresholds of Significance (See Section 4.2.1 above). As a result, the Project would have a less than significant impact related to GHG emissions.

APPENDIX A CalEEMOD Report

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Sample Ranch Project
Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	44.00	Dwelling Unit	94.00	79,200.00	126

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	45
Climate Zone	3			Operational Year	2027
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -
Land Use - Site Plan

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	14.29	94.00

2.0 Emissions Summary

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**2.1 Overall Construction****Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.2177	2.0546	1.8553	3.9300e-003	0.9208	0.0889	1.0096	0.3727	0.0821	0.4548	0.0000	345.0623	345.0623	0.1013	2.4000e-004	347.6671
2026	0.2851	2.6583	2.8193	6.0300e-003	0.6620	0.1085	0.7705	0.2491	0.1006	0.3496	0.0000	527.6011	527.6011	0.1513	1.2400e-003	531.7509
2027	0.1840	1.6582	2.1448	3.7700e-003	0.0210	0.0691	0.0901	5.6900e-003	0.0650	0.0707	0.0000	326.3675	326.3675	0.0715	2.0400e-003	328.7614
2028	0.1830	1.6515	2.1346	3.7500e-003	0.0209	0.0688	0.0898	5.6600e-003	0.0647	0.0704	0.0000	324.6356	324.6356	0.0712	1.9800e-003	327.0047
2029	0.1834	1.6575	2.1411	3.7500e-003	0.0210	0.0691	0.0901	5.6900e-003	0.0650	0.0707	0.0000	325.4358	325.4358	0.0714	1.9400e-003	327.7996
2030	0.1755	1.0653	2.1492	4.2700e-003	0.0210	0.0196	0.0406	5.6900e-003	0.0196	0.0252	0.0000	365.4142	365.4142	0.0140	1.9000e-003	366.3305
2031	0.1752	1.0651	2.1479	4.2700e-003	0.0210	0.0196	0.0406	5.6900e-003	0.0196	0.0252	0.0000	365.0587	365.0587	0.0140	1.8600e-003	365.9637
2032	0.4011	0.8811	1.8712	3.5400e-003	0.0164	0.0273	0.0436	4.4000e-003	0.0273	0.0317	0.0000	303.9391	303.9391	0.0127	9.2000e-004	304.5292
2033	0.5051	0.0318	0.0681	1.2000e-004	8.9000e-004	7.5000e-004	1.6400e-003	2.4000e-004	7.5000e-004	9.9000e-004	0.0000	10.0318	10.0318	3.9000e-004	1.0000e-005	10.0453
Maximum	0.5051	2.6583	2.8193	6.0300e-003	0.9208	0.1085	1.0096	0.3727	0.1006	0.4548	0.0000	527.6011	527.6011	0.1513	2.0400e-003	531.7509

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**2.1 Overall Construction****Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.2177	2.0546	1.8553	3.9300e-003	0.9208	0.0889	1.0096	0.3727	0.0821	0.4548	0.0000	345.0619	345.0619	0.1013	2.4000e-004	347.6667
2026	0.2851	2.6583	2.8193	6.0300e-003	0.6620	0.1085	0.7705	0.2491	0.1006	0.3496	0.0000	527.6005	527.6005	0.1513	1.2400e-003	531.7503
2027	0.1840	1.6582	2.1448	3.7700e-003	0.0210	0.0691	0.0901	5.6900e-003	0.0650	0.0707	0.0000	326.3672	326.3672	0.0715	2.0400e-003	328.7611
2028	0.1830	1.6515	2.1346	3.7500e-003	0.0209	0.0688	0.0898	5.6600e-003	0.0647	0.0704	0.0000	324.6352	324.6352	0.0712	1.9800e-003	327.0044
2029	0.1834	1.6574	2.1411	3.7500e-003	0.0210	0.0691	0.0901	5.6900e-003	0.0650	0.0707	0.0000	325.4355	325.4355	0.0714	1.9400e-003	327.7992
2030	0.1755	1.0653	2.1492	4.2700e-003	0.0210	0.0196	0.0406	5.6900e-003	0.0196	0.0252	0.0000	365.4138	365.4138	0.0140	1.9000e-003	366.3301
2031	0.1752	1.0651	2.1479	4.2700e-003	0.0210	0.0196	0.0406	5.6900e-003	0.0196	0.0252	0.0000	365.0583	365.0583	0.0140	1.8600e-003	365.9633
2032	0.4011	0.8811	1.8712	3.5400e-003	0.0164	0.0273	0.0436	4.4000e-003	0.0273	0.0317	0.0000	303.9387	303.9387	0.0127	9.2000e-004	304.5289
2033	0.5051	0.0318	0.0681	1.2000e-004	8.9000e-004	7.5000e-004	1.6400e-003	2.4000e-004	7.5000e-004	9.9000e-004	0.0000	10.0318	10.0318	3.9000e-004	1.0000e-005	10.0453
Maximum	0.5051	2.6583	2.8193	6.0300e-003	0.9208	0.1085	1.0096	0.3727	0.1006	0.4548	0.0000	527.6005	527.6005	0.1513	2.0400e-003	531.7503

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	4-18-2025	7-17-2025	0.6941	0.6941

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2	7-18-2025	10-17-2025	0.8005	0.8005
3	10-18-2025	1-17-2026	0.9703	0.9703
4	1-18-2026	4-17-2026	0.9941	0.9941
5	4-18-2026	7-17-2026	0.9151	0.9151
6	7-18-2026	10-17-2026	0.4639	0.4639
7	10-18-2026	1-17-2027	0.4642	0.4642
8	1-18-2027	4-17-2027	0.4539	0.4539
9	4-18-2027	7-17-2027	0.4586	0.4586
10	7-18-2027	10-17-2027	0.4637	0.4637
11	10-18-2027	1-17-2028	0.4640	0.4640
12	1-18-2028	4-17-2028	0.4588	0.4588
13	4-18-2028	7-17-2028	0.4584	0.4584
14	7-18-2028	10-17-2028	0.4636	0.4636
15	10-18-2028	1-17-2029	0.4639	0.4639
16	1-18-2029	4-17-2029	0.4536	0.4536
17	4-18-2029	7-17-2029	0.4583	0.4583
18	7-18-2029	10-17-2029	0.4634	0.4634
19	10-18-2029	1-17-2030	0.4358	0.4358
20	1-18-2030	4-17-2030	0.3058	0.3058
21	4-18-2030	7-17-2030	0.3088	0.3088
22	7-18-2030	10-17-2030	0.3123	0.3123
23	10-18-2030	1-17-2031	0.3126	0.3126
24	1-18-2031	4-17-2031	0.3057	0.3057
25	4-18-2031	7-17-2031	0.3087	0.3087
26	7-18-2031	10-17-2031	0.3122	0.3122
27	10-18-2031	1-17-2032	0.3125	0.3125
28	1-18-2032	4-17-2032	0.3089	0.3089
29	4-18-2032	7-17-2032	0.2961	0.2961
30	7-18-2032	10-17-2032	0.2808	0.2808

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

31	10-18-2032	1-17-2033	0.4235	0.4235
32	1-18-2033	4-17-2033	0.4509	0.4509
		Highest	0.9941	0.9941

2.2 Overall Operational**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.1095	0.0510	3.3272	4.8600e-003		0.4132	0.4132		0.4132	0.4132	36.5562	19.5948	56.1509	8.8000e-004	3.5700e-003	57.2382
Energy	5.7000e-003	0.0487	0.0207	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003	0.0000	88.9027	88.9027	6.3300e-003	1.6700e-003	89.5591
Mobile	0.1745	0.2951	1.6681	4.1500e-003	0.4506	3.3600e-003	0.4540	0.1206	3.1500e-003	0.1237	0.0000	397.6971	397.6971	0.0191	0.0209	404.3978
Waste						0.0000	0.0000		0.0000	0.0000	9.2077	0.0000	9.2077	0.5442	0.0000	22.8116
Water						0.0000	0.0000		0.0000	0.0000	0.9095	2.0205	2.9300	0.0937	2.2500e-003	5.9426
Total	3.2897	0.3948	5.0160	9.3200e-003	0.4506	0.4205	0.8712	0.1206	0.4203	0.5409	46.6733	508.2151	554.8885	0.6642	0.0284	579.9493

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**2.2 Overall Operational****Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.1095	0.0510	3.3272	4.8600e-003		0.4132	0.4132		0.4132	0.4132	36.5562	19.5948	56.1509	8.8000e-004	3.5700e-003	57.2382
Energy	5.7000e-003	0.0487	0.0207	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003	0.0000	88.9027	88.9027	6.3300e-003	1.6700e-003	89.5591
Mobile	0.1745	0.2951	1.6681	4.1500e-003	0.4506	3.3600e-003	0.4540	0.1206	3.1500e-003	0.1237	0.0000	397.6971	397.6971	0.0191	0.0209	404.3978
Waste						0.0000	0.0000		0.0000	0.0000	9.2077	0.0000	9.2077	0.5442	0.0000	22.8116
Water						0.0000	0.0000		0.0000	0.0000	0.9095	2.0205	2.9300	0.0937	2.2500e-003	5.9426
Total	3.2897	0.3948	5.0160	9.3200e-003	0.4506	0.4205	0.8712	0.1206	0.4203	0.5409	46.6733	508.2151	554.8885	0.6642	0.0284	579.9493

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/18/2025	9/4/2025	5	100	
2	Site Preparation	Site Preparation	9/5/2025	11/27/2025	5	60	
3	Grading	Grading	11/28/2025	7/2/2026	5	155	

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Building Construction	Building Construction	7/3/2026	6/10/2032	5	1550
5	Paving	Paving	6/11/2032	11/11/2032	5	110
6	Architectural Coating	Architectural Coating	11/12/2032	4/14/2033	5	110

Acres of Grading (Site Preparation Phase): 90**Acres of Grading (Grading Phase): 465****Acres of Paving: 0****Residential Indoor: 160,380; Residential Outdoor: 53,460; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	16.00	5.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction**3.2 Demolition -2025****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1046	0.9598	0.9709	1.9400e-003		0.0426	0.0426		0.0396	0.0396	0.0000	169.9883	169.9883	0.0475	0.0000	171.1749
Total	0.1046	0.9598	0.9709	1.9400e-003		0.0426	0.0426		0.0396	0.0396	0.0000	169.9883	169.9883	0.0475	0.0000	171.1749

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.2 Demolition -2025****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-003	1.1800e-003	0.0152	5.0000e-005	6.0000e-003	3.0000e-005	6.0200e-003	1.5900e-003	2.0000e-005	1.6200e-003	0.0000	4.5420	4.5420	1.2000e-004	1.2000e-004	4.5800
Total	2.0000e-003	1.1800e-003	0.0152	5.0000e-005	6.0000e-003	3.0000e-005	6.0200e-003	1.5900e-003	2.0000e-005	1.6200e-003	0.0000	4.5420	4.5420	1.2000e-004	1.2000e-004	4.5800

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1046	0.9598	0.9709	1.9400e-003		0.0426	0.0426		0.0396	0.0396	0.0000	169.9881	169.9881	0.0475	0.0000	171.1747
Total	0.1046	0.9598	0.9709	1.9400e-003		0.0426	0.0426		0.0396	0.0396	0.0000	169.9881	169.9881	0.0475	0.0000	171.1747

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.2 Demolition -2025****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-003	1.1800e-003	0.0152	5.0000e-005	6.0000e-003	3.0000e-005	6.0200e-003	1.5900e-003	2.0000e-005	1.6200e-003	0.0000	4.5420	4.5420	1.2000e-004	1.2000e-004	4.5800
Total	2.0000e-003	1.1800e-003	0.0152	5.0000e-005	6.0000e-003	3.0000e-005	6.0200e-003	1.5900e-003	2.0000e-005	1.6200e-003	0.0000	4.5420	4.5420	1.2000e-004	1.2000e-004	4.5800

3.3 Site Preparation -2025**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5897	0.0000	0.5897	0.3031	0.0000	0.3031	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0742	0.7570	0.5374	1.1400e-003		0.0326	0.0326		0.0300	0.0300	0.0000	100.4010	100.4010	0.0325	0.0000	101.2128
Total	0.0742	0.7570	0.5374	1.1400e-003	0.5897	0.0326	0.6223	0.3031	0.0300	0.3331	0.0000	100.4010	100.4010	0.0325	0.0000	101.2128

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.3 Site Preparation -2025****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	8.5000e-004	0.0110	3.0000e-005	4.3200e-003	2.0000e-005	4.3400e-003	1.1500e-003	2.0000e-005	1.1600e-003	0.0000	3.2702	3.2702	8.0000e-005	8.0000e-005	3.2976
Total	1.4400e-003	8.5000e-004	0.0110	3.0000e-005	4.3200e-003	2.0000e-005	4.3400e-003	1.1500e-003	2.0000e-005	1.1600e-003	0.0000	3.2702	3.2702	8.0000e-005	8.0000e-005	3.2976

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5897	0.0000	0.5897	0.3031	0.0000	0.3031	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0742	0.7570	0.5374	1.1400e-003		0.0326	0.0326		0.0300	0.0300	0.0000	100.4008	100.4008	0.0325	0.0000	101.2126
Total	0.0742	0.7570	0.5374	1.1400e-003	0.5897	0.0326	0.6223	0.3031	0.0300	0.3331	0.0000	100.4008	100.4008	0.0325	0.0000	101.2126

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.3 Site Preparation -2025****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	8.5000e-004	0.0110	3.0000e-005	4.3200e-003	2.0000e-005	4.3400e-003	1.1500e-003	2.0000e-005	1.1600e-003	0.0000	3.2702	3.2702	8.0000e-005	8.0000e-005	3.2976
Total	1.4400e-003	8.5000e-004	0.0110	3.0000e-005	4.3200e-003	2.0000e-005	4.3400e-003	1.1500e-003	2.0000e-005	1.1600e-003	0.0000	3.2702	3.2702	8.0000e-005	8.0000e-005	3.2976

3.4 Grading -2025**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3188	0.0000	0.3188	0.0664	0.0000	0.0664	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0348	0.3353	0.3160	7.4000e-004		0.0136	0.0136		0.0125	0.0125	0.0000	65.4075	65.4075	0.0212	0.0000	65.9363
Total	0.0348	0.3353	0.3160	7.4000e-004	0.3188	0.0136	0.3324	0.0664	0.0125	0.0788	0.0000	65.4075	65.4075	0.0212	0.0000	65.9363

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.4 Grading -2025****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.4000e-004	3.8000e-004	4.8700e-003	2.0000e-005	1.9200e-003	1.0000e-005	1.9300e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.4534	1.4534	4.0000e-005	4.0000e-005	1.4656
Total	6.4000e-004	3.8000e-004	4.8700e-003	2.0000e-005	1.9200e-003	1.0000e-005	1.9300e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.4534	1.4534	4.0000e-005	4.0000e-005	1.4656

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3188	0.0000	0.3188	0.0664	0.0000	0.0664	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0348	0.3353	0.3160	7.4000e-004		0.0136	0.0136		0.0125	0.0125	0.0000	65.4074	65.4074	0.0212	0.0000	65.9362
Total	0.0348	0.3353	0.3160	7.4000e-004	0.3188	0.0136	0.3324	0.0664	0.0125	0.0788	0.0000	65.4074	65.4074	0.0212	0.0000	65.9362

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.4 Grading -2025****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.4000e-004	3.8000e-004	4.8700e-003	2.0000e-005	1.9200e-003	1.0000e-005	1.9300e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.4534	1.4534	4.0000e-005	4.0000e-005	1.4656
Total	6.4000e-004	3.8000e-004	4.8700e-003	2.0000e-005	1.9200e-003	1.0000e-005	1.9300e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.4534	1.4534	4.0000e-005	4.0000e-005	1.4656

3.4 Grading -2026**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6410	0.0000	0.6410	0.2434	0.0000	0.2434	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1900	1.8303	1.7247	4.0700e-003		0.0741	0.0741		0.0682	0.0682	0.0000	357.0157	357.0157	0.1155	0.0000	359.9023
Total	0.1900	1.8303	1.7247	4.0700e-003	0.6410	0.0741	0.7151	0.2434	0.0682	0.3116	0.0000	357.0157	357.0157	0.1155	0.0000	359.9023

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.4 Grading -2026****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2700e-003	1.8600e-003	0.0251	8.0000e-005	0.0105	4.0000e-005	0.0105	2.7800e-003	4.0000e-005	2.8200e-003	0.0000	7.7656	7.7656	1.9000e-004	1.9000e-004	7.8278
Total	3.2700e-003	1.8600e-003	0.0251	8.0000e-005	0.0105	4.0000e-005	0.0105	2.7800e-003	4.0000e-005	2.8200e-003	0.0000	7.7656	7.7656	1.9000e-004	1.9000e-004	7.8278

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6410	0.0000	0.6410	0.2434	0.0000	0.2434	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1900	1.8303	1.7247	4.0700e-003		0.0741	0.0741		0.0682	0.0682	0.0000	357.0153	357.0153	0.1155	0.0000	359.9019
Total	0.1900	1.8303	1.7247	4.0700e-003	0.6410	0.0741	0.7151	0.2434	0.0682	0.3116	0.0000	357.0153	357.0153	0.1155	0.0000	359.9019

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.4 Grading -2026****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2700e-003	1.8600e-003	0.0251	8.0000e-005	0.0105	4.0000e-005	0.0105	2.7800e-003	4.0000e-005	2.8200e-003	0.0000	7.7656	7.7656	1.9000e-004	1.9000e-004	7.8278
Total	3.2700e-003	1.8600e-003	0.0251	8.0000e-005	0.0105	4.0000e-005	0.0105	2.7800e-003	4.0000e-005	2.8200e-003	0.0000	7.7656	7.7656	1.9000e-004	1.9000e-004	7.8278

3.5 Building Construction -2026**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0889	0.8105	1.0455	1.7500e-003		0.0343	0.0343		0.0323	0.0323	0.0000	150.7476	150.7476	0.0354	0.0000	151.6336
Total	0.0889	0.8105	1.0455	1.7500e-003		0.0343	0.0343		0.0323	0.0323	0.0000	150.7476	150.7476	0.0354	0.0000	151.6336

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2026****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2000e-004	0.0141	4.0200e-003	6.0000e-005	2.1500e-003	9.0000e-005	2.2500e-003	6.2000e-004	9.0000e-005	7.1000e-004	0.0000	5.9071	5.9071	3.0000e-005	8.9000e-004	6.1727
Worker	2.5900e-003	1.4800e-003	0.0200	6.0000e-005	8.3100e-003	4.0000e-005	8.3500e-003	2.2100e-003	3.0000e-005	2.2400e-003	0.0000	6.1651	6.1651	1.5000e-004	1.5000e-004	6.2145
Total	2.9100e-003	0.0156	0.0240	1.2000e-004	0.0105	1.3000e-004	0.0106	2.8300e-003	1.2000e-004	2.9500e-003	0.0000	12.0722	12.0722	1.8000e-004	1.0400e-003	12.3872

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0889	0.8105	1.0455	1.7500e-003		0.0343	0.0343		0.0323	0.0323	0.0000	150.7475	150.7475	0.0354	0.0000	151.6334
Total	0.0889	0.8105	1.0455	1.7500e-003		0.0343	0.0343		0.0323	0.0323	0.0000	150.7475	150.7475	0.0354	0.0000	151.6334

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2026****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2000e-004	0.0141	4.0200e-003	6.0000e-005	2.1500e-003	9.0000e-005	2.2500e-003	6.2000e-004	9.0000e-005	7.1000e-004	0.0000	5.9071	5.9071	3.0000e-005	8.9000e-004	6.1727
Worker	2.5900e-003	1.4800e-003	0.0200	6.0000e-005	8.3100e-003	4.0000e-005	8.3500e-003	2.2100e-003	3.0000e-005	2.2400e-003	0.0000	6.1651	6.1651	1.5000e-004	1.5000e-004	6.2145
Total	2.9100e-003	0.0156	0.0240	1.2000e-004	0.0105	1.3000e-004	0.0106	2.8300e-003	1.2000e-004	2.9500e-003	0.0000	12.0722	12.0722	1.8000e-004	1.0400e-003	12.3872

3.5 Building Construction -2027**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2027****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4000e-004	0.0282	7.9600e-003	1.2000e-004	4.3300e-003	1.8000e-004	4.5100e-003	1.2500e-003	1.7000e-004	1.4200e-003	0.0000	11.6078	11.6078	6.0000e-005	1.7500e-003	12.1295
Worker	4.8800e-003	2.6900e-003	0.0378	1.3000e-004	0.0167	7.0000e-005	0.0168	4.4400e-003	6.0000e-005	4.5000e-003	0.0000	12.1049	12.1049	2.7000e-004	2.9000e-004	12.1984
Total	5.5200e-003	0.0309	0.0458	2.5000e-004	0.0210	2.5000e-004	0.0213	5.6900e-003	2.3000e-004	5.9200e-003	0.0000	23.7126	23.7126	3.3000e-004	2.0400e-003	24.3279

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2027****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4000e-004	0.0282	7.9600e-003	1.2000e-004	4.3300e-003	1.8000e-004	4.5100e-003	1.2500e-003	1.7000e-004	1.4200e-003	0.0000	11.6078	11.6078	6.0000e-005	1.7500e-003	12.1295
Worker	4.8800e-003	2.6900e-003	0.0378	1.3000e-004	0.0167	7.0000e-005	0.0168	4.4400e-003	6.0000e-005	4.5000e-003	0.0000	12.1049	12.1049	2.7000e-004	2.9000e-004	12.1984
Total	5.5200e-003	0.0309	0.0458	2.5000e-004	0.0210	2.5000e-004	0.0213	5.6900e-003	2.3000e-004	5.9200e-003	0.0000	23.7126	23.7126	3.3000e-004	2.0400e-003	24.3279

3.5 Building Construction -2028**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1778	1.6211	2.0910	3.5000e-003		0.0686	0.0686		0.0645	0.0645	0.0000	301.4953	301.4953	0.0709	0.0000	303.2671
Total	0.1778	1.6211	2.0910	3.5000e-003		0.0686	0.0686		0.0645	0.0645	0.0000	301.4953	301.4953	0.0709	0.0000	303.2671

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2028****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.3000e-004	0.0279	7.8400e-003	1.2000e-004	4.3100e-003	1.8000e-004	4.4900e-003	1.2500e-003	1.7000e-004	1.4200e-003	0.0000	11.3239	11.3239	5.0000e-005	1.7000e-003	11.8326
Worker	4.5600e-003	2.4500e-003	0.0358	1.2000e-004	0.0166	6.0000e-005	0.0167	4.4200e-003	6.0000e-005	4.4800e-003	0.0000	11.8165	11.8165	2.5000e-004	2.8000e-004	11.9050
Total	5.1900e-003	0.0304	0.0436	2.4000e-004	0.0209	2.4000e-004	0.0212	5.6700e-003	2.3000e-004	5.9000e-003	0.0000	23.1403	23.1403	3.0000e-004	1.9800e-003	23.7376

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1778	1.6211	2.0910	3.5000e-003		0.0686	0.0686		0.0645	0.0645	0.0000	301.4949	301.4949	0.0709	0.0000	303.2667
Total	0.1778	1.6211	2.0910	3.5000e-003		0.0686	0.0686		0.0645	0.0645	0.0000	301.4949	301.4949	0.0709	0.0000	303.2667

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2028****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.3000e-004	0.0279	7.8400e-003	1.2000e-004	4.3100e-003	1.8000e-004	4.4900e-003	1.2500e-003	1.7000e-004	1.4200e-003	0.0000	11.3239	11.3239	5.0000e-005	1.7000e-003	11.8326
Worker	4.5600e-003	2.4500e-003	0.0358	1.2000e-004	0.0166	6.0000e-005	0.0167	4.4200e-003	6.0000e-005	4.4800e-003	0.0000	11.8165	11.8165	2.5000e-004	2.8000e-004	11.9050
Total	5.1900e-003	0.0304	0.0436	2.4000e-004	0.0209	2.4000e-004	0.0212	5.6700e-003	2.3000e-004	5.9000e-003	0.0000	23.1403	23.1403	3.0000e-004	1.9800e-003	23.7376

3.5 Building Construction -2029**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2029****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2000e-004	0.0279	7.8000e-003	1.2000e-004	4.3300e-003	1.8000e-004	4.5100e-003	1.2500e-003	1.7000e-004	1.4200e-003	0.0000	11.1368	11.1368	5.0000e-005	1.6700e-003	11.6370
Worker	4.2900e-003	2.2600e-003	0.0343	1.2000e-004	0.0167	6.0000e-005	0.0168	4.4400e-003	5.0000e-005	4.4900e-003	0.0000	11.6441	11.6441	2.3000e-004	2.7000e-004	11.7291
Total	4.9100e-003	0.0302	0.0421	2.4000e-004	0.0210	2.4000e-004	0.0213	5.6900e-003	2.2000e-004	5.9100e-003	0.0000	22.7810	22.7810	2.8000e-004	1.9400e-003	23.3661

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2029****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2000e-004	0.0279	7.8000e-003	1.2000e-004	4.3300e-003	1.8000e-004	4.5100e-003	1.2500e-003	1.7000e-004	1.4200e-003	0.0000	11.1368	11.1368	5.0000e-005	1.6700e-003	11.6370
Worker	4.2900e-003	2.2600e-003	0.0343	1.2000e-004	0.0167	6.0000e-005	0.0168	4.4400e-003	5.0000e-005	4.4900e-003	0.0000	11.6441	11.6441	2.3000e-004	2.7000e-004	11.7291
Total	4.9100e-003	0.0302	0.0421	2.4000e-004	0.0210	2.4000e-004	0.0213	5.6900e-003	2.2000e-004	5.9100e-003	0.0000	22.7810	22.7810	2.8000e-004	1.9400e-003	23.3661

3.5 Building Construction -2030**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0336	343.0336	0.0138	0.0000	343.3777
Total	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0336	343.0336	0.0138	0.0000	343.3777

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2030****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.1000e-004	0.0278	7.7300e-003	1.1000e-004	4.3300e-003	1.8000e-004	4.5100e-003	1.2500e-003	1.7000e-004	1.4200e-003	0.0000	10.9282	10.9282	5.0000e-005	1.6400e-003	11.4188
Worker	4.0300e-003	2.1000e-003	0.0329	1.2000e-004	0.0167	5.0000e-005	0.0168	4.4400e-003	5.0000e-005	4.4900e-003	0.0000	11.4524	11.4524	2.1000e-004	2.6000e-004	11.5340
Total	4.6400e-003	0.0299	0.0407	2.3000e-004	0.0210	2.3000e-004	0.0213	5.6900e-003	2.2000e-004	5.9100e-003	0.0000	22.3806	22.3806	2.6000e-004	1.9000e-003	22.9528

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0332	343.0332	0.0138	0.0000	343.3773
Total	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0332	343.0332	0.0138	0.0000	343.3773

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2030****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.1000e-004	0.0278	7.7300e-003	1.1000e-004	4.3300e-003	1.8000e-004	4.5100e-003	1.2500e-003	1.7000e-004	1.4200e-003	0.0000	10.9282	10.9282	5.0000e-005	1.6400e-003	11.4188
Worker	4.0300e-003	2.1000e-003	0.0329	1.2000e-004	0.0167	5.0000e-005	0.0168	4.4400e-003	5.0000e-005	4.4900e-003	0.0000	11.4524	11.4524	2.1000e-004	2.6000e-004	11.5340
Total	4.6400e-003	0.0299	0.0407	2.3000e-004	0.0210	2.3000e-004	0.0213	5.6900e-003	2.2000e-004	5.9100e-003	0.0000	22.3806	22.3806	2.6000e-004	1.9000e-003	22.9528

3.5 Building Construction -2031**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0336	343.0336	0.0138	0.0000	343.3777
Total	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0336	343.0336	0.0138	0.0000	343.3777

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2031****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.1000e-004	0.0277	7.7000e-003	1.1000e-004	4.3300e-003	1.8000e-004	4.5000e-003	1.2500e-003	1.7000e-004	1.4200e-003	0.0000	10.7434	10.7434	5.0000e-005	1.6100e-003	11.2256
Worker	3.7700e-003	1.9600e-003	0.0317	1.1000e-004	0.0167	5.0000e-005	0.0167	4.4400e-003	5.0000e-005	4.4800e-003	0.0000	11.2817	11.2817	2.0000e-004	2.5000e-004	11.3604
Total	4.3800e-003	0.0297	0.0394	2.2000e-004	0.0210	2.3000e-004	0.0212	5.6900e-003	2.2000e-004	5.9000e-003	0.0000	22.0250	22.0250	2.5000e-004	1.8600e-003	22.5860

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0332	343.0332	0.0138	0.0000	343.3773
Total	0.1708	1.0355	2.1085	4.0400e-003		0.0193	0.0193		0.0193	0.0193	0.0000	343.0332	343.0332	0.0138	0.0000	343.3773

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2031****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.1000e-004	0.0277	7.7000e-003	1.1000e-004	4.3300e-003	1.8000e-004	4.5000e-003	1.2500e-003	1.7000e-004	1.4200e-003	0.0000	10.7434	10.7434	5.0000e-005	1.6100e-003	11.2256
Worker	3.7700e-003	1.9600e-003	0.0317	1.1000e-004	0.0167	5.0000e-005	0.0167	4.4400e-003	5.0000e-005	4.4800e-003	0.0000	11.2817	11.2817	2.0000e-004	2.5000e-004	11.3604
Total	4.3800e-003	0.0297	0.0394	2.2000e-004	0.0210	2.3000e-004	0.0212	5.6900e-003	2.2000e-004	5.9000e-003	0.0000	22.0250	22.0250	2.5000e-004	1.8600e-003	22.5860

3.5 Building Construction -2032**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0759	0.4602	0.9371	1.8000e-003		8.5900e-003	8.5900e-003		8.5900e-003	8.5900e-003	0.0000	152.4594	152.4594	6.1200e-003	0.0000	152.6123
Total	0.0759	0.4602	0.9371	1.8000e-003		8.5900e-003	8.5900e-003		8.5900e-003	8.5900e-003	0.0000	152.4594	152.4594	6.1200e-003	0.0000	152.6123

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2032****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7000e-004	0.0123	3.4100e-003	5.0000e-005	1.9200e-003	8.0000e-005	2.0000e-003	5.6000e-004	8.0000e-005	6.3000e-004	0.0000	4.7028	4.7028	2.0000e-005	7.1000e-004	4.9139
Worker	1.5700e-003	8.2000e-004	0.0137	5.0000e-005	7.4200e-003	2.0000e-005	7.4400e-003	1.9700e-003	2.0000e-005	1.9900e-003	0.0000	4.9475	4.9475	8.0000e-005	1.1000e-004	4.9814
Total	1.8400e-003	0.0131	0.0171	1.0000e-004	9.3400e-003	1.0000e-004	9.4400e-003	2.5300e-003	1.0000e-004	2.6200e-003	0.0000	9.6503	9.6503	1.0000e-004	8.2000e-004	9.8953

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0759	0.4602	0.9371	1.8000e-003		8.5900e-003	8.5900e-003		8.5900e-003	8.5900e-003	0.0000	152.4592	152.4592	6.1200e-003	0.0000	152.6121
Total	0.0759	0.4602	0.9371	1.8000e-003		8.5900e-003	8.5900e-003		8.5900e-003	8.5900e-003	0.0000	152.4592	152.4592	6.1200e-003	0.0000	152.6121

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.5 Building Construction -2032****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7000e-004	0.0123	3.4100e-003	5.0000e-005	1.9200e-003	8.0000e-005	2.0000e-003	5.6000e-004	8.0000e-005	6.3000e-004	0.0000	4.7028	4.7028	2.0000e-005	7.1000e-004	4.9139
Worker	1.5700e-003	8.2000e-004	0.0137	5.0000e-005	7.4200e-003	2.0000e-005	7.4400e-003	1.9700e-003	2.0000e-005	1.9900e-003	0.0000	4.9475	4.9475	8.0000e-005	1.1000e-004	4.9814
Total	1.8400e-003	0.0131	0.0171	1.0000e-004	9.3400e-003	1.0000e-004	9.4400e-003	2.5300e-003	1.0000e-004	2.6200e-003	0.0000	9.6503	9.6503	1.0000e-004	8.2000e-004	9.8953

3.6 Paving -2032**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0762	0.3916	0.8717	1.5400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	132.5473	132.5473	6.2100e-003	0.0000	132.7027
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0762	0.3916	0.8717	1.5400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	132.5473	132.5473	6.2100e-003	0.0000	132.7027

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.6 Paving -2032****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-003	7.3000e-004	0.0121	4.0000e-005	6.6000e-003	2.0000e-005	6.6100e-003	1.7500e-003	2.0000e-005	1.7700e-003	0.0000	4.3984	4.3984	7.0000e-005	1.0000e-004	4.4286
Total	1.4000e-003	7.3000e-004	0.0121	4.0000e-005	6.6000e-003	2.0000e-005	6.6100e-003	1.7500e-003	2.0000e-005	1.7700e-003	0.0000	4.3984	4.3984	7.0000e-005	1.0000e-004	4.4286

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0762	0.3916	0.8717	1.5400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	132.5472	132.5472	6.2100e-003	0.0000	132.7025
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0762	0.3916	0.8717	1.5400e-003		0.0182	0.0182		0.0182	0.0182	0.0000	132.5472	132.5472	6.2100e-003	0.0000	132.7025

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.6 Paving -2032****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-003	7.3000e-004	0.0121	4.0000e-005	6.6000e-003	2.0000e-005	6.6100e-003	1.7500e-003	2.0000e-005	1.7700e-003	0.0000	4.3984	4.3984	7.0000e-005	1.0000e-004	4.4286
Total	1.4000e-003	7.3000e-004	0.0121	4.0000e-005	6.6000e-003	2.0000e-005	6.6100e-003	1.7500e-003	2.0000e-005	1.7700e-003	0.0000	4.3984	4.3984	7.0000e-005	1.0000e-004	4.4286

3.7 Architectural Coating -2032**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2433					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3500e-003	0.0154	0.0324	5.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	4.5959	4.5959	1.9000e-004	0.0000	4.6005
Total	0.2456	0.0154	0.0324	5.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	4.5959	4.5959	1.9000e-004	0.0000	4.6005

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.7 Architectural Coating -2032****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	5.0000e-005	7.9000e-004	0.0000	4.3000e-004	0.0000	4.3000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	0.2879	0.2879	0.0000	1.0000e-005	0.2899
Total	9.0000e-005	5.0000e-005	7.9000e-004	0.0000	4.3000e-004	0.0000	4.3000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	0.2879	0.2879	0.0000	1.0000e-005	0.2899

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2433					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3500e-003	0.0154	0.0324	5.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	4.5959	4.5959	1.9000e-004	0.0000	4.6005
Total	0.2456	0.0154	0.0324	5.0000e-005		3.7000e-004	3.7000e-004		3.7000e-004	3.7000e-004	0.0000	4.5959	4.5959	1.9000e-004	0.0000	4.6005

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.7 Architectural Coating -2032****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	5.0000e-005	7.9000e-004	0.0000	4.3000e-004	0.0000	4.3000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	0.2879	0.2879	0.0000	1.0000e-005	0.2899
Total	9.0000e-005	5.0000e-005	7.9000e-004	0.0000	4.3000e-004	0.0000	4.3000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	0.2879	0.2879	0.0000	1.0000e-005	0.2899

3.7 Architectural Coating -2033**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5001					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8400e-003	0.0317	0.0665	1.1000e-004		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	9.4470	9.4470	3.8000e-004	0.0000	9.4566
Total	0.5049	0.0317	0.0665	1.1000e-004		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	9.4470	9.4470	3.8000e-004	0.0000	9.4566

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.7 Architectural Coating -2033****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	9.0000e-005	1.5900e-003	1.0000e-005	8.9000e-004	0.0000	8.9000e-004	2.4000e-004	0.0000	2.4000e-004	0.0000	0.5848	0.5848	1.0000e-005	1.0000e-005	0.5887
Total	1.8000e-004	9.0000e-005	1.5900e-003	1.0000e-005	8.9000e-004	0.0000	8.9000e-004	2.4000e-004	0.0000	2.4000e-004	0.0000	0.5848	0.5848	1.0000e-005	1.0000e-005	0.5887

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5001					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8400e-003	0.0317	0.0665	1.1000e-004		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	9.4470	9.4470	3.8000e-004	0.0000	9.4566
Total	0.5049	0.0317	0.0665	1.1000e-004		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	9.4470	9.4470	3.8000e-004	0.0000	9.4566

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**3.7 Architectural Coating -2033****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	9.0000e-005	1.5900e-003	1.0000e-005	8.9000e-004	0.0000	8.9000e-004	2.4000e-004	0.0000	2.4000e-004	0.0000	0.5848	0.5848	1.0000e-005	1.0000e-005	0.5887
Total	1.8000e-004	9.0000e-005	1.5900e-003	1.0000e-005	8.9000e-004	0.0000	8.9000e-004	2.4000e-004	0.0000	2.4000e-004	0.0000	0.5848	0.5848	1.0000e-005	1.0000e-005	0.5887

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**4.0 Operational Detail - Mobile****4.1 Mitigation Measures Mobile**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1745	0.2951	1.6681	4.1500e-003	0.4506	3.3600e-003	0.4540	0.1206	3.1500e-003	0.1237	0.0000	397.6971	397.6971	0.0191	0.0209	404.3978
Unmitigated	0.1745	0.2951	1.6681	4.1500e-003	0.4506	3.3600e-003	0.4540	0.1206	3.1500e-003	0.1237	0.0000	397.6971	397.6971	0.0191	0.0209	404.3978

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	415.36	419.76	376.20	1,202,320	1,202,320
Total	415.36	419.76	376.20	1,202,320	1,202,320

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.531212	0.053720	0.175693	0.143990	0.023462	0.006329	0.014830	0.022874	0.000693	0.000284	0.022838	0.001406	0.002670

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**5.0 Energy Detail**

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	32.4624	32.4624	5.2500e-003	6.4000e-004	32.7834
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	32.4624	32.4624	5.2500e-003	6.4000e-004	32.7834
NaturalGas Mitigated	5.7000e-003	0.0487	0.0207	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003	0.0000	56.4404	56.4404	1.0800e-003	1.0300e-003	56.7758
NaturalGas Unmitigated	5.7000e-003	0.0487	0.0207	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003	0.0000	56.4404	56.4404	1.0800e-003	1.0300e-003	56.7758

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	1.05765e+006	5.7000e-003	0.0487	0.0207	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003	0.0000	56.4404	56.4404	1.0800e-003	1.0300e-003	56.7758
Total		5.7000e-003	0.0487	0.0207	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003	0.0000	56.4404	56.4404	1.0800e-003	1.0300e-003	56.7758

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	1.05765e+006	5.7000e-003	0.0487	0.0207	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003	0.0000	56.4404	56.4404	1.0800e-003	1.0300e-003	56.7758
Total		5.7000e-003	0.0487	0.0207	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003	0.0000	56.4404	56.4404	1.0800e-003	1.0300e-003	56.7758

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	350854	32.4624	5.2500e-003	6.4000e-004	32.7834
Total		32.4624	5.2500e-003	6.4000e-004	32.7834

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	350854	32.4624	5.2500e-003	6.4000e-004	32.7834
Total		32.4624	5.2500e-003	6.4000e-004	32.7834

6.0 Area Detail

6.1 Mitigation Measures Area

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.1095	0.0510	3.3272	4.8600e-003		0.4132	0.4132		0.4132	0.4132	36.5562	19.5948	56.1509	8.8000e-004	3.5700e-003	57.2382
Unmitigated	3.1095	0.0510	3.3272	4.8600e-003		0.4132	0.4132		0.4132	0.4132	36.5562	19.5948	56.1509	8.8000e-004	3.5700e-003	57.2382

6.2 Area by SubCategory**Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0743					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3093					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.7160	0.0473	3.0008	4.8500e-003		0.4114	0.4114		0.4114	0.4114	36.5562	19.0611	55.6173	3.7000e-004	3.5700e-003	56.6918
Landscaping	9.8000e-003	3.7600e-003	0.3264	2.0000e-005		1.8100e-003	1.8100e-003		1.8100e-003	1.8100e-003	0.0000	0.5337	0.5337	5.1000e-004	0.0000	0.5464
Total	3.1095	0.0510	3.3272	4.8700e-003		0.4132	0.4132		0.4132	0.4132	36.5562	19.5948	56.1509	8.8000e-004	3.5700e-003	57.2382

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied**6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0743					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3093					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.7160	0.0473	3.0008	4.8500e-003		0.4114	0.4114		0.4114	0.4114	36.5562	19.0611	55.6173	3.7000e-004	3.5700e-003	56.6918
Landscaping	9.8000e-003	3.7600e-003	0.3264	2.0000e-005		1.8100e-003	1.8100e-003		1.8100e-003	1.8100e-003	0.0000	0.5337	0.5337	5.1000e-004	0.0000	0.5464
Total	3.1095	0.0510	3.3272	4.8700e-003		0.4132	0.4132		0.4132	0.4132	36.5562	19.5948	56.1509	8.8000e-004	3.5700e-003	57.2382

7.0 Water Detail**7.1 Mitigation Measures Water**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	2.9300	0.0937	2.2500e-003	5.9426
Unmitigated	2.9300	0.0937	2.2500e-003	5.9426

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	2.86678 / 1.80732	2.9300	0.0937	2.2500e-003	5.9426
Total		2.9300	0.0937	2.2500e-003	5.9426

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	2.86678 / 1.80732	2.9300	0.0937	2.2500e-003	5.9426
Total		2.9300	0.0937	2.2500e-003	5.9426

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	9.2077	0.5442	0.0000	22.8116
Unmitigated	9.2077	0.5442	0.0000	22.8116

Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	45.36	9.2077	0.5442	0.0000	22.8116
Total		9.2077	0.5442	0.0000	22.8116

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	45.36	9.2077	0.5442	0.0000	22.8116
Total		9.2077	0.5442	0.0000	22.8116

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Sample Ranch Project - Fresno County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Sample Ranch Residential Development

Noise Study Report April 2025

Prepared by:

VRPA Technologies, Inc.
4630 W. Jennifer, Suite 105
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Project Manager: Georgiena Vivian



Table of Contents

Section	Description	Page
1.0	Introduction	1
1.1	Description of the Region/Project	1
1.2	Sound and the Human Ear	1
1.2.1	A-Weighted Decibels	1
1.2.2	Sound Pressure Levels and Decibels	2
1.2.3	Sound, Noise, and Acoustics	7
1.2.4	Frequency and Hertz	7
1.2.5	Addition of Decibels	7
1.3	Characteristics of Sound Propagation and Attenuation	7
1.3.1	Noise Descriptors	8
1.3.2	Sound Propagation	8
1.4	Ground-borne Vibration	9
1.5	Methodology	10
1.5.1	California Environmental Quality Act	10
1.5.2	Fresno County	11
1.5.3	Study Methods and Procedures	11
2.0	Existing Conditions	13
2.1	Traffic Noise	13
2.2	Railroad Noise	15
2.3	Airport Noise	15
2.4	Ground-borne Vibration	16
3.0	Short-Term Impacts	18
3.1	Construction Noise Impacts	18
3.2	Ground-borne Vibration	18
4.0	Long-Term Impacts	21
4.1	Traffic Noise Impacts	21
4.2	Stationary Noise Impacts	23

5.0	Impact Determinations and Recommended Mitigation	24
5.1	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	24
5.1.1	Short-Term Impacts	24
5.1.2	Long-Term Impacts	25
5.2	Generation of excessive ground-borne vibration or ground-borne noise levels	26
5.3	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	26

Appendices

Appendix A – Acoustical terminology
Appendix B – TNM 3.2 Sound Level Worksheets

List of Tables

1	Fresno County's Land Use Compatibility for Community Noise Environments	12
2	Existing Noise Levels	15
3	Typical Levels of Ground-Borne Vibration	17
4	Construction Equipment Noise	20
5	Vibration Source Levels for Construction Equipment	20
6	Existing Plus Project Noise Levels	22
7	Horizon Year 2046 Noise Levels	23
8	Horizon Year 2046 Noise Levels With Mitigation	27

List of Figures

1	Regional Location	3
2	Project Location	4
3	Project Site Plan	5
4	Common Environmental Sound Levels	6
5	Noise Receiver Locations	14
6	Noise Barrier Location	28

1.0 Introduction

1.1 Description of the Region/Project

This Noise Study Report (NSR) has been prepared for the purpose of identifying potential noise impacts that may result from the proposed Sample Ranch Residential Development (Project), which seeks to develop 44 single-family homes. The Project is located in Fresno County on the north side of Tollhouse Road-State Route (SR) 168 approximately two (2) miles east of the Shepherd Avenue and SR-168 intersection. Figures 1 and 2 show the location of the Project along with major roadways and highways. Figure 3 provides the site plan prepared for the Project.

When preparing a NSR, guidelines set by Fresno County must be followed. In analyzing noise levels, the guidelines and policies in the Noise section of the Fresno County's adopted General Plan were utilized. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dBA). 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 use A-weighting, as it provides a high degree of correlation with human annoyance and health effects.

1.2 Sound and the Human Ear

Sound levels are presented on a logarithmic scale to account for the large range of acoustic pressures that the human ear is exposed to and is expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing defined as 20 micropascals (μPa). Noise can generally be described as unwanted sound and has been cited as being a health problem, not just in terms of actual physiological damages such as hearing impairment, but also in terms of inhibiting general wellbeing and contributing to stress and annoyance. Long or repeated exposure to sounds at or above 85 dB can cause hearing loss. The louder the sound, the shorter the time period before hearing loss can occur. Sounds of less than 75 dB are unlikely to cause hearing loss even after long exposure.¹

1.2.1 A-Weighted Decibels

Sound pressure level alone is not a reliable indicator of loudness. The frequency, or pitch, of a sound also has a substantial effect on how humans will respond. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear. Human hearing is limited not only in the range of audible frequencies but also in the way it perceives the SPL in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, and it perceives a sound within that range as being more intense than a sound of higher or lower frequency with the same magnitude. To approximate the frequency response of the human ear, a series of SPL adjustments is usually applied to the sound measured by a sound level meter. The adjustments

¹ Source: National Institute on Deafness and Other Hearing Disorders

(referred to as a weighting network) are frequency dependent. The A-scale weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-scale, C-scale, D-scale), but these scales are rarely, if ever, used in conjunction with highway traffic noise. Noise levels for traffic noise reports are typically reported in terms of A-weighted dBAs. In environmental noise studies, A-weighted SPLs are commonly referred to as noise levels.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance, and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment, referred to as the "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by the hearers. Regarding increases in A-weighted noise level, knowledge of the following relationships will be helpful in understanding this report:

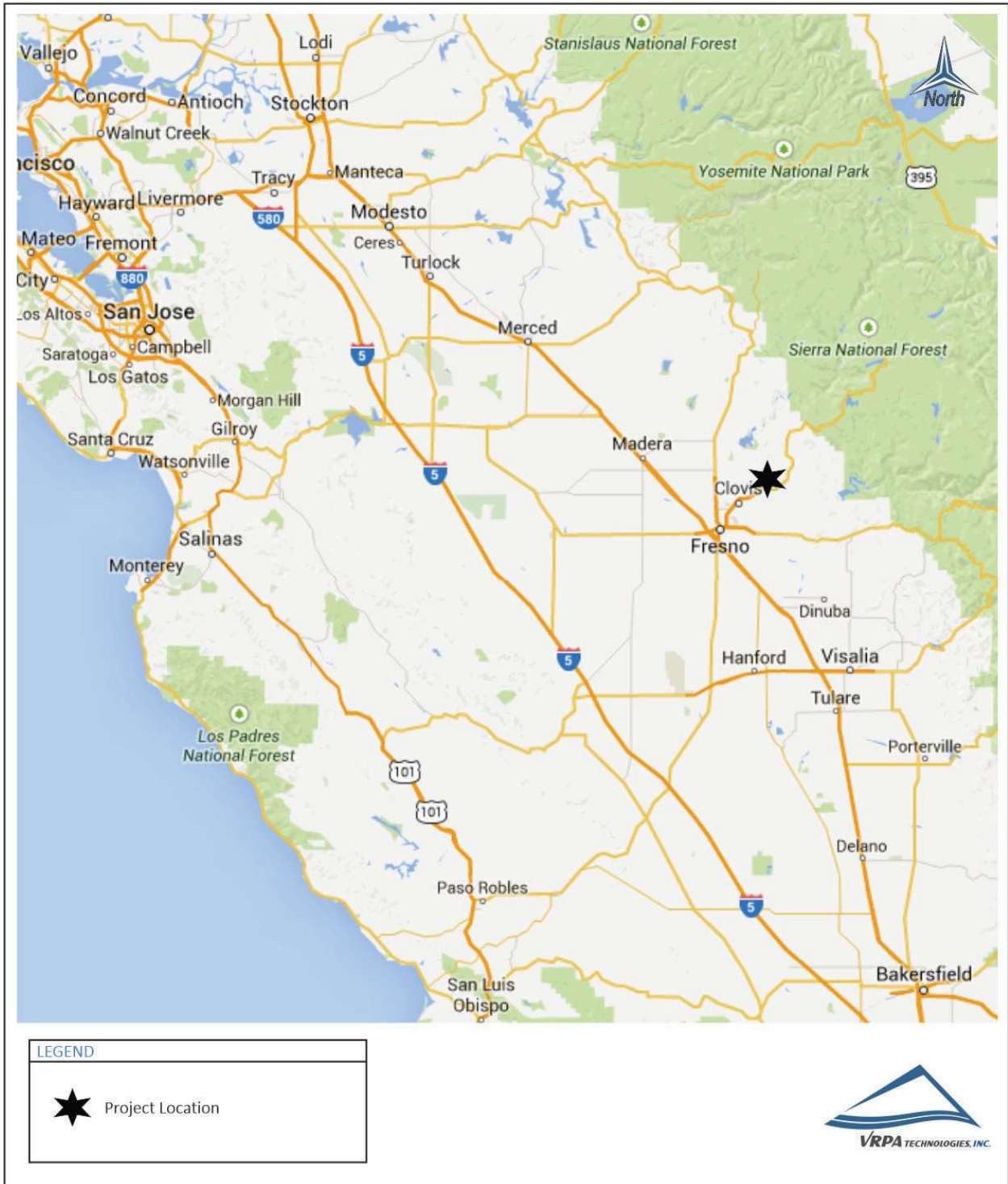
1. Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans.
2. Outside of the laboratory, a 3 dB change is considered a just-perceivable difference.
3. A change in level of at least 5 dB is required before any noticeable change in community response would be expected.
4. A 10 dB change is subjectively heard as approximately a doubling in loudness.

1.2.2 Sound Pressure Levels and Decibels

Because of the ability of the human ear to detect a wide range of sound pressure fluctuations, sound pressure levels are expressed in logarithmic units called decibels. The sound pressure level in decibels is calculated by taking the log of the ratio between the actual sound pressure and the reference sound pressure squared. The reference sound pressure is considered the absolute hearing threshold. In addition, because the human ear is not equally sensitive to all sound frequencies, a specific frequency-dependent rating scale was devised to relate noise to human sensitivity. A dBA scale performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. The basis for comparison is the faintest sound audible to the average ear at the frequency of maximum sensitivity. This dBA scale has been chosen by most authorities for purposes of environmental noise regulation. Typical indoor and outdoor noise levels are presented in Figure 4 (Common Environmental Sound Levels).

Sample Ranch Residential Development Regional Location

Figure 1



Sample Ranch Residential Development
Project Location

Figure
2



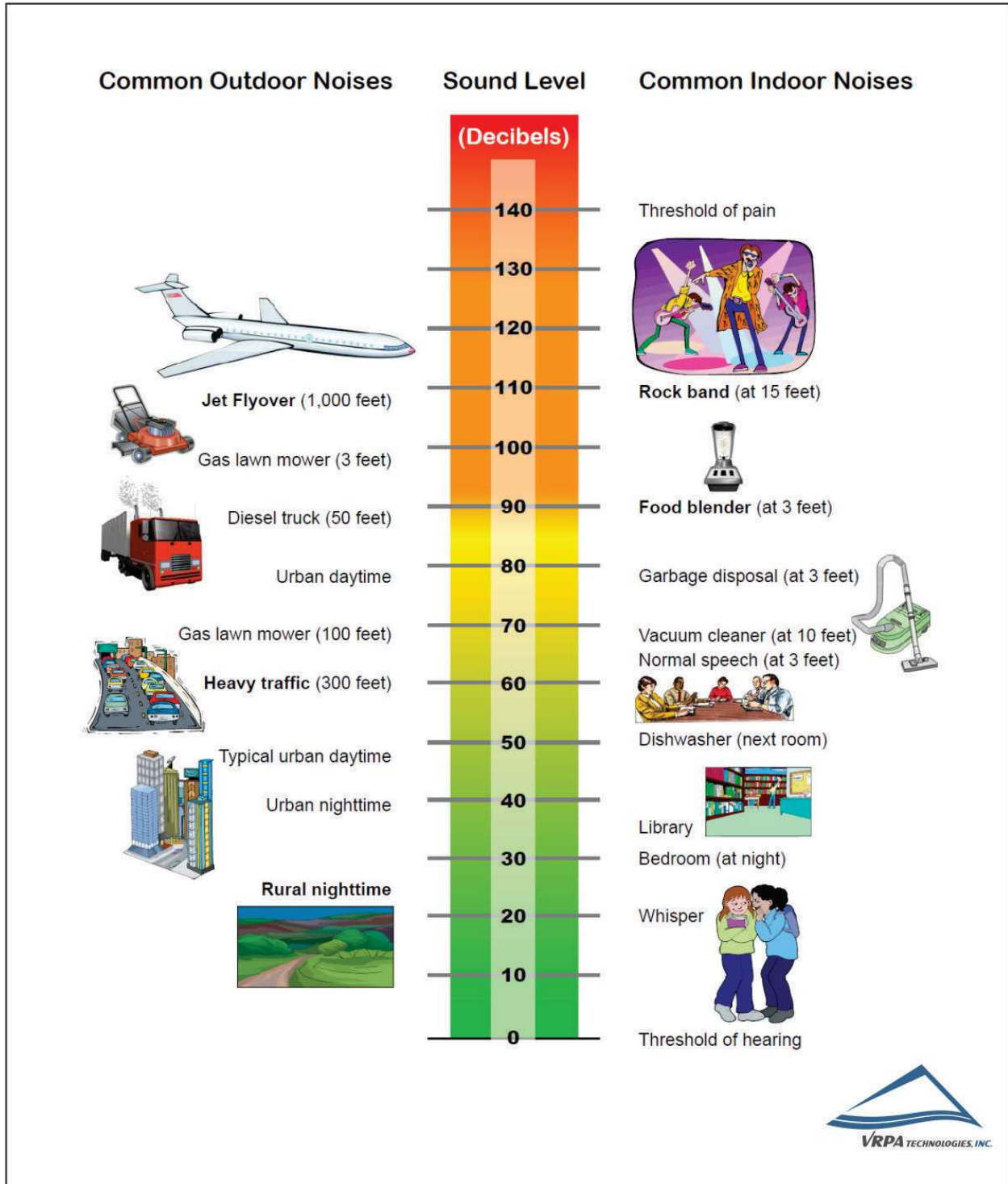
Sample Ranch Residential Development
Project Site Plan

Figure
3



Sample Ranch Residential Development
Common Environmental Sound Levels

Figure
4



1.2.3 Sound, Noise, and Acoustics

Sound is a disturbance created by a moving or vibrating source in a gaseous or liquid medium or the elastic stage of a solid and is capable of being detected by the hearing organs. Sound may be thought of as the mechanical energy of a vibrating object transmitted by pressure waves through a medium to a hearing organ, such as a human ear. For traffic sound, the medium of concern is air. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. Sound is actually a process that consists of three components: the sound source, the sound path, and the sound receiver. All three components must be present for sound to exist. Without a source to produce sound, there is no sound. Likewise, without a medium to transmit sound pressure waves, there is also no sound. Finally, sound must be received; a hearing organ, sensor, or object must be present to perceive, register, or be affected by sound or noise. In most situations, there are many different sound sources, paths, and receivers rather than just one of each. Acoustics is the field of science that deals with the production, propagation, reception, effects, and control of sound.

1.2.4 Frequency and Hertz

A continuous sound can be described by its frequency (pitch) and its amplitude (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch, like the low notes on a piano, whereas high-frequency sounds are high in pitch, like the high notes on a piano. Frequency is expressed in terms of oscillations, or cycles, per second. Cycles per second are commonly referred to as Hertz (Hz). A frequency of 250 cycles per second is referred to as 250 Hz. High frequencies are sometimes more conveniently expressed in units of kilo-Hertz (kHz), or thousands of Hertz. The extreme range of frequencies that can be heard by the healthiest human ear spans from 16–20 Hz on the low end to about 20,000 Hz (or 20 kHz) on the high end.

1.2.5 Addition of Decibels

Because decibels are logarithmic units, sound pressure levels cannot be added or subtracted by ordinary arithmetic means. For example, if one automobile produces an SPL of 70 dBA as it passes an observer, two cars passing simultaneously would not produce 140 dBA; they would, in fact, combine to produce 73 dBA. When two sounds of equal SPL are combined, they will produce a combined SPL 3 dBA greater than the original individual SPL. In other words, sound energy must be doubled to produce a 3 dBA increase. If two sound levels differ by 10 dBA or more, the combined SPL is equal to the higher SPL; in other words, the lower sound level does not increase the higher sound level.

1.3 Characteristics of Sound Propagation and Attenuation

Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks, and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates (is reduced) at a rate between 3.0 and 4.5 dBA per doubling of distance. The rate depends on the ground surface and

the number or type of objects between the noise source and the receiver. Hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3.0 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance.

Noise generated by stationary sources typically attenuates at a rate between 6.0 and about 7.5 dBA per doubling of distance. Sound levels can be reduced by placing barriers between the noise source and the receiver (commonly called the “receptor”). In general, barriers contribute to decreasing noise levels only when the structure breaks the “line of sight” between the source and the receiver. Buildings, concrete walls, and berms can all act as effective noise barriers. Wooden fences or broad areas of dense foliage can also reduce noise but are less effective than solid barriers.

1.3.1 Noise Descriptors

Noise in the daily environment fluctuates over time. Some of the fluctuations are minor; some are substantial. Some noise levels occur in regular patterns; others are random. Some noise levels fluctuate rapidly, others slowly. Some noise levels vary widely; others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following is a list of the noise descriptors most commonly used in traffic noise analysis:

1. **Equivalent Sound Level (Leq)** - Leq represents an average of the sound energy occurring over a specified period. Leq is, in effect, the steady-state sound level that, in a stated period, would contain the same acoustical energy as the time-varying sound that actually occurs during the same period. The one-hour A-weighted equivalent sound level, Leq(h), is the energy average of the A-weighted sound levels occurring during a one-hour period and is the basis for the Noise Abatement Criteria (NAC) used by the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA).
2. **Percentile-Exceeded Sound Level (Lx)** - Lx represents the sound level exceeded for a given percentage of a specified period. For example, L10 is the sound level exceeded 10 percent of the time, and L90 is the sound level exceeded 90 percent of the time.
3. **Maximum Sound Level (Lmax)** - Lmax is the highest instantaneous sound level measured during a specified period.

1.3.2 Sound Propagation

When sound propagates over a distance, it changes in both level and frequency content. The manner in which noise reduces with distance depends on the following factors:

1. **Geometric Spreading** - Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates (or drops off) at a rate of six dBA for each doubling of distance. Highway noise is not a single, stationary point source of sound. The movement of the vehicles on a highway

makes the source of the sound appear to emanate from a line (i.e., a line source) rather than a point. This line source results in cylindrical spreading rather than the spherical spreading that results from a point source. The change in sound level from a line source is 3 dBA per doubling of distance.

2. **Ground Absorption** - Most often, the noise path between the highway and the observer is very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is done for simplification only; for distances of less than 60 m (200 ft), prediction results based on this scheme are sufficiently accurate. For acoustically hard sites (i.e., those sites with a reflective surface, such as a parking lot or a smooth body of water, between the source and the receiver), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees, between the source and the receiver), an excess ground attenuation value of 1.5 dBA per doubling of distance is normally assumed. When added to the geometric spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dBA per doubling of distance for a line source and 7.5 dBA per doubling of distance for a point source.
3. **Atmospheric Effects** - Research by Caltrans and others has shown that atmospheric conditions can have a significant effect on noise levels within 60 m (200 ft) of a highway. Wind has been shown to be the most important meteorological factor within approximately 150 m (500 ft) of the source, whereas vertical air temperature gradients are more important for greater distances. Other factors such as air temperature, humidity, and turbulence also have significant effects. Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lower noise levels. Increased sound levels can also occur as a result of temperature inversion conditions (i.e., increasing temperature with elevation).
4. **Shielding by Natural and Human-Made Features** - A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by this shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dBA of noise reduction.

1.4 Ground-borne Vibration

Annoyance to humans and damage to buildings are the two ground-borne vibration impacts of general concern. The two measurements corresponding to human annoyance and building damage for evaluating ground-borne vibration are peak particle velocity (PPV) and root-mean square (RMS) velocity. PPV is the maximum instantaneous positive or negative peak of the vibration signal, measured as a distance per time (such as millimeters or inches per second). This

measurement has been used historically to evaluate shock-wave type vibrations from actions like blasting, pile driving, and mining activities, and their relationship to building damage. RMS is an average, or smoothed, vibration amplitude, commonly measured over 1-second intervals. It is expressed on a log scale in decibels (VdB) referenced to 0.000001×10^{-6} inch per second and is not to be confused with noise decibels. It is more suitable for addressing human annoyance and characterizing background vibration conditions because it better represents the response time of humans to ground vibration signals.

1.5 Methodology

When preparing an NSR, guidelines set by affected agencies must be followed. Acoustical terminology used for this NSR is documented in Appendix A. In analyzing traffic noise levels, the FHWA Highway Traffic Noise Prediction methodology must be applied. Safety concerns must also be analyzed to determine the need for appropriate mitigation resulting from increased noise due to increased traffic and other evaluations such as the need for noise barriers and other noise abatement improvements. Stationary noise levels were evaluated using Section 2.1.4 of the California Department of Transportation's (Caltrans) Technical Noise Supplement which evaluates the decrease in noise as distance from the noise source increases. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dBA). 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 use A-weighting, as it provides a high degree of correlation with human annoyance and health effects.

1.5.1 California Environmental Quality Act (CEQA)

CEQA requires environmental impact reports to evaluate whether and to what extent a proposed project may result in significant effects on the environment. If a project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are also evaluated and determined to not be feasible. An EIR is also required to evaluate a reasonable range of alternatives to the proposed Project that could feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project. An EIR must also evaluate a "No Project" Alternative. CEQA Guidelines Appendix G suggests the following as potential thresholds for determining whether a project will result in significant impacts on the environment:

- a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- b) Generation of excessive ground-borne vibration or ground-borne noise levels?
- c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

1.5.2 *Fresno County*

The Health and Safety Element of the Fresno County General Plan serves as the primary policy statement for the County for implementing policies to maintain and improve the noise environment in Fresno County. The Health and Safety Element section presents Goals and Objectives relative to planning for the noise environment within the County. For example, Goal HS-G seeks to protect residential and other noise-sensitive uses from exposure to harmful or annoying noise levels; to identify maximum acceptable noise levels compatible with various land use designations; and to develop a policy framework necessary to achieve and maintain a healthful noise environment. Future noise/land use incompatibilities can be avoided or reduced with implementation of Fresno County's noise criteria and standards. Fresno County realizes that it may not always be possible to avoid constructing noise-sensitive developments in existing noisy areas and therefore provides noise reduction strategies to be implemented in situations with potential noise/land use conflicts. It should be noted that Fresno County does not have specific zoning or general plan requirements related to vibration.

Table 1 shows Fresno County's Land Use Compatibility for Community Noise Environments.

1.5.3 *Study Methods and Procedures*

Site Selection

Developed and undeveloped land uses in the project vicinity were identified through land use maps, aerial photography, and site inspection. Within each land use category, sensitive receptors were then identified. Land uses in the Project vicinity include agricultural, residential, and commercial uses. The generalized land use data and location of sensitive receptors were the basis for the selection of the noise monitoring and analysis sites.

Noise Level Measurement Program

Existing noise levels in the project vicinity were sampled during the PM peak hour because traffic counts conducted in the study area show a greater volume of traffic in the PM peak hour than the AM peak hour. All measurements were made using a Type 2 sound level meter datalogger.

The following measurement procedure was utilized:

1. Calibrate sound level meter.
2. Set up sound level meter at a height of 1.5 m (5 ft).
3. Commence noise monitoring.
4. Collect site-specific data such as date, time, direction of traffic, and distance from sound level meter to the center of the roadway.
5. Stop measurement after 15 minutes.
6. Proceed to the next monitoring site and repeat.

Table 1
Fresno County's Land Use Compatibility for Community Noise Environments

Land Use Category	Community Noise Exposure (Outdoor) Ldn or CNEL, dB							
	50	55	60	65	70	75	80	85
Residential: Low-Density Single-Family, Duplex, Mobile Homes								
Residential: Multiple Family								
Transient Lodging: Motels, Hotels								
Schools, Libraries, Churches, Hospitals, Nursing Homes								
Auditoriums, Concert Halls, Amphitheaters								
Sports Arena, Outdoor Spectator Sports								
Playgrounds, Neighborhood Parks								
Golf Courses, Riding Stables, Water Recreation, Cemeteries								
Office Buildings, Business Commercial and Professional								
Industrial, Manufacturing, Utilities, Agriculture								
	Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.						
	Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.						
	Generally Unacceptable	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.						
	Land Use Discouraged	New construction or development should generally not be undertaken.						

2.0 Existing Conditions

Existing noise levels in the County are principally generated by transportation noise sources. Vehicular traffic noise is the dominant source in most areas, but aircraft and rail activity are also significant sources of environmental noise in the local areas surrounding these operations. Noise is generated by either mobile or stationary sources.

- ✓ Mobile source noise is typically associated with transportation, such as cars, trains, and aircraft. The most significant source of mobile noise in the Project area is SR 168 (Tollhouse Road).
- ✓ Stationary noise is that generated by any 'fixed' noise source. Examples of stationary sources include outdoor machinery (i.e. such as heating/air conditioning systems and power generators), farming activities, high voltage power lines, and industrial areas within the County. Noise generated from construction sites also falls into the category of stationary sources.

2.1 Traffic Noise

Highway and roadway traffic noise levels are generally dependent upon three primary factors, which include the traffic volume, the traffic speed, and the percentage of heavy vehicles on the roadway. Traffic generated noise is the result of vehicle engines, exhaust, tires, and wind generated by taller vehicles. Vehicles with defective mufflers or faulty equipment have the propensity to increase traffic noise. Traffic noise levels are reduced by distance, terrain, vegetation, and natural/manmade obstacles between a noise receptor and the highway or roadway.

To assess existing noise conditions, VRPA Technologies staff conducted noise level measurements at one (1) location (called receivers) in the vicinity of the Project site and tabulated the results. The weather during the time of the noise measurements taken consisted of sunshine and wind speeds of less than 5 mph. The purpose of the measurements was to determine baseline existing noise levels in the Project area and to calibrate the FHWA Traffic Noise model, which will be used to then predict and assess future year conditions.

The receiver location evaluated for this Project were located adjacent to SR-168 at the Project site. The receiver location is shown in Figure 5. Four (4) additional receivers, or sensitive receptors, were incorporated into the analysis to assess impacts of traffic noise to the backyard area of the residential uses proposed by the Project. The additional receivers are also reflected in Figure 5.

Sample Ranch Residential Development
Noise Receiver Locations

Figure
5



Table 2 characterizes the results of existing noise conditions at the field receiver evaluated in the study area. Ambient noise levels in the study area are primarily the result of traffic along SR-168.

Table 2
Existing Noise Levels

Receiver ID No.	Location	Distance from Noise Source- Roadway Centerline (feet)	Existing Noise Level Leq(h) dB
1	Open area adjacent to SR-168 located approximately 2 miles east of Shepherd Avenue	20	76.0

Source: VRPA Technologies, 2025

Traffic noise exposure is mainly a function of the number of vehicles on a given roadway per day, the speed of those vehicles, the percentage of medium and heavy trucks in the traffic volume, and the receiver's proximity to the roadway. Every vehicle passage on every roadway in the County radiates noise.

Existing high noise levels along major streets and highways are generally caused by traffic and congestion. Potential impacts along these facilities are generally classified as follows:

- ✓ Low - Ldn 59 dB or below
- ✓ Moderate - Ldn 60 dB to 65 dB
- ✓ High - Ldn 66 dB or greater

The potential for adverse noise impacts is generally moderate to high along most segments of State highways and is generally low to moderate along most segments of County streets and highways.

2.2 Railroad Noise

The Union Pacific (UP), Burlington Northern & Santa Fe (BNSF), and San Joaquin Valley Railroad (SJVRR) provide freight service to the City of Fresno, connecting Fresno and Fresno County to other major markets and destinations throughout California. Passenger rail service in Fresno County is provided by Amtrak on its San Joaquin service, with the nearest rail station located in the City of Fresno, approximately 14 miles southwest of the Project site. There is a BNSF railway line located approximately 15 miles southwest of the Project. Noise from the UP, BNSF and SJVRR railway will not have an impact on the Project given the distance from the Project site.

2.3 Airport Noise

The Fresno Chandler Executive Airport (FCH), located 16 miles southwest of the Project, serves the City of Fresno and Fresno County area. It is one of the oldest operational airports in California. The airport, which is owned and operated by the City of Fresno, generates approximately 25,000

annual operations. Noise generated from the airport will not impact the Project study area since the Project is located 16 miles away and falls outside of the airport noise contour zones.

The Fresno Yosemite International Airport (FAT), located 10 miles southwest of the Project, serves the City of Fresno, Fresno County, and the Central Valley at large. The airport is primarily used for general aviation operations, including local and itinerant services. The airport, which is owned and operated by the City of Fresno, generates approximately 92,000 annual operations. Noise generated from the airport will not impact the Project study area since the Project is located nearly 10 miles away and falls outside of the airport noise contour zones.

2.4 Ground-borne Vibration

Ambient vibration levels in residential areas are typically 50 VdB, which is well below human perception. The operation of heating/air conditioning systems and slamming of doors produce typical indoor vibrations that are noticeable to humans. The most common exterior sources of ground vibration that can be noticeable to humans inside residences include construction activities, train operations, and street traffic. Table 3 provides some common sources of ground vibration and the relationship to human perception. This information comes from the Federal Transit Administration's "Basic Ground-Bourne Vibration Concepts."

Table 3
Typical Levels of Ground-Borne Vibration

Human/Structural Response	Velocity Level*, VdB	Typical Events (50 ft. Setback)
Threshold, minor cosmetic damage fragile buildings	100	Blasting from construction projects Bulldozers, vibratory rollers, and other heavy tracked construction equipment
Difficulty with tasks such as reading a video or computer screen	90	Commuter rail, upper range
Residential annoyance, infrequent events (e.g commuter rail)	80	Rapid transit, upper range Commuter rail, typical
Residential annoyance, infrequent events (e.g rapid transit)	70	Bus or truck over bump Rapid transit, typical
Limit for vibration sensitive equipment. Approx. threshold for human perception of vibration	60	Bus or truck, typical
	50	Typical background vibration

* RMS velocity in decibels (VdB) are 10^{-6} inches/second

3.0 Short-Term Impacts

3.1 Construction Noise Impacts

The Project has the potential to result in short-term noise impacts to surrounding land uses due to construction activity noise (collectively referred to hereafter as just “construction” noise). Construction noise represents a short-term impact on ambient noise levels and includes activities such as site preparation, grading, and other construction-related activities. Noise generated from the transport of workers and the movement of materials to and from the construction site and the physical activities associated with any construction-related activities could potentially impact neighboring sensitive land uses. Although most of the types of exterior construction activities associated with the Project will not generate continually high noise levels, occasional single-event disturbances from grading and construction activities are possible.

Table 4 depicts typical construction equipment noise levels, based upon a distance of 50 feet between the noise source and the noise receptor. Noise emitted by construction equipment is controlled by the Environmental Protection Agency's (EPA's) Noise Control Program (Part 204 of Title 40, Code of Federal Regulations).

During construction of various components of the Project, noise from construction activities will add to the noise environment in the immediate area. Activities involved in building construction would generate maximum noise levels, as indicated in Table 4, ranging from 77 to 85 dBA at 50 feet. Construction activities will be temporary in nature and are expected to occur during normal daytime working hours. Construction noise impacts could result in annoyance or sleep disruption for nearby residences if nighttime operations occurred, or if unusually noisy equipment was used. It is not anticipated that any portion of the construction phase will take place during nighttime hours. Based on information provided in Table 4 and the noise attenuation formula provided in the California Department of Transportation's (Caltrans) *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, the nearest residence to the east of the Project site (158 feet) could be subject to short-term noise reaching 67 to 75 dBA Lmax generated by construction activities.

3.2 Ground-borne Vibration

Construction activity can result in ground vibration, depending upon the types of equipment used. Operation of construction equipment causes ground vibrations, which spread through the ground and diminish in strength with distance from the source generating the vibration. Building structures that are founded on the soil in the vicinity of the construction site respond to these vibrations, with varied results. Ground vibrations as a result of construction activities very rarely reach vibration levels that will damage structures but can cause low rumbling sounds and detectable vibrations for buildings very close to the site.

Vibration levels from various types of construction equipment are shown in Table 5. The primary concern with construction vibration is building damage. Therefore, construction vibration is generally assessed in terms of peak particle velocity (PPV). It should be noted that there is a considerable variation in reported ground vibration levels from construction activities. The data provides a reasonable estimate for a wide range of soil conditions.

Despite the perceptibility threshold of about 65 VdB, human reaction to vibration is not significant unless the vibration exceeds 75 VdB according to the United States Department of Transportation. Fresno County does not specifically identify vibration level impact standards. Caltrans has established vibration thresholds in terms of human annoyance of 0.04 in/sec PPV as documented in Caltrans' *Transportation and Construction Vibration Guidance Manual*. The vibration threshold of 0.04 in/sec PPV was used to estimate the impact of vibrations from construction activities associated with the Project. The following formula was used to estimate the human response (annoyance) at the nearest residence to the east of the Project site.

$$PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}$$

Using the vibratory roller vibration level shown in Table 5 (PPV 0.210) and the formula shown above, the anticipated vibration velocity levels at the nearest residence to the east of the Project is expected to approach 0.013 in/sec PPV. Based on the vibration velocity levels provided in Table 5, vibrations generated by the construction phase of the Project are considered less than significant.

Table 4
Construction Equipment Noise

TYPE OF EQUIPMENT	Sound Levles Measured (dBA of 50 feet)
Rock Drills	85
Jack Hammers	85
Pneumatic Tools	85
Pumps	77
Dozers	85
Tractor	84
Vibratory Rollers ¹	80
Front-End Loaders	80
Hydraulic Backhoe	80
Hydraulic Excavators	85
Graders	85
Air Compressors	80
Trucks	84

Source: Noise Control for Buildings and Manufacturing Plants (Bolt, Beranek and Newman, 1987).

1 - Federal Highway Administration Roadway Construction Noise Model, FHWA 2006

Table 5
Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 ft (in/sec)	PPV Levels at Residences North of the Project (in/sec)	Threshold (in/sec)	Threshold Exceeded
Vibratory roller	0.210	0.0132	0.040	No
Large bulldozer	0.089	0.0056	0.040	No
Caisson drilling	0.089	0.0056	0.040	No
Loaded trucks	0.076	0.0048	0.040	No
Jackhammer	0.035	0.0022	0.040	No
Small bulldozer	0.003	0.0002	0.040	No

Source: VRPA Technologies, Inc, 2025

4.0 Long-Term Impacts

4.1 Traffic Noise Impacts

This section provides an assessment of the anticipated noise conditions in the future as it relates to the Project and the impact of increased traffic noise generated by the Project on the surrounding land uses within the study area. The noise impacts from the Project were analyzed considering Existing Plus Project, Horizon Year 2046 No Project, and Horizon Year 2046 Plus Project Conditions.

Existing Plus Project Conditions

Existing Plus Project traffic noise levels were established based on previously collected traffic data and using the Traffic Noise Model (TNM) Version 3.2. Existing Plus Project levels, which are based on expected Project trip distribution, are calculated and compared to both the existing noise level and Fresno County's Land Use Compatibility for Community Noise Environments as described in the Fresno County General Plan. Referencing Table 1, Fresno County's Land Use Compatibility for Community Noise Environments shows that mitigation must be considered when the exterior noise exposure level of 65 Ldn/CNEL for single-family residential uses has been exceeded. Levels reported in this section are in terms of A-weighted levels. The Ldn is estimated to be within +/- 2 dBA of the peak hour Leq under normal traffic conditions based upon Caltrans' Traffic Analysis Noise Protocol.

Traffic volumes associated with the Project, in addition to existing traffic along roadway segments in the study area, were entered into the model to estimate noise levels at various sensitive receptors. To calibrate the TNM 3.2 model, the existing counts, lane geometry, and other pertinent existing conditions were added to the model. The noise level measurements taken in the study area were then compared to the noise levels computed by the model. The difference between the measured and modeled noise levels, referred to as the "K constant", is then added to any additional receivers to be evaluated in the TNM 3.2 model.

Table 6 shows the predicted noise levels at sensitive receptors in the study area as a result of adding traffic associated with the Project. As shown in Table 6, the highest peak hour sound level expected at the residences proposed by the Project is 65.0 Leq(h), dB or approximately 63 – 67 Ldn, dB. Therefore, the Existing Plus Project noise levels at the outdoor areas of residential uses adjacent to SR-168 could potentially exceed Fresno County's Land Use Compatibility for Community Noise Environments as described in the Fresno County General Plan. Recommended Mitigation Measures are presented in Section 5.0. TNM 3.2 printouts included are provided in Appendix B.

Table 6
Existing Plus Project Noise Levels

Receiver ID No.	Location	Distance from Noise Source Roadway Centerline (feet)	Existing Plus Project Noise Level Leq(h) dB	Estimated Existing Plus Project Noise Level Ldn, dB	Fresno County's Community Noise Exposure (Outdoor) Ldn or CNEL, dB	Impact
1	Open area adjacent to SR-168 located approximately 2 miles east of Shepherd Avenue	20	76.0	74 - 78	--	None
2	Outdoor area of single-family residence north of SR-168 South of Central Avenue / East of Orange Avenue	125	65.0	63 - 67	65.0	Potential
3	Outdoor area of single-family residence north of SR-168 South of Central Avenue / East of Orange Avenue	1,700	56.0	54 - 58	65.0	None
4	Outdoor area of single-family residence north of SR-168 South of Central Avenue / East of Orange Avenue	900	50.0	48 - 52	65.0	None
5	Outdoor area of single-family residence north of SR-168 South of Central Avenue / East of Orange Avenue	125	65.0	63 - 67	65.0	Potential

Source: VRPA Technologies, 2025

Horizon Year 2046 Conditions

This section provides an assessment of the anticipated noise conditions in the future as it relates to the Project and the impact of increased traffic noise generated by the Project on the surrounding land uses within the study area. The noise impacts from development of the Project were analyzed considering Horizon Year 2046 Conditions as a result of the City of Fresno and Fresno County General Plan. Future development within the planning area will result in increased traffic volumes, thus increasing noise levels in some areas. While there will be increases in some noise levels, efforts can be taken to help minimize such instances. For example, siting noise sensitive uses away from high-noise areas (e.g., major traffic routes) and buffering noise through design will help minimize future noise-related land use conflicts.

The levels of traffic expected in the year 2046 relate to the cumulative effect of traffic increases resulting from the implementation of the general plans of local agencies and pending development projects. Traffic conditions for the Horizon Year 2046 scenario was determined by applying a 1% per year growth rate to existing traffic volumes. The 1% per year growth rate is consistent with Caltrans traffic counts in the study area. Traffic volumes, truck mix, and vehicle speeds were used as inputs to the TNM 3.2 model for the Horizon Year 2046 modeled scenarios consistent with generally accepted engineering principles and methods.

Table 7 shows the predicted noise levels at the modeled receivers evaluated in the study area for the Horizon Year 2046 Plus Project condition. Results of the analysis show that noise levels at outdoor areas of the single-family residences adjacent to SR-168 could potentially exceed Fresno County's Land Use Compatibility for Community Noise Environments as described in the Fresno County General Plan. Recommended Mitigation Measures are presented in Section 5.0.

As noted in Section 1.0, the Project seeks to develop 44 single-family homes which will generate 46 PM peak hour trips. As noted in Caltrans' *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, the doubling of traffic on a highway would result in an increase of 3 dB.

Considering existing traffic on SR-168, the Project will increase traffic by 6% which would increase noise in the study area between 0.2 and 0.5 decibels. A 3 dB change is just-perceivable by the human ear. As a result, the Project will have a less than significant impact on existing residential land uses in the study area.

Table 7
Horizon Year 2046 Noise Levels

Receiver ID No.	Location	Distance from Noise Source Roadway Centerline (feet)	Horizon Year 2046 Plus Project Noise Level Leq(h) dBA	Estimated Horizon Year 2046 Plus Project Noise Level Ldn, dB	Fresno County's Community Noise Exposure (Outdoor) Ldn or CNEL, dB	Impact
1	Open area adjacent to SR-168 located approximately 2 miles east of Shepherd Avenue	20	77.0	75 - 79	--	None
2	Outdoor area of single-family residence north of SR-168 South of Central Avenue / East of Orange Avenue	125	66.0	64 - 68	65.0	Potential
3	Outdoor area of single-family residence north of SR-168 South of Central Avenue / East of Orange Avenue	1,700	57.0	55 - 59	65.0	None
4	Outdoor area of single-family residence north of SR-168 South of Central Avenue / East of Orange Avenue	900	51.0	47 - 53	65.0	None
5	Outdoor area of single-family residence north of SR-168 South of Central Avenue / East of Orange Avenue	125	66.0	64 - 68	65.0	Potential

Source: VRPA Technologies, 2025

4.2 Stationary Noise Impacts

There aren't any stationary noise sources in the vicinity of the Project site and the Project will not include or generate stationary noise sources. Therefore, operation related noise impacts associated with the Project would result in a less than significant impact on noise-sensitive receptors near the Project site.

5.0 Impact Determinations and Recommended Mitigation

In accordance with CEQA, the effects of a project are evaluated to determine if they will result in significant adverse impacts on the environment. The criteria used to determine the significance of a noise impact are based on the following thresholds of significance, which come from Appendix G of the CEQA Guidelines. Accordingly, noise impacts resulting from the Project are considered significant if the Project would 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?
- b) Generation of excessive ground-borne vibration or ground-borne noise levels?
- c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Each of these thresholds are evaluated individually below to determine whether the Project will cause a significant effect on the environment. Where impacts are found to be significant, mitigation measures are recommended that would avoid or reduce the impact to less than significant.

5.1 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

5.1.1 Short-Term Impacts

Implementation of the Project has the potential to result in short-term construction noise impacts to surrounding land uses due to construction activities. Construction noise represents a short-term impact on ambient noise levels. Although most of the types of exterior construction activities associated with the Project will not generate continually high noise levels, occasional single-event disturbances from grading and construction activities are possible. Table 4 depicts typical construction equipment noise. Construction equipment noise is controlled by the EPA's Noise Control Program (Part 204 of Title 40, Code of Federal Regulations).

During construction of various components of the Project, noise from construction activities will

add to the noise environment in the immediate area. Activities involved in building construction would generate maximum noise levels, as indicated in Table 4, ranging from 77 to 85 dBA at 50 feet. Construction activities will be temporary in nature and are expected to occur during normal daytime working hours. Construction noise impacts could result in annoyance or sleep disruption for nearby residences if nighttime operations occurred, or if unusually noisy equipment was used. It is not anticipated that any portion of the construction phase will take place during nighttime hours. Based on information provided in Table 4 and the noise attenuation formula provided in the California Department of Transportation's (Caltrans) *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, the nearest residence to the east of the Project site (158 feet) could be subject to short-term noise reaching 67 to 75 dBA Lmax generated by construction activities.

5.1.2 Long-Term Impacts

Traffic Noise

Tables 6 and 7 show the predicted noise levels at sensitive receivers in the study area as a result of adding traffic associated with the Project. Results of the analysis show that the highest peak hour sound level expected at the residences proposed by the Project is 65.0 and 66.0 Leq(h), dB or approximately 63 – 67 / 64 – 68 Ldn, dB. Therefore, the Existing Plus Project and Horizon Year 2046 Plus Project noise levels at the outdoor areas of residential uses adjacent to SR-168 could potentially exceed Fresno County's Land Use Compatibility for Community Noise Environments as described in the Fresno County General Plan. Recommended Mitigation Measures are presented below which would result in a less than significant impact on Project single-family residences as shown in Table 8.

Mitigation Measure (MM) NSR-1: Construct an 8-foot sound wall as depicted in Figure 6 along the southern portion of the Project site. Alternatively, the Project site could be shifted 100-ft to the north from its currently proposed footprint/position.

As noted in Section 1.0, the Project seeks to develop 44 single-family homes which will generate 46 PM peak hour trips. As noted in Caltrans' *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, the doubling of traffic on a highway would result in an increase of 3 dB. Considering existing traffic on SR-168, the Project will increase traffic by 6% which would increase noise in the study area between 0.2 and 0.5 decibels. A 3 dB change is just-perceivable by the human ear. As a result, the Project will have a less than significant impact on existing residential land uses in the study area.

Stationary Noise

There aren't any stationary noise sources in the vicinity of the Project site and the Project will not include or generate stationary noise sources. Therefore, operation related noise impacts associated with the Project would result in a less than significant impact on noise-sensitive

receptors near the Project site. As a result, no mitigation measures are needed.

5.2 Generation of excessive ground-borne vibration or ground-borne noise levels

Vibration levels from various types of construction equipment are shown in Table 5. The primary concern with construction vibration is building damage. Therefore, construction vibration is generally assessed in terms of peak particle velocity (PPV). It should be noted that there is a considerable variation in reported ground vibration levels from construction activities. The data provides a reasonable estimate for a wide range of soil conditions.

Despite the perceptibility threshold of about 65 VdB, human reaction to vibration is not significant unless the vibration exceeds 75 VdB according to the United States Department of Transportation. Fresno County does not specifically identify vibration level impact standards. Caltrans has established vibration thresholds in terms of human annoyance of 0.04 in/sec PPV as documented in Caltrans' *Transportation and Construction Vibration Guidance Manual*. The vibration threshold of 0.04 in/sec PPV was used to estimate the impact of vibrations from construction activities associated with the Project.

Using the vibratory roller vibration level shown in Table 5 (PPV 0.210) and the formula shown above, the anticipated vibration velocity levels at the nearest residence to the east of the Project is expected to approach 0.013 in/sec PPV. Based on the vibration velocity levels provided in Table 5, vibrations generated by the construction phase of the Project are considered less than significant. Therefore, no mitigation measures are needed.

5.3 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

The Project is not located within the vicinity of a private airstrip or an airport land use plan or within two miles of a public airport or public use airport. The Fresno Chandler Executive Airports is the closest public use airport and is located approximately 16 miles southwest of the Project site. The Fresno Yosemite International Airport (FAT) is located approximately 10 miles southwest of the Project site. Therefore, the Project will not result in the stated impact.

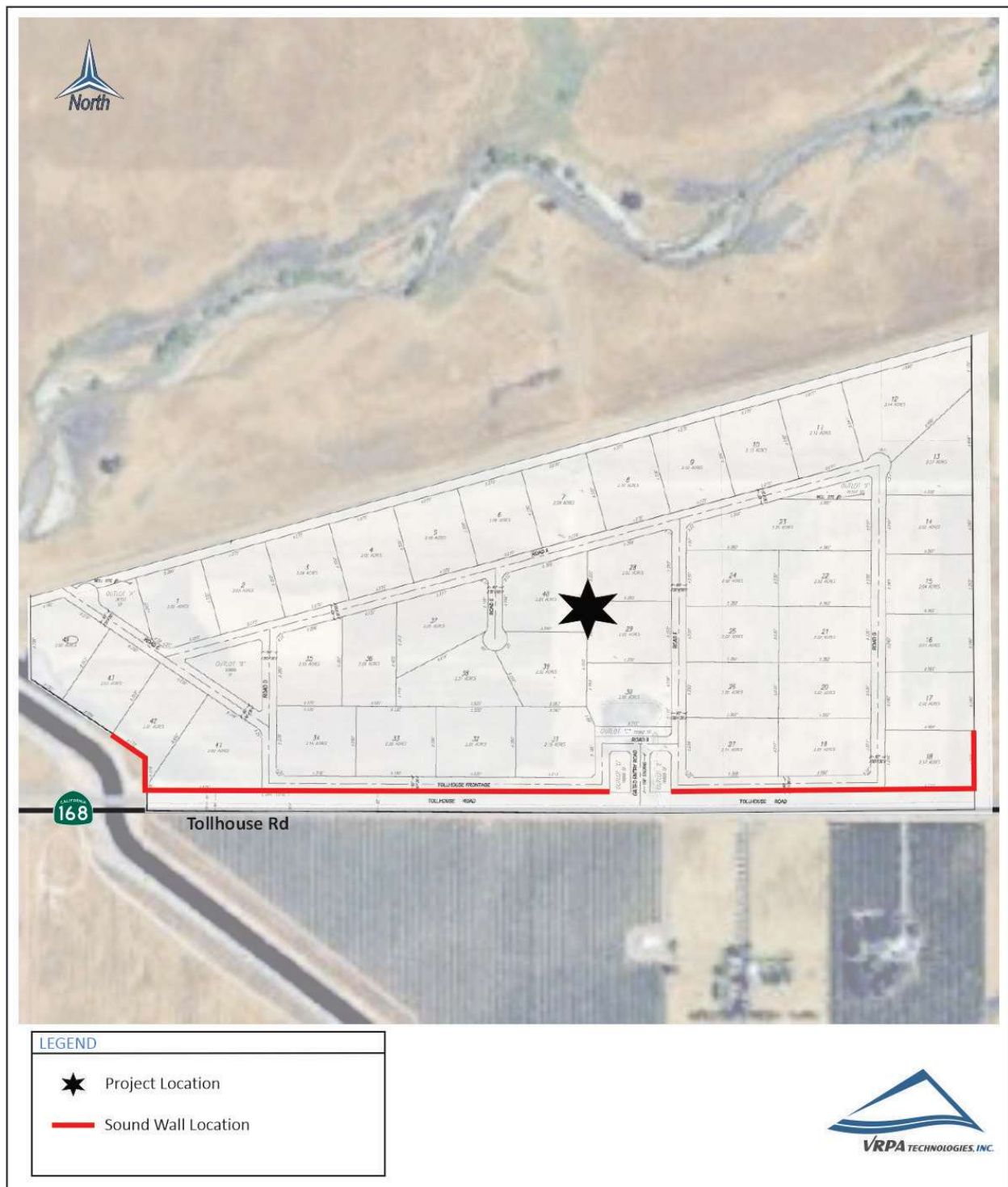
Table 8
Horizon Year 2046 Noise Levels With Mitigation

Receiver ID No.	Location	Distance from Noise Source Roadway Centerline (feet)	Horizon Year 2046 Plus Project Noise Level With Mitigation Leq(h) dBA	Estimated Horizon Year 2046 Plus Project Noise Level With Mitigation Ldn, dB	Fresno County's Community Noise Exposure (Outdoor) Ldn or CNEL, dB	Impact
1	Open area adjacent to SR-168 located approximately 2 miles east of Shepherd Avenue	20	77.0	75 - 79	--	None
2	Outdoor area of single-family residence north of SR-168 South of Central Avenue / East of Orange Avenue	125	59.0	57 - 61	65.0	None
3	Outdoor area of single-family residence north of SR-168 South of Central Avenue / East of Orange Avenue	1,700	55.0	53 - 57	65.0	None
4	Outdoor area of single-family residence north of SR-168 South of Central Avenue / East of Orange Avenue	900	48.0	46 - 50	65.0	None
5	Outdoor area of single-family residence north of SR-168 South of Central Avenue / East of Orange Avenue	125	59.0	57 - 61	65.0	None

Source: VRPA Technologies, 2025

Sample Ranch Residential Development
Noise Barrier Location

Figure
6



APPENDIX A

Acoustical Terminology

ACOUSTICAL TERMINOLOGY

The following terminology has been used for purposes of this NSR:

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 p.m. to 10p.m. and ten decibels to sound levels in the night before 7 a.m. and after 10 p.m.
Decibel, dBA:	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 micro-newtons 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.
$L_{eq}(h)$:	The hourly value of L_{eq} .
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.). L_{10} equals the level exceeded 10 percent of the time.
$L_n(h)$:	The hourly value of L_n .
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.

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 the 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 the 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.

Note: *CNEL and DNL represent daily levels of noise exposure averaged on an annual basis, while L_n represents the average noise exposure for a shorter time period, typically one hour.*

APPENDIX B

TNM 3.2 Sound Level Worksheets

REPORT:

Results: Sound Levels - No Barrier Objects

TNM VERSION

3.2.8741.34338

REPORT DATE:

17 April 2025

CALCULATED WITH:

TNM v3.2.8741.34338

CALCULATION DATE:

4/17/2025 4:51:21 PM

CASE:

Existing Conditions

ORGANIZATION:

Sample Ranch Development

UNITS:

English

ANALYSIS BY:

VRPA Technologies, Inc.

DEFAULT GROUND TYPE:

HardSoil

PROJECT/CONTRACT

Sample Ranch Development

ATMOSPHERICS:

68°F, 50%

Average pavement type shall be used unless a state

PAVEMENT TYPE(S) USED:

Average

highway agency substantiates the use of a different

type with approval FHWA.

Receiver				Modeled Traffic Noise Levels				
Name	No.	Nb. R.R.	Existing LAeq					
				LAeq		Increase over Existing		Type of Impact
					Absolute		Relative	
			Calc.	Criterion	Calc.	Criterion		
			dBA	dBA	dBA	dBA	dBA	
Field Receptor 1-1	1	1	---	75.9	0.0	---	---	Sound Level
Sensitive Receptor 1-2	2	1	---	65.0	0.0	---	---	Sound Level
Sensitive Receptor 2-3	3	1	---	56.1	0.0	---	---	Sound Level
Sensitive Receptor 3-4	4	1	---	49.5	0.0	---	---	Sound Level
Sensitive Receptor 4-5	5	1	---	65.0	0.0	---	---	Sound Level

REPORT:

Results: Sound Levels - No Barrier Objects

TNM VERSION

3.2.8741.34338

REPORT DATE:

17 April 2025

CALCULATED WITH:

TNM v3.2.8741.34338

CALCULATION DATE:

4/17/2025 5:01:22 PM

CASE:

Existing Plus Project
Conditions

ORGANIZATION:

Sample Ranch Development

UNITS:

English

ANALYSIS BY:

VRPA Technologies, Inc.

DEFAULT GROUND TYPE:

HardSoil

PROJECT/CONTRACT

Sample Ranch Development

ATMOSPHERICS:

68°F, 50%

Average pavement type shall be used unless a state

PAVEMENT TYPE(S) USED:

Average

highway agency substantiates the use of a different

type with approval FHWA.

Receiver				Modeled Traffic Noise Levels					
Name	No.	Nb. R.R.	Existing LAeq dBA						
				LAeq		Increase over Existing		Type of Impact	
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
Field Receptor 1-1	1	1	---	76.0	0.0	---	---	Sound Level	
Sensitive Receptor 1-2	2	1	---	65.1	0.0	---	---	Sound Level	
Sensitive Receptor 2-3	3	1	---	56.1	0.0	---	---	Sound Level	
Sensitive Receptor 3-4	4	1	---	49.6	0.0	---	---	Sound Level	
Sensitive Receptor 4-5	5	1	---	65.1	0.0	---	---	Sound Level	

REPORT:

Results: Sound Levels - No Barrier Objects

TNM VERSION

3.2.8741.34338

REPORT DATE:

17 April 2025

CALCULATED WITH:

TNM v3.2.8741.34338

CALCULATION DATE:

4/17/2025 5:09:50 PM

CASE:

Horizon Year Plus
Project Conditions

ORGANIZATION:

Sample Ranch Development

UNITS:

English

ANALYSIS BY:

VRPA Technologies, Inc.

DEFAULT GROUND TYPE:

HardSoil

PROJECT/CONTRACT

Sample Ranch Development

ATMOSPHERICS:

68°F, 50%

Average pavement type shall be used unless a state

PAVEMENT TYPE(S) USED:

Average

highway agency substantiates the use of a different

type with approval FHWA.

Receiver				Modeled Traffic Noise Levels				
Name	No.	Nb. R.R.	Existing LAeq					Type of Impact
				LAeq		Increase over Existing		
				Calc.	Absolute Criterion	Calc.	Relative Criterion	
			dBA	dBA	dBA	dBA		
Field Receptor 1-1	1	1	---	76.9	0.0	---	---	Sound Level
Sensitive Receptor 1-2	2	1	---	66.0	0.0	---	---	Sound Level
Sensitive Receptor 2-3	3	1	---	57.0	0.0	---	---	Sound Level
Sensitive Receptor 3-4	4	1	---	50.5	0.0	---	---	Sound Level
Sensitive Receptor 4-5	5	1	---	66.0	0.0	---	---	Sound Level

REPORT:	Results: Sound Levels - Input Heights		REPORT DATE:	17 April 2025
TNM VERSION:	3.2.8741.34338		CALCULATION DATE:	4/17/2025 5:18:08 PM
CALCULATED WITH:	TNM v3.2.8741.34338		ORGANIZATION:	Sample Ranch Development
CASE:	Horizon Year Plus Project Conditions - Mitigation		PROJECT/CONTRACT:	Sample Ranch Development
ANALYSIS BY:	VRPA Technologies, Inc.			
DEFAULT GROUND TYPE:	HardSoil			
ATMOSPHERICS:	68°F, 50%		Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval of FHWA.	
PAVEMENT TYPE(S) USED:	Average			

Results for:		DU	Noise Reduction			Barrier Cost			
			Min	Avg	Max	Area / Volume	Lineal	Total	Total/D
			dB	dB	dB	\$	\$	\$	\$
Receivers in the Barrier Design:	All	5	0.0	3.9	7.2	0	0	0	
	All Impacted	5	0.0	3.9	7.2	0	0	0	
Meeting Noise Reduction Goal:	All	0	---	---	---	0	0	0	---
	All Impacted	0	---	---	---	0	0	0	---

Receiver				Modeled Traffic Noise Levels								
				All Abatement Barriers at Zero Height					With Abatement Barriers			
				LAeq		Increase over Existing		Type of Impact	Calc. LAeq	Noise Reduction		Calc. Minus Goal
				Calc.	Absolute Criterion	Calc.	Relative Criterion			Calc.	Goal	
Name	No.	DUs	Existing LAeq dBA	dBA	dBA	dBA	dBA		dBA	dBA	dBA	dBA
Field Receptor 1-1	1	1	---	76.9	0.0	---	---	Sound Level	76.9	0.0	8.0	
Sensitive Receptor 1-2	2	1	---	66.0	0.0	---	---	Sound Level	58.7	7.2	8.0	
Sensitive Receptor 2-3	3	1	---	57.0	0.0	---	---	Sound Level	54.5	2.5	8.0	
Sensitive Receptor 3-4	4	1	---	50.5	0.0	---	---	Sound Level	47.7	2.8	8.0	
Sensitive Receptor 4-5	5	1	---	66.0	0.0	---	---	Sound Level	59.3	6.7	8.0	

GROUNDWATER SUPPLY REPORT
FOR WCP SAMPLE RANCH PROJECT

Draft Report-For Review Purposes Only

Prepared for
WCP
Fresno, California

By
Kenneth D. Schmidt and Associates
Groundwater Quality Consultants
Fresno, California

October 2025

October 15, 2025

Mr. Josh Peterson
WCP Developers
2505 Alluvial Avenue
Clovis, CA 93611

Re: Sample Ranch Groundwater
Supply Report

Dear Josh:

Submitted herewith is our draft groundwater supply report for Sample Ranch. We appreciate the assistance of Bradley & Sons of Del Rey in conducting the pump tests.

Sincerely Yours,

Kenneth D. Schmidt
Geologist No. 1578
Certified Hydrogeologist
No. 176

KDS/td

TABLE OF CONTENTS

LIST OF TABLES	<u>Page</u> iii
LIST OF ILLUSTRATIONS	iv
INTRODUCTION	1
TOPGRAPHIC CONDITIONS	1
GEOLOGIC CONDITIONS	1
WELL DATA	3
GROUNDWATER OCCURRENCE	5
Water Levels	5
PUMP TESTS	7
Procedure	7
Drawdown Measurements for NW-4 Test	8
Pumped Well	8
Observation Wells	9
Recovery Measurements for NW-4 Test	9
Pumped Well	11
Observation Wells	11
Drawdown Measurements for NW-168 Test	11
Pumped Well	11
Observation Wells	13
Recovery Measurements for NW-168 Test	13
Pumped Well	15
Observation Wells	15
Drawdown Measurements for NW-1 Test	15
Pumped Well	15
Observation Wells	17
Recovery Measurements for NW-1 Test	17
Pumped Well	19
Observation Wells	19
GROUNDWATER QUALITY	19
GROUNDWATER RECHARGE	22
GROUNDWATER DISCHARGE	23

Continued:

TABLE OF CONTENTS
(Continued:)

	<u>Page</u>
STORAGE CAPACITY	24
Amount of Groundwater Available	24
Expected Availability of Water in the Future	25
Predicted Regional Water-Level Declines	25
Feasibility of Individual Wells	25
Anticipated Depths of Individual Wells	26
Chemical Quality	26
Type of Well to be Used	26
Adequacy of Source Data	26
General Plan Policy PF-C.17	26
Impacts on Other Wells	27
 ATTACHMENT A Completion Report for Wells	
 ATTACHMENT B Transducer Water-Level Hydrographs for Wells	
 ATTACHMENT C Drawdown Measurements for Pump Test on Well NW-4	
 ATTACHMENT D Recovery Measurements for Pump Test on Well NW-4	
 ATTACHMENT E Drawdown Measurements for Pump Test on Well NW-168	
 ATTACHMENT F Recovery Measurements for Pump Test on Well NW-168	
 ATTACHMENT G Drawdown Measurements for Pump Test on Well NW-1	
 ATTACHMENT H Recovery Measurements for Pump Test on Well NW-1	
 ATTACHMENT I Chemical Analyses of Water from Pumped Wells	

LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
1	Construction Data for Wells	4
2	Chemical Quality of Water from Pumped Wells	21

LIST OF ILLUSTRATIONS

<u>No.</u>	<u>Title</u>	<u>Page</u>
1	Locations of Project Site, Drainages, and Wells	2
2	Water-Level Elevations and Direction of Groundwater Flow for September-October, 2025	6
3	Drawdown for Well NW-4	10
4	Water-Level Recovery for Well NW-4	12
5	Drawdown for Well NW-168	14
6	Water-Level Recovery for Well NW-168	16
7	Drawdown for Well NW-1	18
8	Water-Level Recovery for Well NW-1	20

GROUNDWATER SUPPLY REPORT
FOR WCP SAMPLE RANCH

INTRODUCTION

WCP has submitted Variance Application No. ____ to create 44 parcels in an 144-acre area south located north of Tollhouse Road and northwest of Friant Kern Canal between Dry Creek and Dog Creek. Pursuant to General Plan Policy PF-C.17, the County of Fresno requested a hydrogeologic investigation for this project, following Section II-H of the County Improvement Standards. A proposed hydrogeologic evaluation by Kenneth D. Schmidt and Associates (KDSA) was submitted to the County on August 25, 2025. The County of Fresno subsequently reviewed and approved the proposal on September 3, 2025. Figure 1 shows the locations of wells used for the pump tests.

TOPOGRAPHIC CONDITIONS

The project site is located near in the southeast quarter of Section 20, T12S/R22E. Land surface elevations range from about 465 to 470 feet above mean sea level.

GEOLOGIC CONDITIONS

Alluvial deposits are present at the site, and these are underlain by granitic rocks below a depth of about 50 to 60 feet. Coarse-grained stream channel deposits are present in the alluvial deposits below

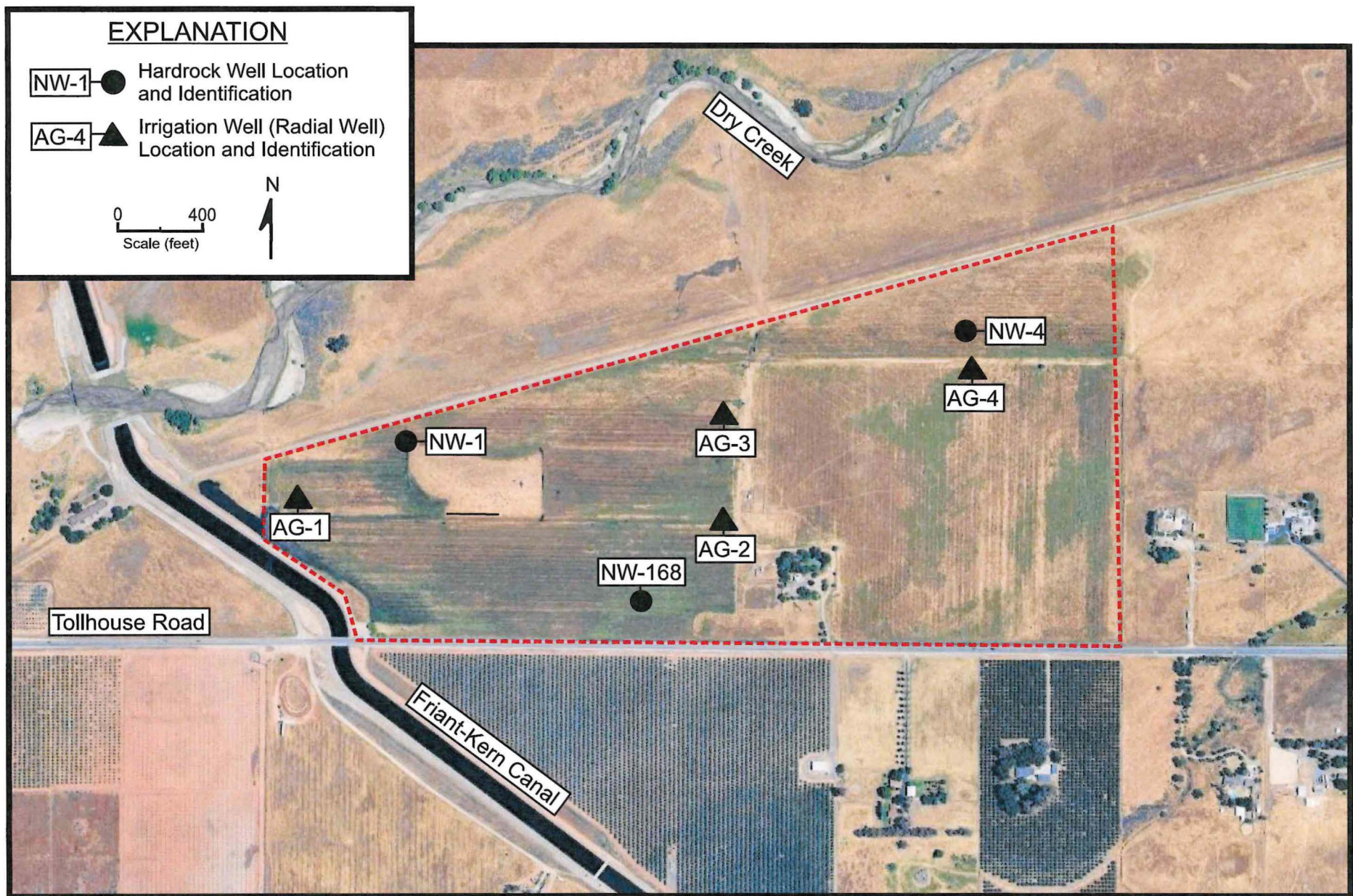


FIGURE 1-LOCATION OF PROJECT SITE, DRAINAGES, AND WELLS

the water level and groundwater production from lateral wells in the area is from these. Hardrock wells tap fractures in granitic rock below the alluvium. The area has been designated by the California Department of Water Resources to be inside the Kings Groundwater Sub-basin.

WELL DATA

Table 1 summarizes information for the wells at the site and Figure 1 shows the well locations. There are four irrigation wells at the ranch. These are lateral or radial wells that tap groundwater in the weathered zone and alluvium. Johnson Drilling Co. of Reedley constructed these wells during 1961-65. Depths range from 55 to 68 feet. The wells have from 6 to 11 laterals, ranging in length from about 188 to 518 feet. These wells have been used to irrigate pasture at the ranch. Such wells are no longer drilled because of OSHA concerns.

Completion reports for the hardrock wells are provided in Attachment A. Strickland Drilling of Fresno drilled the three hardrock wells at the site by the air rotary method. The wells range in depth from 340 to 420 feet. These wells are cased to a depth of 105 feet and have annular seals from 100 feet to the surface. The wells are open hole below a depth of 105 feet. The wells produced from 25 to 100 gpm at the time of drilling. Most of the water production was from below a depth of 300 feet.

TABLE 1 - CONSTRUCTION DATA FOR WELLS

Well I.D.	Date Completed	Total Depth (feet)	Cased Depth (feet)	Annular Seal (feet)
AGR-1	1961	N.A.	N.A.	-
AGR-2	1961	55	N.A.	-
AGR-3	1965	N.A.	N.A.	-
AGR-4	1966	68	N.A.	-
NW-4	7/24	420	105	0-100
NW-1	7/24	340	105	0-100
NW-168	11/24	420	105	0-100

Wells NW-4, NW-1, and NW-168 produced 25 gpm, 100 gpm, and 30 gpm by airlifting at the time of drilling. Johnson Drilling Co. of Reedley constructed the irrigation wells (AGR) which produced about 500 gpm and Strickland Drilling of Fresno constructed the hardrock wells. WCR 2024-008201, 2024-08227, and 2024-012154 are available for the hardrock wells.

GROUNDWATER OCCURRENCE

Alluvial deposits are present to a depth ranging from about 50 to 60 feet at the project site and the water producing deposits are sand and gravel. Wells tapping these deposits are lateral wells that are used for irrigation. The hardrock would be tapped for individual wells. Wells depths would range from about 350 to 450 feet. Seepage from Dry Creek and Dog Creek are the primary sources of recharge to groundwater in the area.

Water Levels

Water-level measurements for the pump tests were used to prepare a water-level elevation and direction of groundwater flow map for the hardrock for September-October, 2025. Depth to water in NW-1 and NW-168 ranged from 24.6 feet to 26.9 feet. The average water-level elevation was 440 feet above mean sea level at NW-1 and 438 feet at NW-168. Depth to water at NW-4 ranged from 26.1 to 26.5 feet. The average water-level elevation was 449 feet. Figure 2 shows water-level elevations for the hardrock for September-October, 2025. Depth to water measurements (static levels) for the radial wells were very close to those for the hardrock wells. Average water-level elevations were 436 feet at AG-1, 443 feet at AG-3, and 445 feet at AG-4.

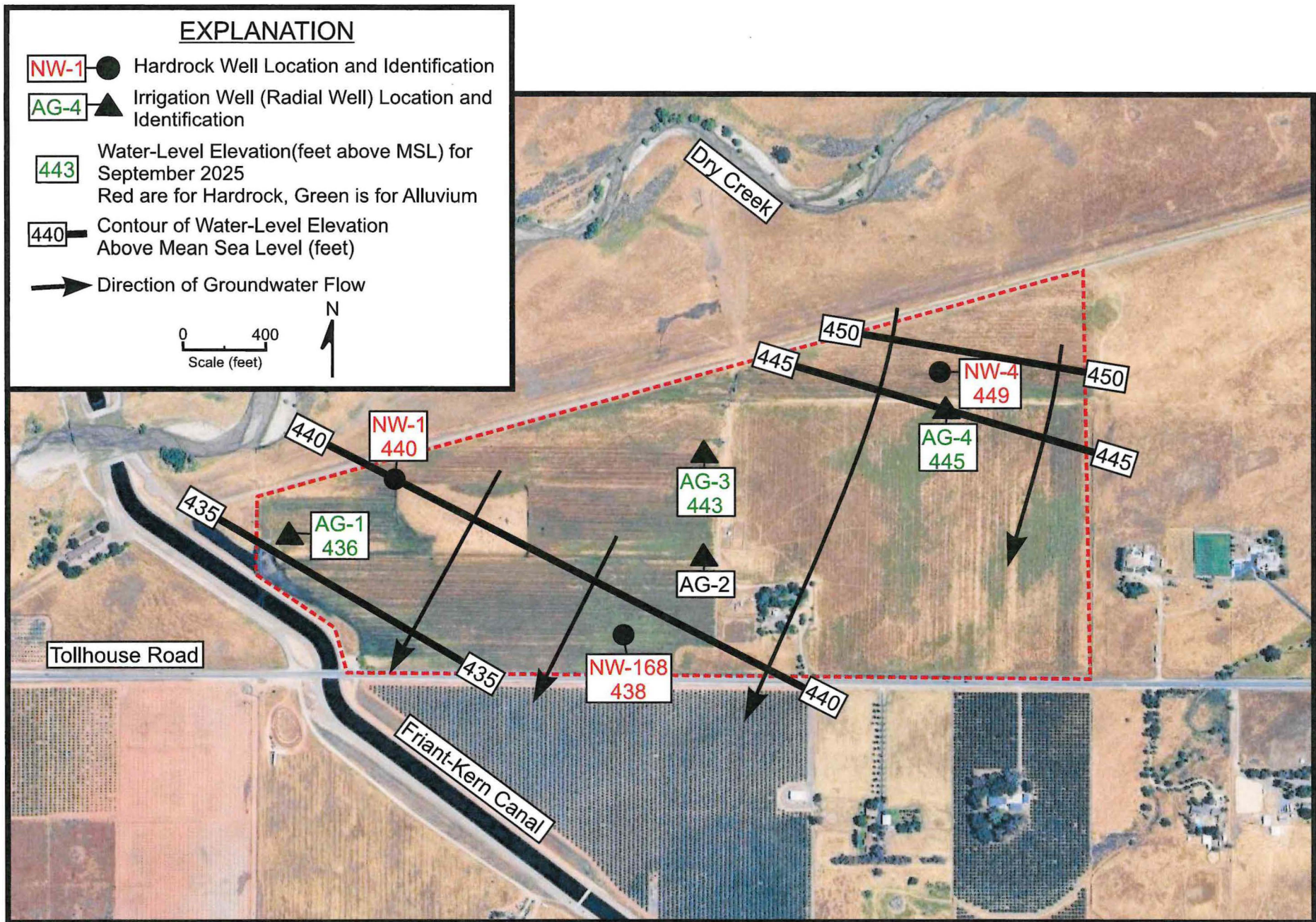


FIGURE 2-WATER-LEVEL ELEVATIONS AND DIRECTION OF GROUNDWATER FLOW FOR SEPTEMBER-OCTOBER 2025

Provost & Pritchard prepared water-level hydrographs for two hardrock wells (NW-1 and NW-168) and four radial wells (AG-1, AG-2, AG-3, and AG-4). These are provided in Attachment B. The annual variation in depth to water (static levels) were about four feet for the two hardwork wells and from one and a half to four feet in the radial wells. Wells AG-1, AG-2, AG-3, and AG-4 were used to irrigate pasture from about April 10, 2025 through October 10, 2025. For these, pumping levels were also provided on the transducer hydrographs. Drawdowns due to pumping ranged from about four feet to 14 feet. Pumping rates for the radial wells haven't been regularly measured, but they are believed to be about 500 gpm.

PUMP TESTS

Procedure

Following Fresno County requirements, a 72-hour pump test was conducted on each of the three hardrock wells. Drawdown measurements for the NW-4 test are provided in Attachment B and recovery measurements in Attachment C. Drawdown measurements for the NW-168 test are provided in Attachment D and recovery measurements in Attachment E. Drawdown measurements for the NW-1 test are provided in Attachment F and recovery measurements in Attachment G. These measurements were done under the supervi-

sion of Cheryl Lassotovitch, a Registered Geologist and Certified Hydrogeologist in California. Water levels were measured inside the access tube with an electric sounder. The nearest hardrock and radial wells to each pumped well were used as observation wells for the test. An electric sounder was used to measure the water level in this well. Water pumped from each pumped well was discharged to an area more than 300 feet from the pumped well so as to not interfere with the test. A one-inch diameter totalizing flowmeter was used to measure the pumping rate and total pumpage from Wells NW-4 and NW-168. A one-and a half inch diameter totalizing flowmeter was used in Well NW-1. The timing of filling a 5-gallon bucket was periodically used to verify the pumping rate during pumping.

Drawdown Measurements for Well NW-4 Test

Drawdown measurements for the 72-hour pump test on Well NW-4 are provided in Attachment C.

Pumped Well

Pumping of Well NW-4 began at 9:20 AM on September 22 and continued until 9:20 AM on September 25, 2025. The well was temporarily not pumped for three different periods for repairs, for a total of 42 minutes. The static water level in Well NW-4 was 26.1 feet below the measuring point prior to pumping. The

initial pumping rate was about 37 gpm. For the first six and a half hours, about 4,070 gallons was pumped from the well and the average pumping rate was about 10 gpm. A constant head test was done for the rest of the pumping period. Figure 3 shows drawdown in Well NW-4 for the first six and a half hours of pumping (the constant rate part of the test). Drawdown measurements for the constant rate test indicated an aquifer transmissivity of 20 gpd per foot. A constant head test was done during the rest of the pumping period. A total of 33,600 gallons was pumped during the test and the average pumping rate was 7.8 gpm.

Observation Wells

Well NW-168 is located about 2,040 feet southwest of Well NW-4 and Well AG-4 is located about 200 feet south of Well NW-4. Depth to water in Well NW-168 was 25.75 feet prior to pumping of Well NW-4 and 26.36 feet near the end of pumping, or an apparent drawdown of 0.61 foot. Depth to water in Well AG-4 was 25.58 feet prior to pumpage and 25.42 near the end of pumping, or a water-level rise of 0.16 foot. Recovery measurements indicate that the decline in Well NW-168 was due to background conditions, and not due to pumping of Well NW-4.

Recovery Measurements for NW-4 Test

Recovery measurements for the test are provided in Attachment D.

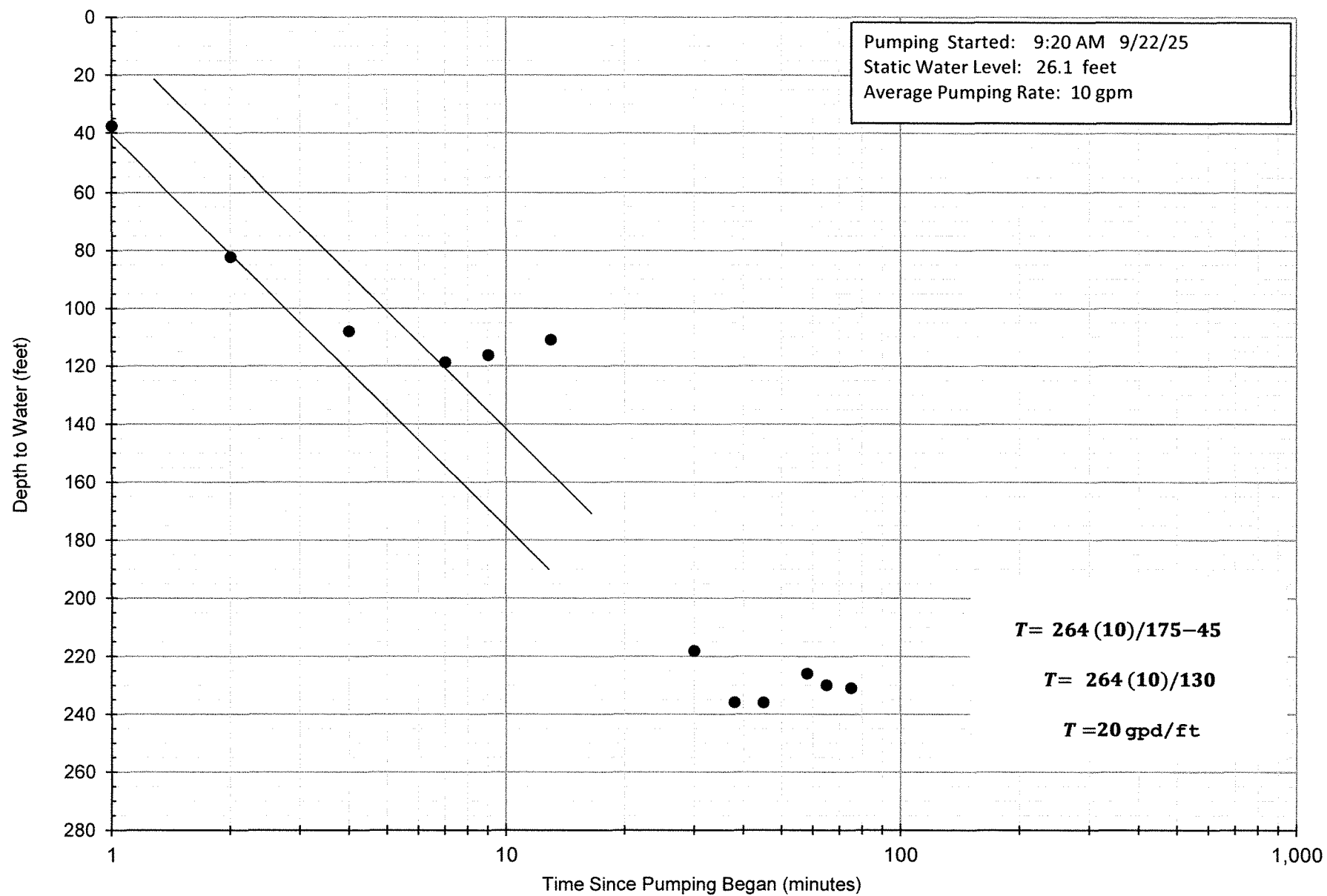


FIGURE 3-DRAWDOWN FOR WELL NW-4

Pumped Well

Figure 4 shows recovery for Well NW-4. After 280 minutes of recovery, depth to water was 33.2 feet, or 7.2 feet below the static level prior to pumping. Uncorrected recovery measurements for 100 to 280 minutes indicate a transmissivity of 60 gpd per foot.

Observation Wells

Depth to water in Well NW-168 was 26.36 feet after about 265 minutes of recovery, or 0.61 foot below the static level prior to pumping. The water level in Well AG-4 was 25.38 feet after about two hours of recovery, compared to 25.58 feet prior to pumping. Overall, the water levels in the observation wells didn't change due to pumping for the test.

Drawdown Measurements for NW-168 Test

Drawdown measurements for the 72-hour pump test are provided in Attachment E.

Pumped Well

Pumping of Well NW-168 began at 9:00 AM on September 29, 2025 and continued until 9:00 AM on October 2, 2025. The static level in the pumped well was 26.8 feet prior to pumping. For the first seven hours, 7,607 gallons were pumped and the average pumping rate was 16.9 gpm. The pumping level was 311.8 feet, the draw-

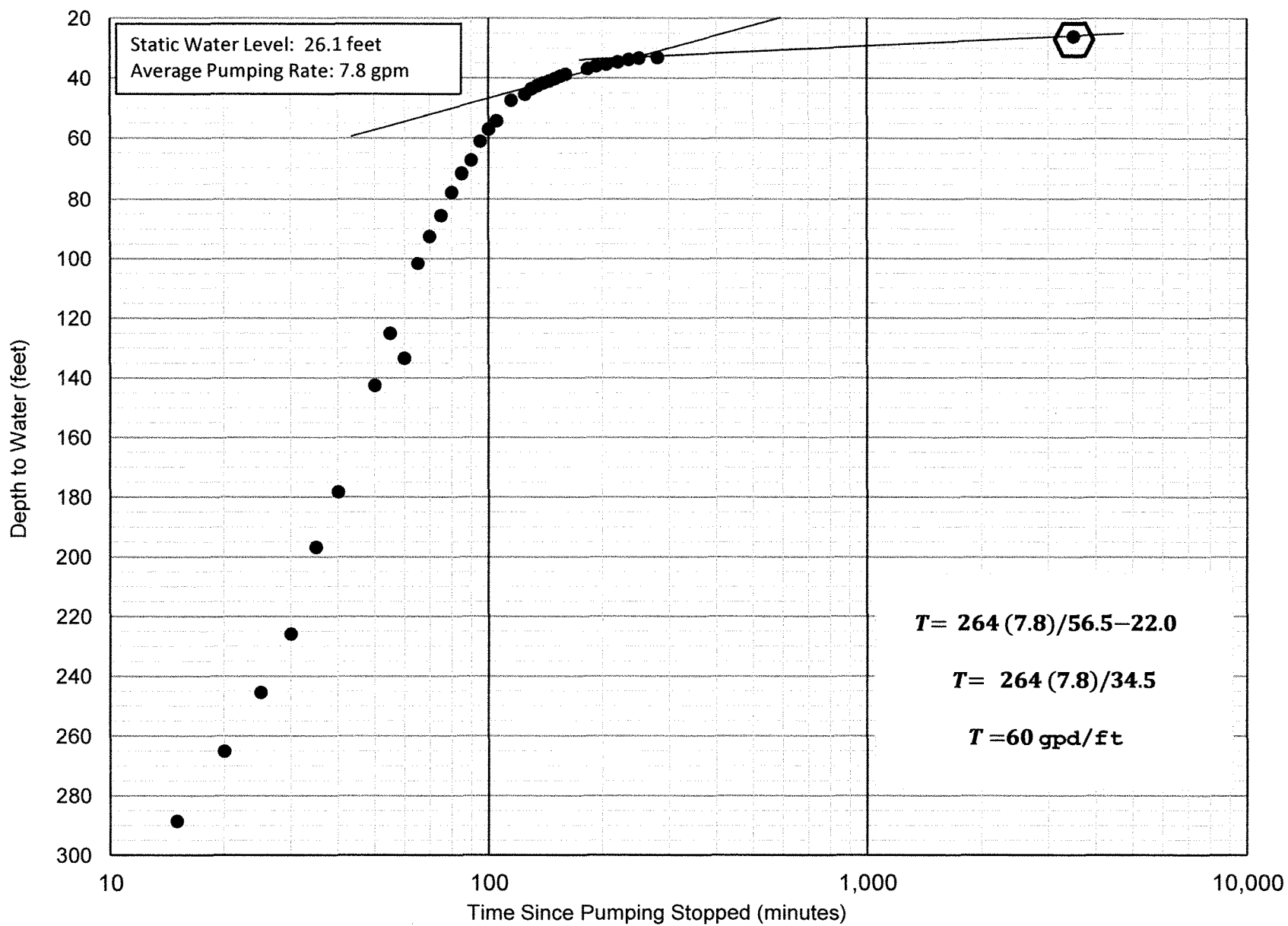


FIGURE 4-WATER-LEVEL RECOVERY FOR WELL NW-4

down was 285.0 feet, and the specific capacity was 0.06 gpm per foot. The transmissivity was 69 gpd per foot, based on the first seven hours of drawdown data (Figure 5). After seven hours, a constant head test was done, and pumping levels were between 306 and 314 feet for most of the rest of the pumping period. The pumping rate decreased to about 14.8 gpm at the end of the pumping period. A total of 65,190 gallons was pumped during the entire test and the average pumping rate was 15.1 gpm.

Observation Wells

Well NW-4 was used as an observation well for the test. It is about 2,040 feet northeast of the pumped well. Depth to water in NW-4 was 26.5 feet deep prior to pumping and 26.2 feet near the end of pumping. Well AG-2 is a radial well that was also used as an observation well for the test. It is located about 530 feet northeast of the pumped well. Depth to water was 27.2 feet before pumping and 27.1 feet at the end of pumping. Thus there was no drawdown in either observation well due to pumping of Well NW-168.

Recovery Measurements for NW-168 Test

Recovery measurements for the NW-168 test are produced in Attachment F.

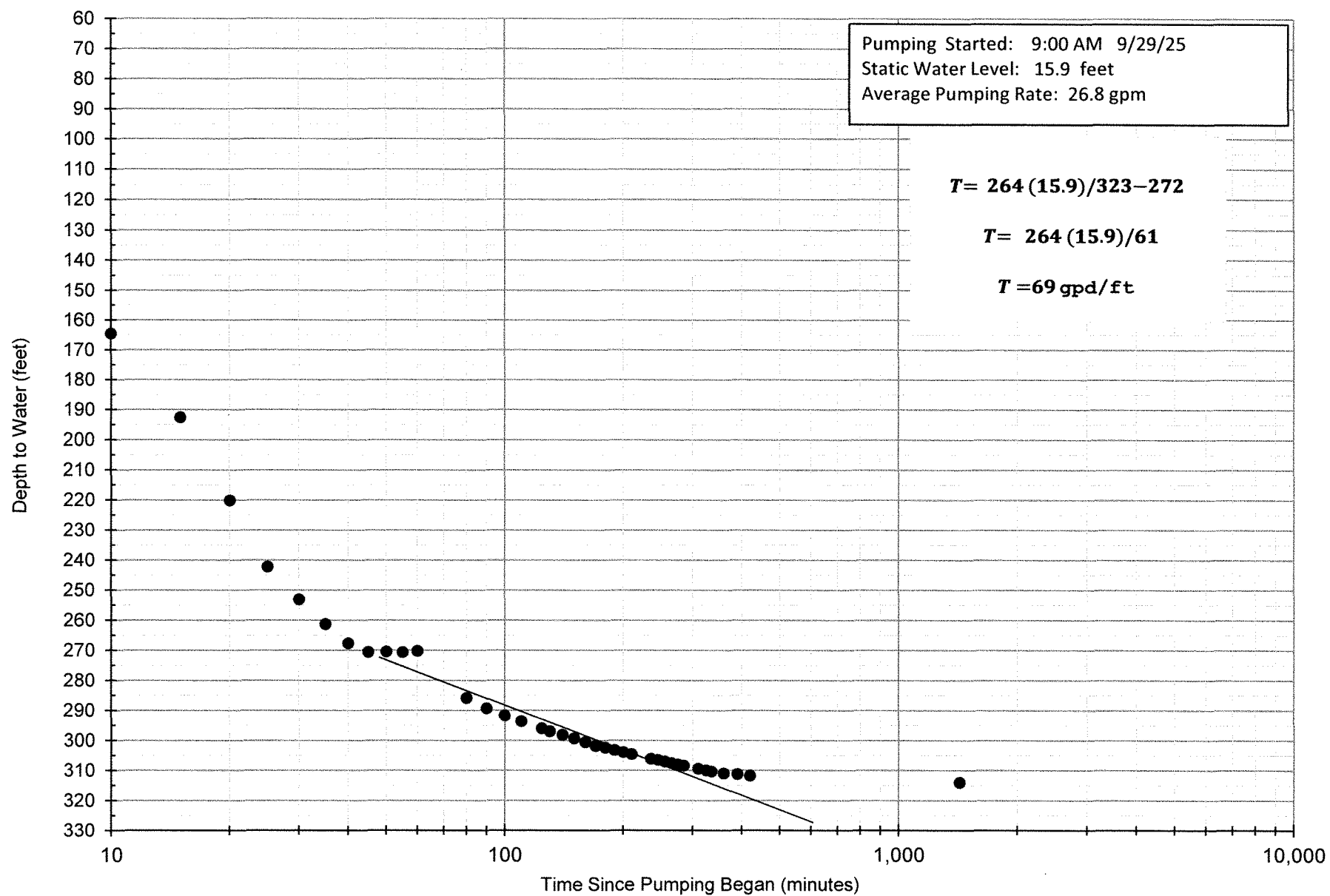


FIGURE 5-DRAWDOWN FOR WELL NW-168

Pumped Well

Depth to water in Well NW-168 was 31.7 feet after about one day of recovery, or 4.9 feet below the static level prior to pumping. 90 percent of the drawdown was recovered after about six hours of recovery. Uncorrected recovery measurements indicate a transmissivity of 52 gpd per foot (Figure 6).

Observation Wells

Depth to water in Well NW-4 was 26.1 feet after about one day of recovery or about 0.4 foot above the static level prior to pumping. Depth to water in Well AG-2 was 27.2 feet, the same as the static level prior to pumping. Thus neither observation well was influenced by pumping of Well NW-168.

Drawdown Measurements for NW-1 Test

Drawdown measurements for the 72-hour test are provided in Attachment G.

Pumped Well

The static water level in Well NW-1 prior to pumping was 24.6 feet below the measuring point. The test pump was set to a depth of 300 feet. Pumping began at 9:20 AM in October 6 and continued until 9:20 AM on October 9, 2025. For the first five hours of pumping, the average pumping rate was 80.4 gpm and the

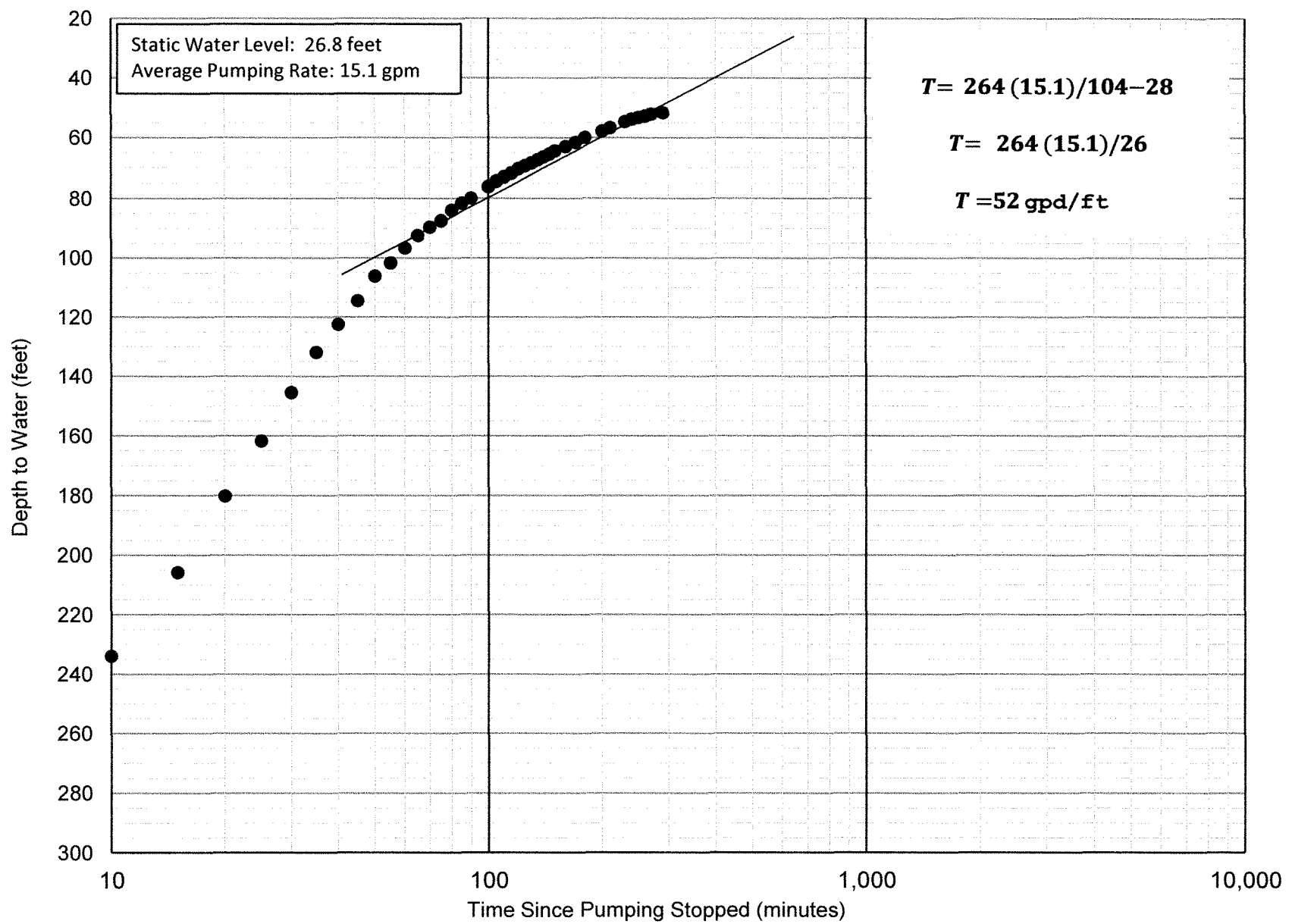


FIGURE 6-WATER-LEVEL RECOVERY FOR WELL NW-168

the pumping level after 4.8 hours of pumping was 40.3 feet. The test pump could not lower the water level more. Thus the rest of the test was done with the maximum pumping rate possible. A total of 318,900 gallons was pumped for the test and the average pumping rate was 73.8 gpm. At the end of pumping, the specific capacity was 5.3 gpm per foot. Drawdown measurements for the first 30 minutes of pumping indicated an aquifer transmissivity of 7,300 gpd per foot (Figure 7).

Observation Wells

Well NW-168, located about 1,370 feet southeast of Well NW-1 and Well AG-1, located about 600 feet southwest of Well NW-1, were used as observation wells for the test. Depth to water in Well NW-168 was 26.90 feet prior to pumping of Well NW-1 and 26.92 feet near the end of pumping. Thus there was no change in depth to water in Well NW-168 due to pumping of Well NW-1. Depth to water in Well AG-1 was 26.60 feet prior to pumping of Well NW-1 and 26.82 feet near the end of pumping, or an apparent drawdown of about 0.22 foot.

RECOVERY MEASUREMENTS FOR WELL NW-1 PUMP TEST

Water-level recovery measurements for the Well NW-1 pump test are provided in Attachment H.

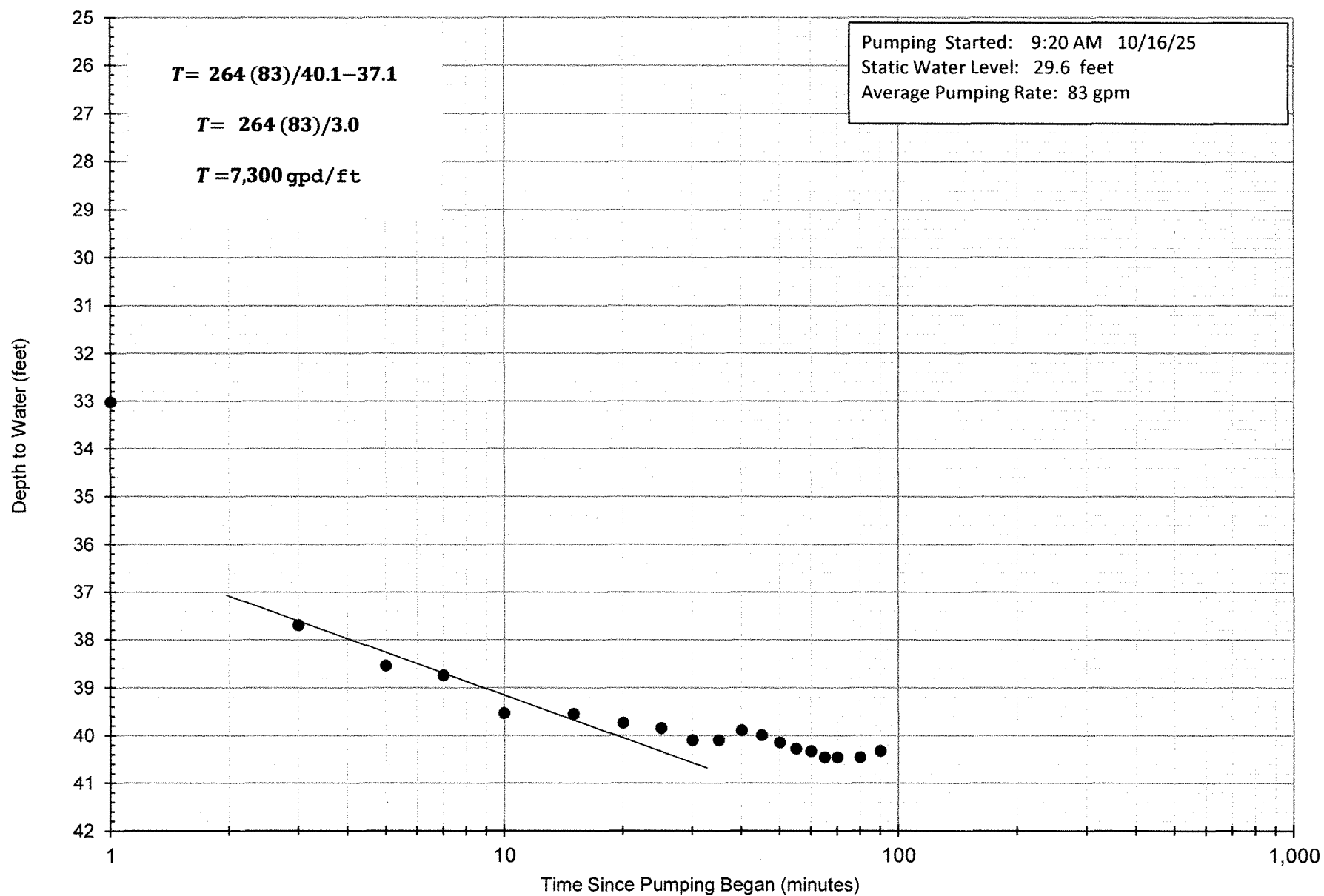


FIGURE 7-DRAWDOWN FOR WELL NW-1

Pumped Well

After 200 minutes of recovery, depth to water in Well NW-1 was 24.63 feet, indicating full recovery. Figure 8 provides the recovery measurements for the pumped well. Based on the first 200 minutes of recovery, the transmissivity was 24,000 gpd per foot. This is considered a very high value for a hardrock well.

Observation Wells

After about one day of recovery, depth to water in Well NW-168 was 26.89 feet, compared to the static level of 26.92 feet prior to when pumping of Well NW-1 began. After about one day of recovery, depth to water in Well AG-2 was 21.57 feet, compared to 26.6 feet prior to when pumping began. Thus drawdown in the two observation wells were insignificant due to pumping of Well NW-1.

GROUNDWATER QUALITY

Water samples were collected from each of the pumped wells near the end of the 72-hour pumping periods. Table 2 shows the results of these analyses. The total dissolved solids (TDS) concentrations ranged from 320 to 730 mg/l, compared to the MCL of 500 mg/l. Nitrate-nitrogen concentrations ranged from less than 0.2 to 1.3 mg/l, less than the maximum contaminant level (MCL) of 10 mg/l for public water systems. Water from NW-4 and NW-168 was of the mixed cation bicarbonate-chloride type. Water

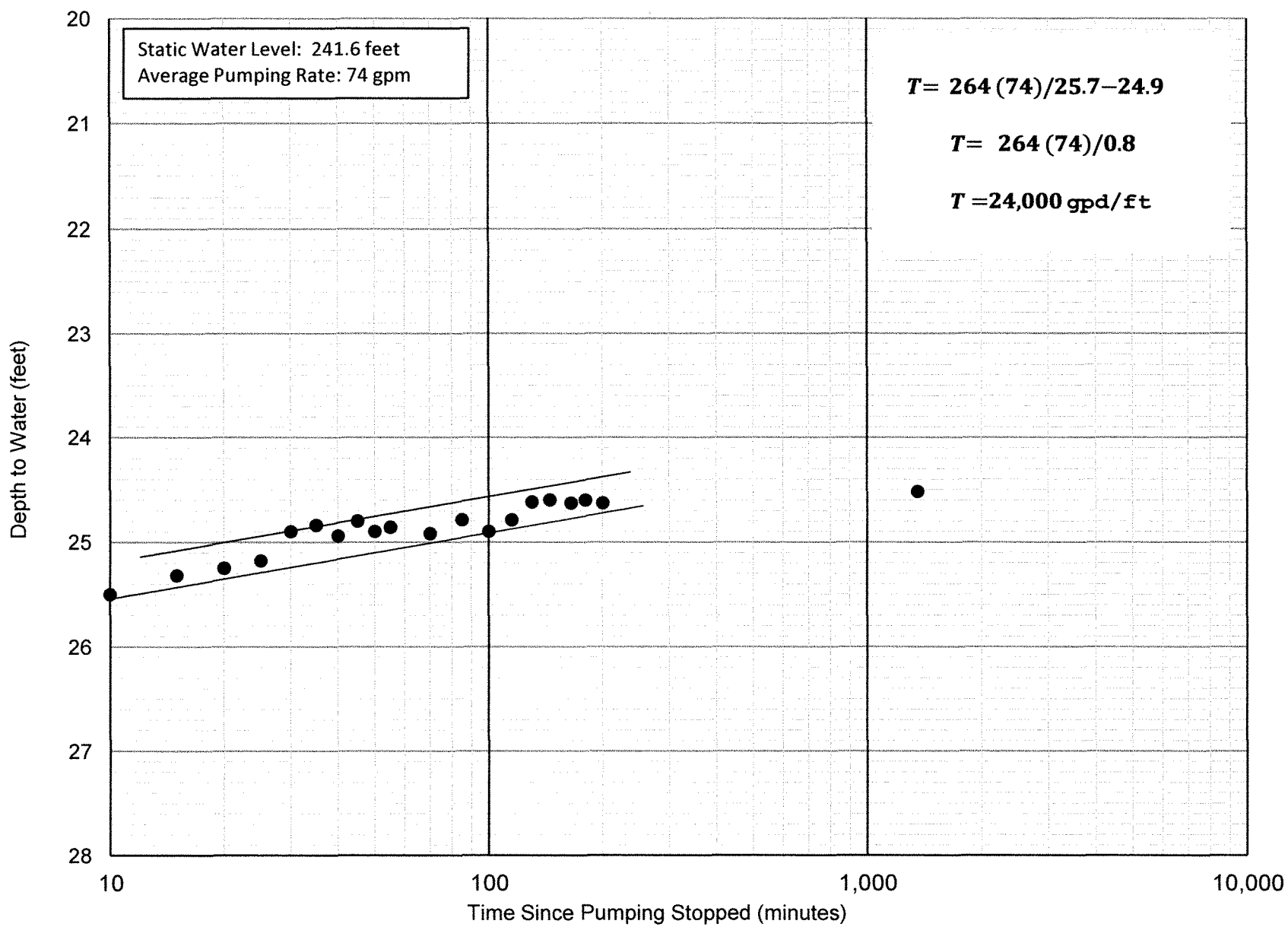


FIGURE 8-WATER-LEVEL RECOVERY FOR WELL NW-1

TABLE 2-CHEMICAL QUALITY OF WATER FROM PUMPED WELLS

<u>Constituent (mg/l)</u>	<u>NW-4</u>	<u>NW-168</u>	<u>NW-1</u>	<u>MCL</u>
Calcium	76	75	48	
Magnesium	34	22	25	
Sodium	78	82	29	
Potassium	9	5	3	
Bicarbonate	183	171	268	
Sulfate	9	10	15	250
Chloride	140	200	24	10
Nitrate-Nitrogen	0.5	<0.2	1.3	
pH	7.7	7.9	7.9	
Electrical Conductivity (micromhos/cm @ 25°C)	1,008	860	540	
Total Dissolved Solids (@ 180°C)	730	570	320	500
Iron	<0.03	<0.03	<0.03	0.3
Manganese	<0.01	<0.01	<0.01	0.05
Arsenic (ppb)	3.2	2.6	<2	10
Gross Alpha Activity (picocuries/liter)	6.4	6.6	4.6	15
DBCP (ppb)	<0.02	<0.02	<0.02	0.2
EDB (ppb)	<0.01	<0.01	<0.01	0.05
1,2,3-TCP (ppt)	<5	<5	<5	<5
Date Sampled	9/25/25	10/2/25	10/9/25	

Analyses by BSK Associates of Fresno.

from NW-1 was of the mixed cation bicarbonate type. Concentrations of iron, manganese, arsenic, and the gross alpha activity were below the representative MCLs.

GROUNDWATER RECHARGE

Recharge to the alluvial deposits and hardrock in the vicinity of the project site is indicated to primarily come from seepage from Dry Creek and Dog Creek. Additional recharge from onsite precipitation is subsequently discussed (Page 24). The direction of groundwater flow both in the alluvium and the hardrock has been to the southwest. Darcy's Law can be used to calculate the groundwater flow:

$Q = TIL$, where

Q = groundwater inflow (gpd)

T = transmissivity (gpd/ft)

I = water-level slope (ft/mile)

L = width of flow (miles)

From Figure 2, the average water-level slope in the hardrock was 26 feet per mile in September-October, 2025. The width of groundwater inflow beneath the ranch was 0.69 mile. The average transmissivity of the hardrock was 8,040 gpd per foot.

$Q = 8,040 \text{ gpd/ft} \times 26 \text{ ft/mile} \times 0.69 \text{ mile}$

$Q = 162 \text{ acre-feet per year.}$

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$Q = 162 \text{ acre-feet per year.}$

Additional recharge to the hardrock is from downward flow of groundwater from the overlying weathered zone and alluvium. Streamflow in Dog Creek has been measured at a gaging station about half a mile east of the ranch. Streamflow in Dry Creek has been measured at a gaging station near the dam.

GROUNDWATER DISCHARGE

Groundwater discharge in the vicinity is to pumping wells and groundwater outflow to the southwest. For the 114 acres of pasture at the ranch, the estimated pumpage from the radial wells has been about 650 acre-feet per year. Of this pumpage, the estimated consumptive use was 350 acre-feet per year, based on an evapotranspiration of applied water value for pasture from DWR Bulletin 113-3, Table 25. There is additional pumping from private domestic wells particularly to the west of the ranch. Most of these wells are indicated to tap the hardrock and the pumpage is not measured.

STORAGE CAPACITY

Storage capacity in the alluvial deposits beneath the 144 acre ranch is estimated to be about 50 feet x 144 acres x 0.20, or 1,440 acre-feet. Storage capacity in the hardrock beneath the ranch and above a depth of 400 feet is estimated to be about 144 acres x 350 feet x 0.01, or 500 acre-feet.

Amount of Groundwater Available

For the 44 lots on the 144-acre parcel, the consumptive use would essentially be for outside evapotranspiration, as the inside water use would be recharged through the septic tank systems. If the landscaping for each lot comprised about a quarter of an acre, the annual consumptive use would be about 0.75 acre-foot per year per lot, or a total of 33 acre-feet per year for the 44 lots. Storm runoff from the lots is to be recharged on-site. For each lot, recharge would be about 20 percent of the annual precipitation of 12 inches per year. This would provide about 0.9 acre-foot per year of recharge per lot, or a total of 40 acre-feet per year. The lateral groundwater inflow in the hardrock is expected to average about 160 acre-feet per year. Thus the amount of groundwater available for the 44 lots would exceed the projected consumptive use.

Expected Availability of Water in the Future

The amount of recharge from Dry Creek and Dog Creek in the

future could be reduced due to global warming. However, the average recharge is still expected to provide enough water for the project, since a net zero withdrawal of groundwater is proposed.

Projected Regional Water-Level Declines

SGMA studies for the Kings Sub-basin indicate an average water level decline of about half a foot per year in the alluvial deposits in the area north of the Enterprise Canal. However, at the ranch, monitoring records indicate no groundwater overdraft. The proposed project would not add to regional declines, because it is water neutral.

Feasibility of Individual Wells

Three hardrock wells have been installed at the project site. The 72-hour pump tests indicated yields ranging from 8 to 74 gpm. Additional hardrock wells could be constructed on the 144-acre project site, drilled to depths of at least 350 feet and equivalent yields should be obtained. Thus individual hardrock wells are adequate for the proposed project.

Anticipated Depth of Individual Wells

The new wells would likely range in depth from 350 to 400 feet.

Chemical Quality

The chemical quality of the groundwater is expected to be

suitable for individual wells, if deep annular seals are provided.

Type of Well to be Used

Individual domestic wells tapping groundwater in the hardrock are to be used. The air rotary method would be use to drill these wells.

Adequacy of Source Data

The source data used are adequate.

General Plan Policy PF-C.17

Groundwater is proposed for the supply and the supply is adequate to meet the highest demand that could be proposed at the four parcels. A hydrogeologic investigation was completed herein.

Impacts on Other Wells

Due to the lack of drawdown in the observation wells for the pump tests, there would be no significant drawdown in off-site wells due to pumpage for the project.

ATTACHMENT A
COMPLETION REPORTS FOR WELLS

NW-4

Geologic Log - Free Form		
Depth from Surface Feet to Feet		Description
0	20	TOPSOIL BROWN CLAY WITH SAND
20	40	SALT AND PEPPER GRANITE
40	60	SALT AND PEPPER GRANITE WITH GRAY STREAKS
60	80	GRAY AND BLACK GRANITE LAYERS
80	120	BLACK AND GRAY GRANITE
120	160	BLACK GRANITE
160	200	BLACK GRANITE WITH SALT AND PEPPER STREAKS
200	300	BLACK GRANITE
300	360	BLACK GRANITE WITH SALT AND PEPPER STREAKS
360	420	BLACK GRANITE

State of California
Well Completion Report
Form DWR 188 Submitted 12/10/2024
WCR2024-012954

NW-168

Owner's Well Number _____ Date Work Began 11/21/2024 Date Work Ended 11/27/2024
Local Permit Agency Fresno County Environmental Health Department
Secondary Permit Agency _____ Permit Number WELL10094831 Permit Date 11/18/2024

Well Owner (must remain confidential pursuant to Water Code 13752)		Planned Use and Activity	
Name	<u>YELLOWFIN HOLDING LP AVILA GROUP HOLDINGS LLC ETALTAL,</u>	Activity	<u>New Well</u>
Mailing Address	<u>2505 ALLUVIAL AVE</u>	Planned Use	<u>Water Supply Domestic</u>
City	<u>CLOVIS</u>		
State	<u>CA</u>		
Zip	<u>93611</u>		

Well Location			
Address <u>11000 TOLLHOUSE RD</u>		APN <u>15006145</u>	
City <u>CLOVIS</u>	Zip <u>93611</u>	County <u>Fresno</u>	Township <u>12 S</u>
Latitude <u>36</u> <u>52</u> <u>2.298</u> <u>N</u>	Longitude <u>-119</u> <u>35</u> <u>11.6627</u> <u>W</u>	Range <u>22 E</u>	Section <u>20</u>
Deg. Min. Sec.	Deg. Min. Sec.	Baseline Meridian <u>Mount Diablo</u>	
Dec. Lat. <u>36.867305</u>	Dec. Long. <u>-119.586573</u>	Ground Surface Elevation _____	
Vertical Datum _____	Horizontal Datum <u>WGS84</u>	Elevation Accuracy _____	
Location Accuracy _____	Location Determination Method _____	Elevation Determination Method _____	

Borehole Information		Water Level and Yield of Completed Well	
Orientation <u>Vertical</u>	Specify _____	Depth to first water _____ (Feet below surface)	
Drilling Method <u>Downhole Hammer</u>	Drilling Fluid <u>Air</u>	Depth to Static _____	
Total Depth of Boring <u>420</u> Feet		Water Level <u>24</u> (Feet) Date Measured <u>11/27/2024</u>	
Total Depth of Completed Well <u>420</u> Feet		Estimated Yield* <u>30</u> (GPM) Test Type <u>Air Lift</u>	
		Test Length _____ (Hours) Total Drawdown _____ (feet)	
		*May not be representative of a well's long term yield.	

Geologic Log - Free Form		
Depth from Surface Feet to Feet	Description	
0	20	TOPSOIL, BROWN HARD PAN WITH COARSE SAND AND GRAVEL STREAKS
20	40	COARSE SAND WITH GRAVEL AND SMALL COBBLESTONE
40	60	DECOMPOSED GRANITE WITH BLACK GRANITE LAYERS
60	100	BLACK GRANITE WITH QUARTZ STREAKS
100	200	BLACK GRANITE
200	220	BLACK GRANITE WITH QUARTZ STREAKS
220	300	BLACK GRANITE
300	320	BLACK GRANITE WITH QUARTZ STREAKS
320	340	BLACK GRANITE WITH QUARTZ FRACTURES
340	360	BLACK GRANITE
360	380	BLACK GRANITE WITH SALT AND PEPPER STREAKS
380	420	BLACK GRANITE

State of California
Well Completion Report
Form DWR 188 Submitted 9/5/2024
WCR2024-008227

NW-1

Owner's Well Number _____ Date Work Began 07/19/2024 Date Work Ended 07/29/2024
Local Permit Agency Fresno County Environmental Health Department
Secondary Permit Agency _____ Permit Number WELL10089837 Permit Date 03/20/2024

Well Owner (must remain confidential pursuant to Water Code 13752)	Planned Use and Activity
Name <u>YELLOWFIN HOLDING LP AVILA GROUP HOLDINGS LLC ETAL,</u>	Activity <u>New Well</u>
Mailing Address <u>2505 ALLUVIAL AVE</u>	Planned Use <u>Test Well</u>
City <u>CLOVIS</u> State <u>CA</u> Zip <u>93611</u>	

Well Location	
Address _____	APN <u>15006125</u>
City _____ Zip _____ County <u>Fresno</u>	Township <u>12 S</u>
Latitude <u>36</u> <u>52</u> <u>10.1963</u> N Longitude <u>-119</u> <u>35</u> <u>29.9471</u> W	Range <u>22 E</u>
Deg. Min. Sec. Deg. Min. Sec.	Section <u>20</u>
Dec. Lat. <u>36.869499</u> Dec. Long. <u>-119.591652</u>	Baseline Meridian <u>Mount Diablo</u>
Vertical Datum _____ Horizontal Datum <u>WGS84</u>	Ground Surface Elevation _____
Location Accuracy _____ Location Determination Method _____	Elevation Accuracy _____
	Elevation Determination Method _____

Borehole Information	Water Level and Yield of Completed Well
Orientation <u>Vertical</u> Specify _____	Depth to first water _____ (Feet below surface)
Drilling Method <u>Downhole Hammer</u> Drilling Fluid <u>Air</u>	Depth to Static _____
Total Depth of Boring <u>340</u> Feet	Water Level <u>20</u> (Feet) Date Measured <u>07/29/2024</u>
Total Depth of Completed Well <u>340</u> Feet	Estimated Yield* <u>100</u> (GPM) Test Type <u>Air Lift</u>
	Test Length _____ (Hours) Total Drawdown _____ (feet)
	*May not be representative of a well's long term yield.

Geologic Log - Free Form		
Depth from Surface	Feet to Feet	Description
0	20	TOPSOIL BROWN AND GRAY CLAY WITH SAND
20	40	BROWN CLAY WITH GRAVEL LAYER AND SAND
40	60	BLACK GRANITE WITH LOOSE SALT AND PEPPER
60	80	SALT AND PEPPER GRANITE WITH LOOSE LAYERS OF BROWN ROCK
80	220	SALT AND PEPPER GRANITE
220	260	SALT AND PEPPER GRANITE WITH BLACK LAYERS
260	340	SALT AND PEPPER GRANITE

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	105	Blank	Low Carbon Steel	Grade: ASTM A53	0.156	6.625			
1	105	340	No Casing Installed	Other	N/A					OPEN HOLE

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	100	Cement	Other Cement		11 SACK SAND CEMENT
100	105	Filter Pack	Other Gravel Pack	8 X 1/4"	
105	340	Other Fill	See description.		OPEN HOLE

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	105	12.25
105	340	6

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name STRICKLAND DRILLING
 Person, Firm or Corporation
543 NORTH MONTE AVENUE FRESNO CA 93728
 Address City State Zip

Signed electronic signature received 09/05/2024 882088
C-57 Licensed Water Well Contractor Date Signed C-57 License Number

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

Latitude Deg/Min/Sec

Longitude Deg/Min/Sec

TRS:

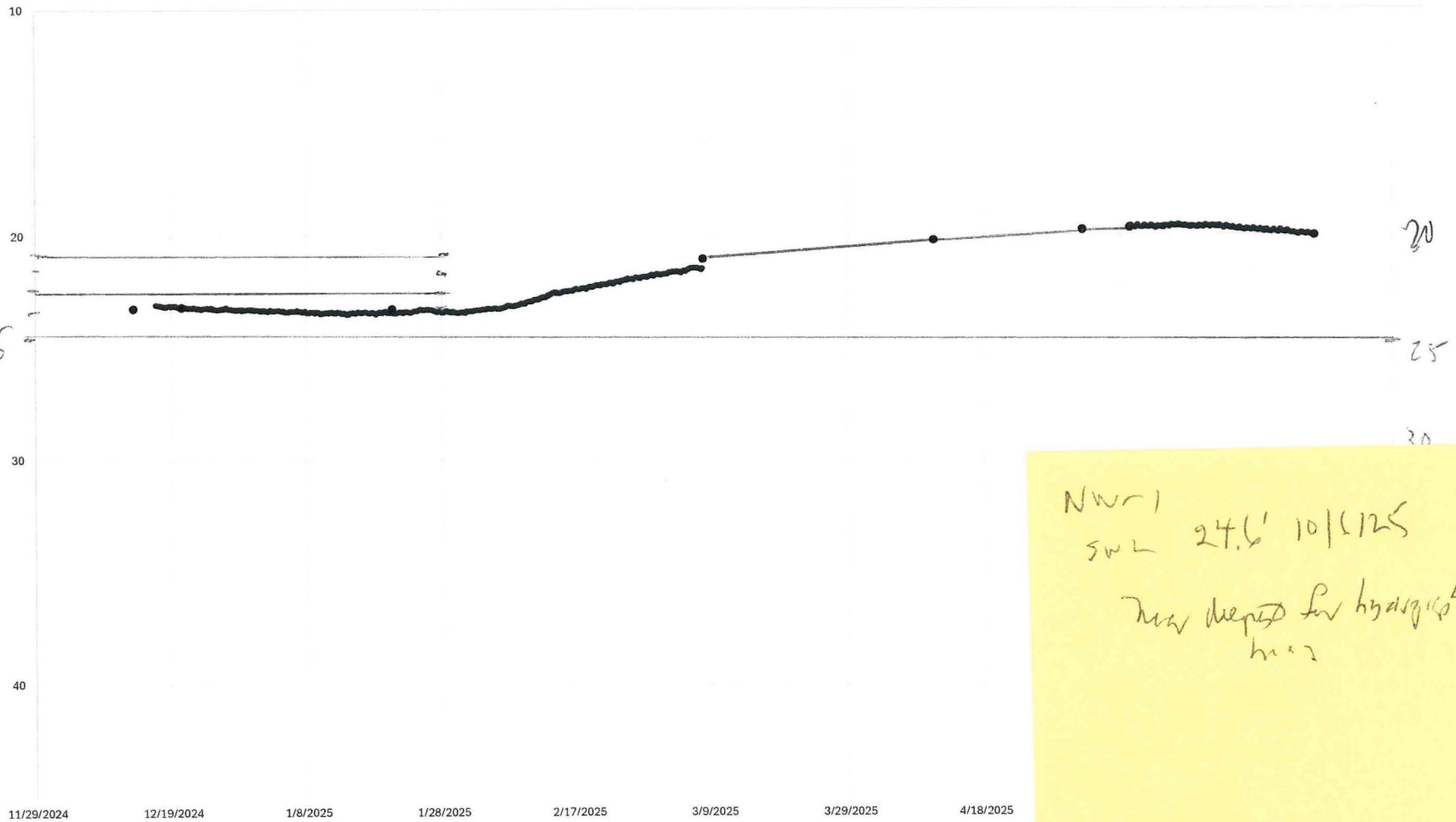
APN:

ATTACHMENT B
TRANSDUCER WATER-LEVEL HYDROGRAPHS
FOR WELLS

WCP Developers, Sample Site, NW-1

1.43" = 10'
1" = 7.0'

Depth to Water (ft) from Ground Surface

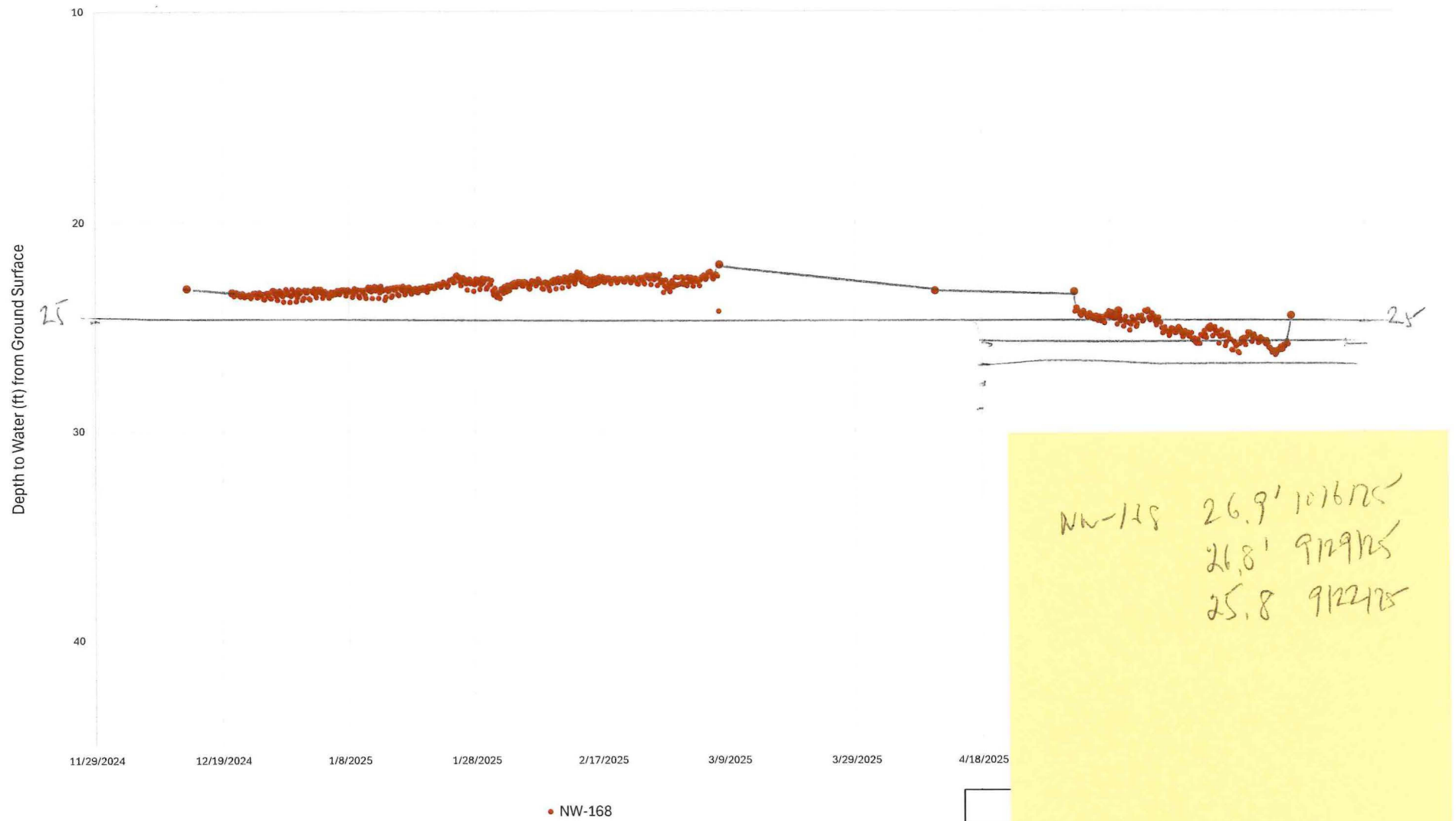


• NW-1



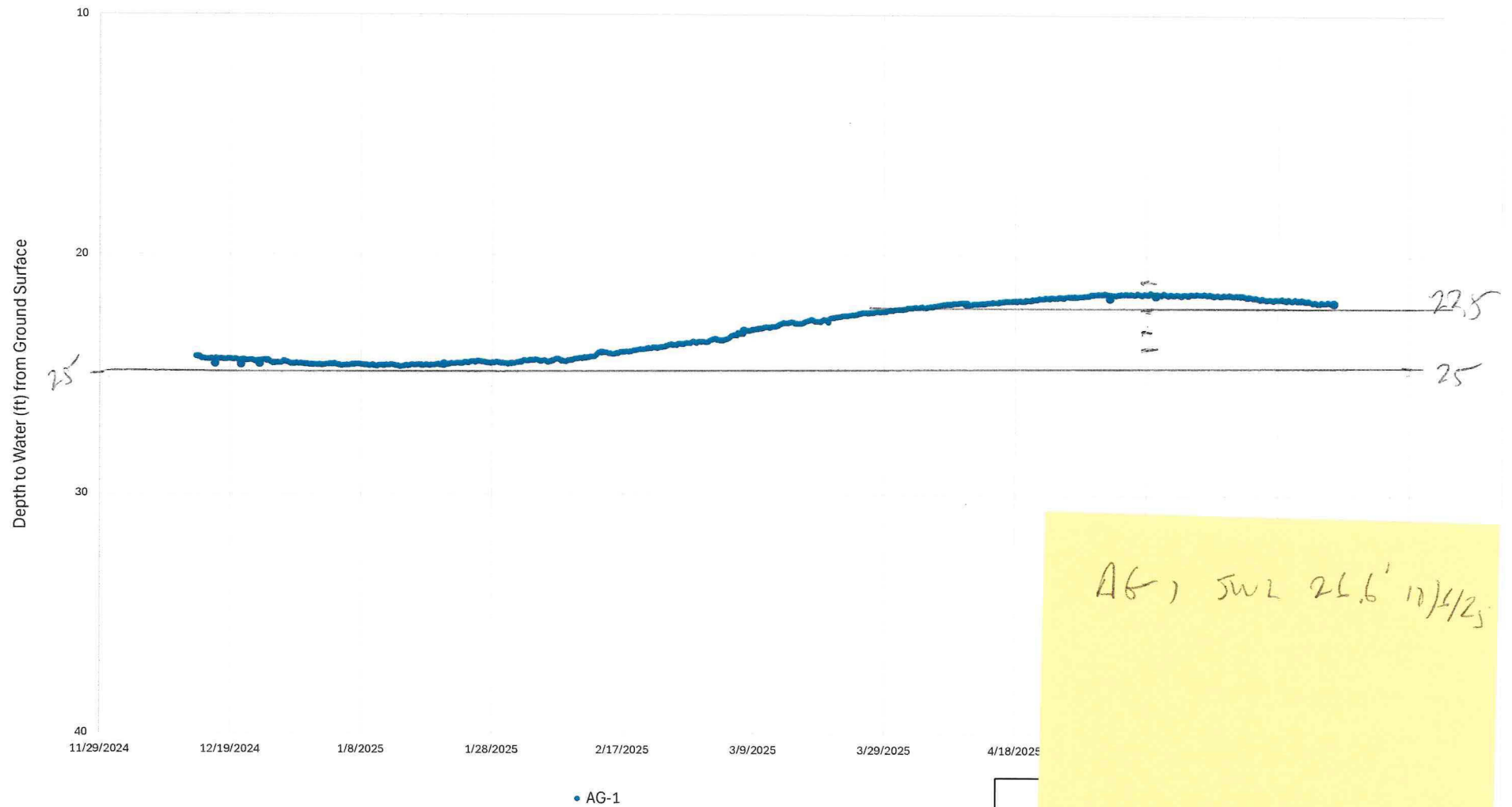
NW-1
SWL 24.6' 10/1/25
Now deeper for hydrograph
h₂2

WCP Developers, Sample Site, NW-168



NW-118 26.9' 10/16/25
26.8' 9/12/25
25.8 9/22/25

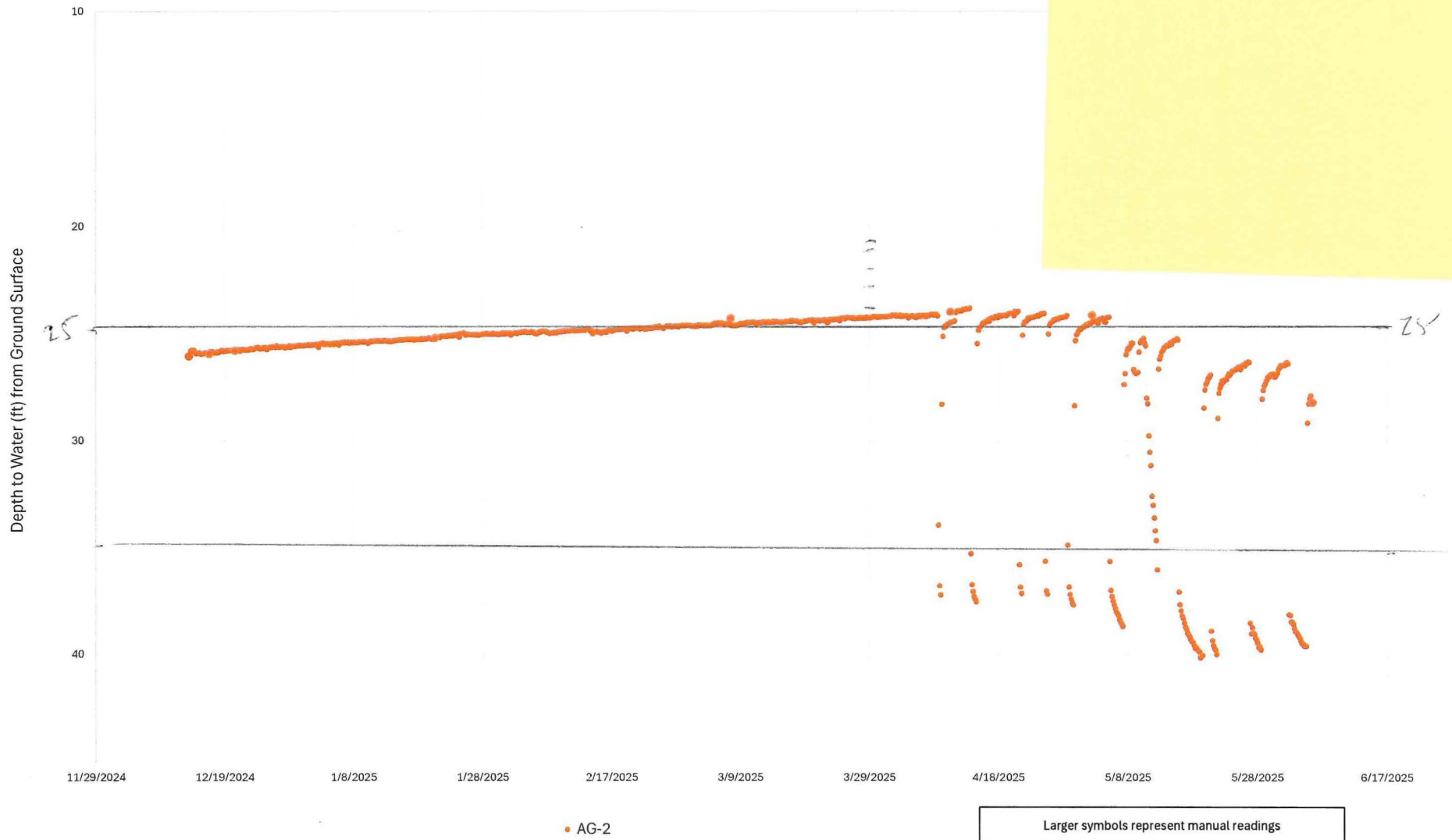
WCP Developers, Sample Site, AG-1



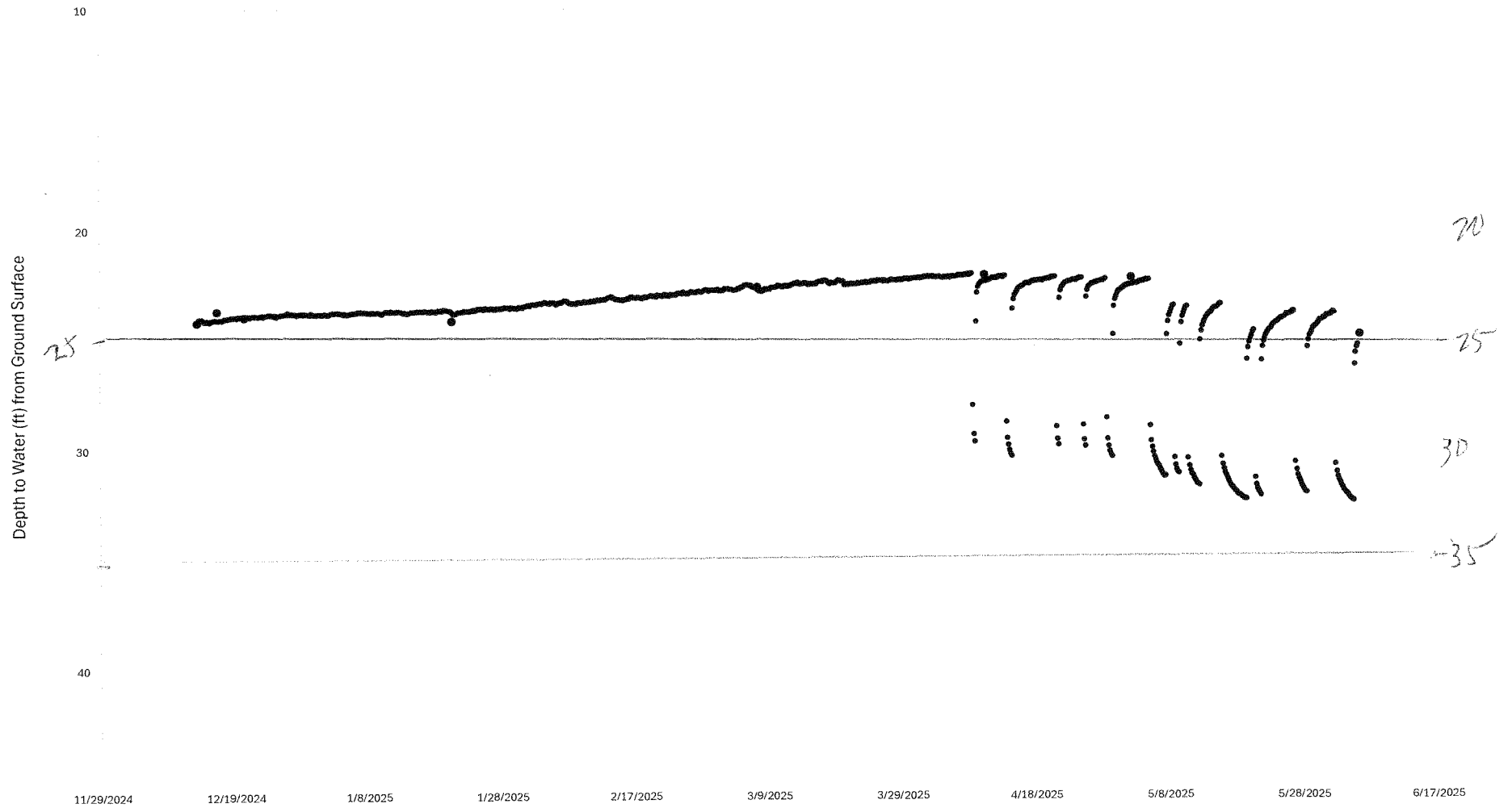
AG-1 SWL 22.6' 10/4/25

WCP Developers, Sample Site, AG-2

AG-2 SWL 27.2 9/29/25



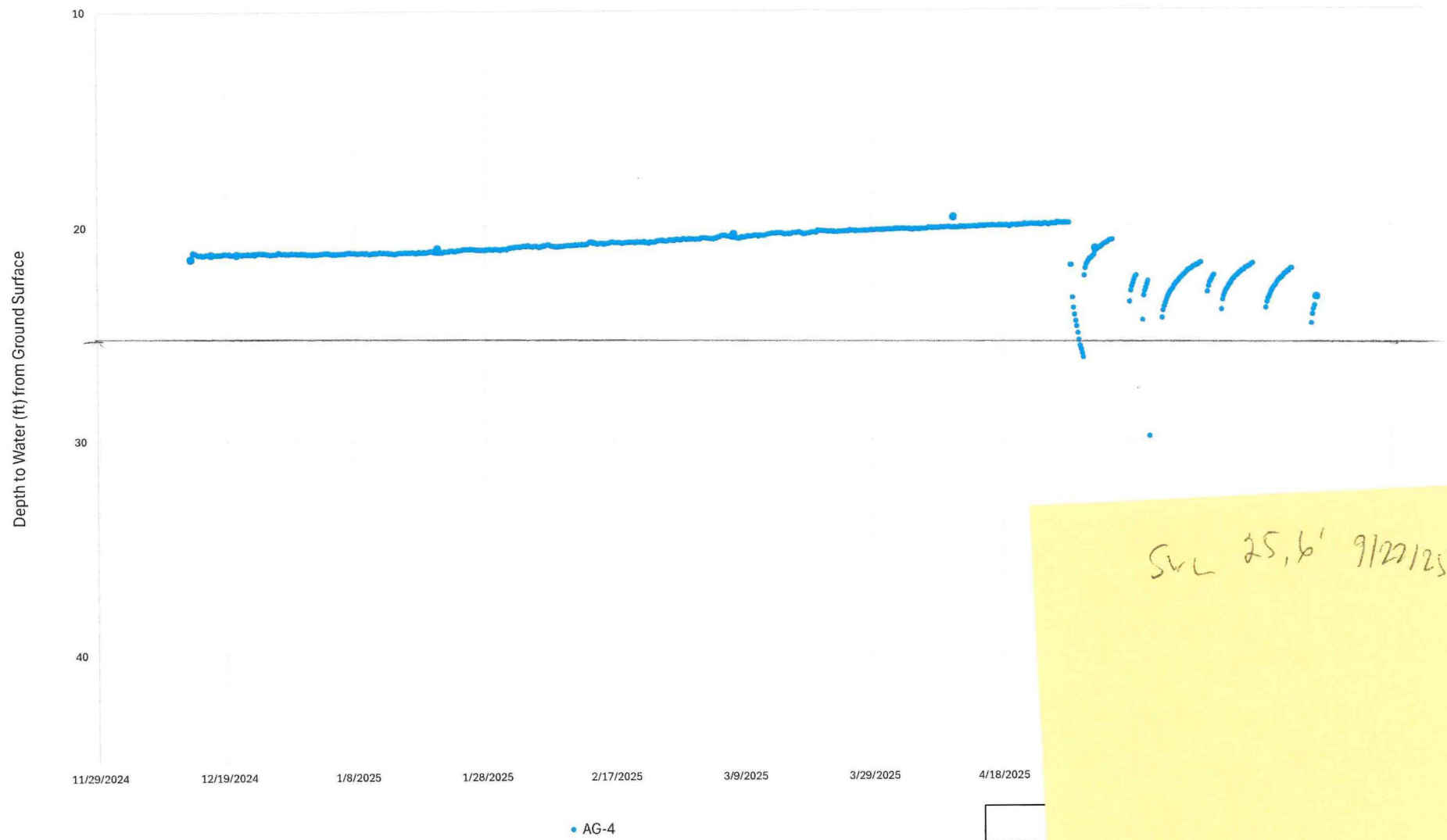
WCP Developers, Sample Site, AG-3



• AG-3

Larger symbols represent manual readings

WCP Developers, Sample Site, AG-4



WCP Developers, Sample Site. AG-5



ATTACHMENT C

DRAWDOWN MEASUREMENTS FOR PUMP TEST
ON WELL NW-4

KENNETH D. SCHMIDT & ASSOCIATES

DRAWDOWN MEASUREMENTS

Pump Setting 360'
T.D. 420' Hardrock well

Well: Sample Ranch NW-4Date: 9/22/25 - 9/25/25

Date	Time	t		Depth to Water (feet)	Discharge		Notes
		(min)	(day)		Totalizer (gallons)	Instant (gpm)	
9/22/25	8:08am		SWL=	266.10 = 26.10	147,397		
	8:10am		SWL=	266.10 = 26.10			
	9:05		SWL=	266.10 = 26.10			
	9:20	Begin Pumping					
	9:21	1		374.62 = 37.62		37	Open valve
	9:22	2		824.30 = 82.30			
	9:24	4		1084.0 = 108.0		32	Roy Jimenez
	9:27	7		1184.75 = 118.75		25	from Fresno Co. on site
	9:29	9		1164.22 = 116.22	147,678	22	
	9:33	13		1114.0 = 111.0			
	9:35	15			147,798		
	9:44	20		176		17	EC 610umho
	9:50	30		2184.2 = 218.2			Water is dark colored
	9:55	35			148,144		
	9:58	38		236			* Approximate
	10:05	45		236		17	water level
	10:10	50					Difficult to
	10:18	58		226	148,397	12	measure
	10:25	65		230	148,471	11	27psi
	10:35	75		231	148,578	11	
	10:40	80		Can not measure	water level	11	
	Called Bradley			unable to measure water level			
	11:13	Can't measure	we below		149,035	11	Sounding Tube is in wrong location - Fix & Secure.
		270-ft in sounding tube					
	11:45	Bradley on site. Problem			w/ Sounding tube -		

KENNETH D. SCHMIDT & ASSOCIATES

DRAWDOWN MEASUREMENTSWell: Sample Ranch NW-4Date: 9/22/25 - 9/25/25

Date	Time	t		Depth to Water (feet)	Discharge		Notes
		(min)	(day)		Totalizer (gallons)	Instant (gpm)	
	12:20pm	180		358			AT PUMP
	12:20pm	Pump	off	Check Flow Meter			
	12:21pm	Pump	on	Problem Fixed			
	12:29	189				13.5	
	12:30	190		$360 + 0 = 360$	149,981		pumping level is near the pump
	12:37	197		$354 + .75 = 354.75$		4.2	Close Valve
	12:39	199		$350 + 1.95 = 350.95$			Maintain
	12:42	202		343.80			
	12:46	206		352.75	149,898		Pumping Level 340-350 ft
	12:50	210		356.65	149,931		Ag Wells 2, 3 & 5
	1:00pm	220		360.3	150,018	8.4	Pumping 12pm-5pm
	1:10	230		344.90	150,072	5.1	
	1:20	240		346.75	150,155	8.3	18psi
	1:30	250		348.0	150,243	8.8	18psi
	1:40	260		348.50	150,331	9.1	
	1:50	270		348.42	150,420	8.6	
	2pm	280		348.10	150,506	8.6	18psi
	2:30	310		348.39	150,746	8.0	
	2:40	320		347.60	150,827	8.1	
	2:50	330		345.11	150,916	8.9	
	3:00	340		343.80	151,005	8.9	
	3:35	345		343.21	151,299	8.4	
	3:45	355		343.10	151,380	8.1	
	3:55	365		343.21	151,465	8.5	
'13	8:32am	1392		85.12	1160,066		Ag Wells 2, 3 & 5 12pm-2am

KENNETH D. SCHMIDT & ASSOCIATES

DRAWDOWN MEASUREMENTSWell: Sample Ranch NW-4Date: 9/22/25 - 9/25/25

Date	Time	t		Depth to Water (feet)	Discharge		Notes
		(min)	(day)		Totalizer (gallons)	Instant (gpm)	
9/23	8:40am	1400		85.12	160,140	9.25	
	8:54	1414		85.12	160,277	9.78	
	9:07	Pump off to Trouble Shoot			Remove flow meter		
	9:11	Pump on		184		38	
	9:13	Pump off					
	9:35	Pump on		270	160,792	38	50 psi
	9:43	Trouble Shoot flow meter problem					
	11:02am	Pump Off Install new flow meter					
	11:12	Begin Pumping		244	220		
	11:14	1551		329	248	18	
	11:19	1559		344.70	324		
	11:23	1562		360	381		Decrease Q
	11:28	1568		360	421	8	
	11:38	1578		359.11	495	7.4	
	11:48	1588		358.40	568	7	
	12pm	1600		357.31	653	7	
	12:30	1630		354.81	870	7.2	
	12:40	1640		354.50	943		
	1:00	1660		354.23	1,092	7.4	
	1:30	1690		354.65	1,310	7.2	
	2pm	1720		354.88	1,529	7.3	
	2:30	1750		355.30	1,747		
	3pm	1780		355.60	1,965	7.2	
9/24/25	8:40am	2840		360	9,496	6.6	All wells all
	8:45	2845		360	9,529	6.6	off

DRAWDOWN MEASUREMENTS

Date: 9/22/25 - 9/25/25

[illegible]

Well No. NW-168

Page No. 1 / 1 ~~Perf. Interval (ft.)~~ T.D. 420 ft

Ohs, Well

Hardware
Wells

DRAWDOWN MEASUREMENTS

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

[illegible]

Well No.

AG-4 Lateral Well

Page No.

Perf. Interval (ft.)

Obs. Well

Has Transducer

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

[illegible]

ATTACHMENT D

**RECOVERY MEASUREMENTS FOR PUMP TEST
ON WELL NW-4**

Sample Ranch
Well No. NW-4SWL (ft.) 26.10

RECOVERY MEASUREMENTS

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

90% Recovery, 59.49 ft

Time (Min.)	Date/Time	Depth to Water (feet)	Time (Min.)	Date/Time	Depth To Water (feet)
	9/25/25 9:20am	Pump Off	105	11:05	541.28 = 542.8
1	9:21	3551.90 = 355.90	115	11:15	471.45 = 47.45
2	9:22	3501.18 = 350.18	125	11:25	451.45 = 45.45
3	9:23	3441.91 = 344.91	130	11:30	431.57 = 43.57
4	9:24	3391.70 = 339.70	135	11:35	421.50 = 42.50
5	9:25	331.65 = 3331.65	140	11:40	411.61 = 41.61
6	9:26	3271.30 = 327.30	145	11:45	41 + 0 = 41.0
8	9:28	3261.80 = 326.80	150	11:50	401.20 = 40.20
10	9:30	3131.10 = 313.0	155	11:55	391.40 = 39.40
15	9:35	2881.58 = 288.58	160	12pm	381.75 = 38.75
20	9:40	2651.12 = 265.12	183	12:23	361.90 = 36.90
25	9:45	2451.50 = 245.50	193	12:33	361.0 = 36.0
30	9:50	2251.92 = 225.92	205	12:45	351.45 = 35.45
35	9:55	1961.82 = 196.82	220	1pm	341.67 = 34.67
40	10:00	1781.33 = 178.33	235	1:15	331.83 = 33.83
50	10:10	1421.60 = 142.60	250	1:30	331.38 = 33.38
55	10:15	1251.15 = 125.15	280	2:00	331.20 = 33.20
60	10:20	1131.50 = 113.50			
65	10:25	1011.70 = 101.70			
70	10:30	921.55 = 92.55			
75	10:35	851.63 = 85.63			
80	10:40	771.73 = 77.73			
85	10:45	711.71 = 71.71			
90	10:50	671.33 = 67.33			
95	10:55	611.11 = 61.11			
100	11am	571.06 = 57.06			

SWL (ft.) 25.75

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

[illegible]

Well No. A6-4 Observed
SWL (ft.) 25.58

RECOVERY MEASUREMENTS

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

[illegible]

ATTACHMENT E

**DRAWDOWN MEASUREMENTS FOR PUMP TEST
ON WELL NW-168**

KENNETH D. SCHMIDT & ASSOCIATES

DRAWDOWN MEASUREMENTST.D. 420ft
Pump Setting 380ftWell: NW-1168Date: Sept 29 - Oct 2, 2025

1.5 ft stickup

Date	Time	t		Depth to Water (feet)	Discharge		Notes
		(min)	(day)		Totalizer (gallons)	Instant (gpm)	
9/29/25	8:04am		SWL=	264.75 = 26.75	19,641		
9/29/25	8:06		SWL=	264.75 = 26.75			
	8:53		SWL=	264.75 = 26.75			
	9:00am	Begin Pumping					
	9:01	1		494.20 = 49.20		34	
	9:02	2		714.42 = 71.42			
	9:03	3			19,743	28	
	9:04	4		1024.81 = 102.81			
	9:05	5		1184.31 = 118.31	19,797	27	
	9:07	7		1364.21 = 136.21	19,850		
	9:08	8		1544.22 = 154.22		27	
	9:10	10		1644.51 = 164.51	19,926		
	9:15	15		1924.65 = 192.65	20,042	24	
	9:20	20		2204.20 = 220.20	20,152		
	9:25	25		2424.30 = 242.30			T 70.3°F
	9:30	30		2534.15 = 253.15	20,349	19	EC 579 umhos
	9:35	35		2644.35 = 264.35	20,446	19	
	9:40	40		2674.70 = 267.70		19	
	9:45	45		2704.65 = 270.65	20,637	19	Problems w/
	9:50	50		2704.50 = 270.50	20,731	19	well sounder
	9:55	55		2704.70 = 270.70	20,823	18	Change sounder
	10:00	60		2704.30 = 270.30	20,914	18	
	10:10	70		—	21,092	17.8	
	10:20	80		2854.90 = 285.90	21,266	17.4	
	10:30	90		2894.44 = 289.44	21,436	17.0	

KENNETH D. SCHMIDT & ASSOCIATES

DRAWDOWN MEASUREMENTSWell: NW-68Date: Sept 29 - Oct 2, 2025

Date	Time	t		Depth to Water (feet)	Discharge		Notes
		(min)	(day)		Totalizer (gallons)	Instant (gpm)	
9/29/25	10:40am	100		2911.74 = 291.71	21,607	17.1	
	10:50	110		2931.64 = 293.64	21,776		
	11:04	124		2961.0 = 296.0	22,017		
	11:10	130		2971.0 = 297.0	22,117	16.6	
	11:20	140		2981.18 = 298.18	22,281	16.4	
	11:30	150		299.33	22,444		
	11:40	160		300.60	22,607	16.3	
	11:50	170		301.58	22,769		
	12pm	180		302.13	22,930		
	12:10	190		303.25	23,092	16.2	
	12:20	200		303.95	23,255		
	12:30	210		304.60	23,417	16.2	
	12:55	235		306.13	23,824		
	1:05	245		306.53	23,990		
	1:15	255		307.05	24,148		
	1:25	265		307.59	24,307	15.9	
	1:35	275		308.0	24,464		
	1:45	285		308.40	24,620		
	2:10	310		309.40	25,083	15.7	
	2:25	325		310.00	25,251		
	2:35	335		310.40	25,407	15.6	
	3pm	360		311.00	25,792		
	3:30	390		311.30	26,275	16.1	
	4pm	420		311.81	26,748		
9/30	8:49 am	1429		3141.02 = 314.02	42,339	15.4	18psi

Well: NW-168

Date: Sept 29 - Oct 2, 2025

[illegible]

Well No. NW-4

Page No. 1 / 1

Perf. Interval (ft.) L.D. 420ft

obs when

DRAWDOWN MEASUREMENTS

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

[illegible]

Well No. AG-2

Page No. 1 / 1

Perf Interval (ft.) T.D. 69 ft

Lateral Well

DRAWDOWN MEASUREMENTS

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

[illegible]

ATTACHMENT F

**RECOVERY MEASUREMENTS FOR PUMP TEST
ON WELL NW-168**

Well No. NW-168SWL (ft.) 26.75**RECOVERY MEASUREMENTS**KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

90% Recovery 55.15ft

Time (Min.)	Date/Time	Depth to Water (feet)	Time (Min.)	Date/Time	Depth To Water (feet)
	10/2/25 9:00am	Pump off	90	10:30am	80+0 = 80.0
1	9:01am	302+88 = 302.88	100	10:40	76+14 = 76.14
2	9:02	292+20 = 292.20	105	10:45	74+38 = 74.38
3	9:03	284+15 = 284.15	110	10:50	73+0 = 73.0
4	9:04	274+65 = 274.65	115	10:55	71+84 = 71.84
5	9:05	266+92 = 266.92	120	11am	70+53 = 70.53
6	9:06	260+34 = 260.34	125	11:05	69+37 = 69.37
7	9:07	252+97 = 252.97	130	11:10	68+43 = 68.43
8	9:08	247+40 = 247.40	135	11:15	67+45 = 67.45
9	9:09	239+95 = 239.95	140	11:20	66+44 = 66.44
10	9:10	234+0 = 234.0	145	11:25	65+53 = 65.53
15	9:15	205+85 = 205.85	150	11:30	64+45 = 64.45
20	9:20	180+20 = 180.20	160	11:40	63+0 = 63.0
25	9:25	161+80 = 161.80	170	11:50	61+64 = 61.64
30	9:30	145+50 = 145.50	180	12pm	60+0 = 60.0
35	9:35	132+0 = 132.00	200	12:20	57+85 = 57.85
40	9:40	122+55 = 122.55	210	12:30	56+73 = 56.73
45	9:45	114+05 = 114.05	230	12:50	54+67 = 54.67
50	9:50	106+15 = 106.15	240	1:00	53+86 = 53.86
55	9:55	101+75 = 101.75	250	1:10	53+30 = 53.30
60	10:00	96+74 = 96.74	260	1:30	52+81 = 52.81
65	10:05	92+45 = 92.45	270	1:40	52+19 = 52.19
70	10:10	89+65 = 89.65	290	2:00	51+67 = 51.67
75	10:15	87+50 = 87.50	1400	10/3 9:30am	31+70 = 31.70
80	10:20	84+0 = 84.0			
85	10:25	81+70 = 81.70			

Well No. NW-4

Obs Well

RECOVERY MEASUREMENTS

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

SWL (ft.) 26.50[illegible]

Well No. AG-2 Observed

SWL (ft.) 27.15

RECOVERY MEASUREMENTS

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

[illegible]

ATTACHMENT G

**DRAWDOWN MEASUREMENTS FOR PUMP TEST
ON WELL NW-1**

KENNETH D. SCHMIDT & ASSOCIATES

DRAWDOWN MEASUREMENTS

T.D. 340ft
 Pump Setting 300ft
 Well: Sample Ranch NW-1

Date: Oct 6 - 9, 2025

Date	Time	t		Depth to Water (feet)	Discharge		Notes
		(min)	(day)		Totalizer (gallons)	Instant (gpm)	
10/6/25	8:20am		SWL=	244.62			
	8:22am		SWL=	244.62	317,022		
	9:10	Pump On & Off - can't measure				WL	Bradley crew moved sounding tube
	9:20				317,038		
	9:20	Begin Pumping					
	9:21	1		334.02 = 33.02		81	Valve wide open
	9:23	3		374.70 = 37.70	317,370		
	9:25	5		381.55 = 38.55			
	9:27	7		381.75 = 38.75	317,790		
	9:30	10		394.54 = 39.54	317,929		T 66.7°F
	9:35	15		394.55 = 39.55	318,260		EC 482 umh
	9:40	20		394.74 = 39.74	318,730	80	
	9:45	25		394.85 = 39.85	319,125	79	
	9:50	30		404.10 = 40.10	319,522	79.4	
	9:55	35		404.10 = 40.10	319,920	79.6	
	10:00	40		394.90 = 39.90	320,319	79.8	
	10:05	45		404.0 = 40.0			
	10:10	50		404.15 = 40.15			
	10:15	55		404.28 = 40.28	321,555		
	10:20	60		404.33 = 40.33	321,965	82.0	
	10:25	65		404.46 = 40.46	322,360	79	
	10:30	70		404.46 = 40.46	322,766		
	10:40	80		404.33 = 40.46	323,567	80.1	
	10:50	90		404.33 = 40.33			
	11:00	100		404.55 = 40.55	325,176	80.4	

KENNETH D. SCHMIDT & ASSOCIATES

DRAWDOWN MEASUREMENTSWell: Sample Ranch NW-1Date: Oct 6-9, 2025

Date	Time	t		Depth to Water (feet)	Discharge		Notes
		(min)	(day)		Totalizer (gallons)	Instant (gpm)	
10/6/25	11:10am	110		40+32 = 40.32	325,976	80	
	11:20	120		40+25 = 40.25	326,780	80.4	
	11:30	130		40+25 = 40.25	327,591	81.1	
	11:40	140		40+25 = 40.25	328,394		
	12pm	160		40+25 = 40.25	330,092	84.9	
	12:10	170		40+30 = 40.25			
	12:30	190		40+30 = 40.25	332,395	76.7	
	12:50	210		40+30 = 40.25	333,985	79.7	
	1:00	220		40+30 = 40.25	335,576	79.5	
	1:30	250		40+30 = 40.25	337,172	79.8	
	1:50	270		40+30 = 40.25	338,764	79.6	
	2:10	290		40+30 = 40.25	340,358	80.2	
10/7/25	7:28am	1328		40+40 = 40.40	423,620	79.3	
	7:38am	1338		40+40 = 40.40	424,413	79.3	
	5:23pm	1923		40+0 = 40.0	470,208	78.2	
	5:31	1931		40+0 = 40.0	470,800	74.0	
10/8/25	9:10am	2866		39+0 = 39.0	540,370	74.4	
	9:20	2880		39+0 = 39.0	541,382	72.2	
	4:10pm	3290		38+20 = 38.20	569,721	69.5	
	4:15pm	3295		38+14 = 38.14	569,552		EC 479 umhos
10/9/25	8:27am	4267		36+90 = 36.90	632,488	64.8	TL 66.2°F
	9:18			36+90 = 36.90			
	9:20am		Pump	Off	635,917		Valve all the way open
							12psi

Well No. NW-168

Page No. 1 / 1

Perf. Interval (ft.) TD. 420 ft

Obs when

DRAWDOWN MEASUREMENTS

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

[illegible]

Well No. A9 Well 1

Page No. 1 / 1 Perf. Interval (ft.) T.D. 66 ft

Unused Lateral Well

Obs Wels

DRAWDOWN MEASUREMENTS

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

[illegible]

ATTACHMENT H
RECOVERY MEASUREMENTS FOR PUMP TEST
ON WELL NW-1

Well No. NW-1SWL (ft.) 24.62**RECOVERY MEASUREMENTS****KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS**

Time (Min.)	Date/Time	Depth to Water (feet)	Time (Min.)	Date/Time	Depth To Water (feet)
	10/9/25 9:20am	Pump Off	200	10/9/25 12:40p	24ft.63 = 24.63
1	9:21	31ft.10 = 31.10	1356	10/10/25 7:56am	24ft.52 = 24.52
2	9:22	27ft.95 = 27.95			
3	9:23	26ft.78 = 26.78			
4	9:24 am	26ft.26 = 26.26			
5	9:25	25ft.82 = 25.82			
6	9:26	25ft.75 = 25.75			
8	9:28 am	25ft.51 = 25.51			
10	9:30	25ft.50 = 25.50			
15	9:35	25ft.32 = 25.32			
20	9:40	25ft.25 = 25.25			
25	9:45 am	25ft.18 = 25.18			
30	9:50	24ft.90 = 24.90			
35	9:55	24ft.84 = 24.84			
40	10:00 am	24ft.94 = 24.94			
45	10:05	24ft.80 = 24.80			
50	10:10 am	24ft.90 = 24.90			
55	10:15 am	24ft.86 = 24.86			
70	10:30 am	24ft.92 = 24.92			
85	10:45 am	24ft.79 = 24.79			
100	11 am	24ft.90 = 24.90			
115	11:15 am	24ft.79 = 24.79			
130	11:30 am	24ft.62 = 24.62			
145	11:45 am	24ft.60 = 24.60			
165	12:05 pm	24ft.63 = 24.63			
180	12:20 pm	24ft.60 = 24.60			

Well No. NW-168

SWL (ft.) 26.92

RECOVERY MEASUREMENTS

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

[illegible]

Well No. AG-2

SWL (ft.) 26.60

RECOVERY MEASUREMENTS

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

[illegible]

ATTACHMENT I
CHEMICAL ANALYSES OF WATER FROM
PUMPED WELLS

Certificate of Analysis

Sample ID: AII3237-01
Sampled By: Cheryl Lassotovitch
Sample Description: Sample Ranch NW-4

Sample Date - Time: 09/25/2025 - 08:30
Matrix: Water
Sample Type: Grab

NCP

BSK Associates Laboratory Fresno
General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Alkalinity as CaCO ₃	SM 2320B	150	3.0	mg/L	1	AII1986	09/30/25	09/30/25	
Bicarbonate as CaCO ₃	SM 2320B	150	3.0	mg/L	1	AII1986	09/30/25	09/30/25	
Carbonate as CaCO ₃	SM 2320B	ND	3.0	mg/L	1	AII1986	09/30/25	09/30/25	
Hydroxide as CaCO ₃	SM 2320B	ND	3.0	mg/L	1	AII1986	09/30/25	09/30/25	
Chloride	EPA 300.0	240	1.0	mg/L	1	AII1783	09/26/25	09/26/25	
Conductivity @ 25C	SM 2510B	1000	5.0	umhos/cm	1	AII1986	09/30/25	09/30/25	
Nitrate as N	EPA 300.0	0.48	0.23	mg/L	1	AII1783	09/26/25 13:52	09/26/25	
pH (1)	SM 4500-H+ B	7.7	0.0	pH Units	1	AII1986	09/30/25 19:19	09/30/25	
pH Temperature in °C		19.0							
Sulfate as SO ₄	EPA 300.0	9.3	1.0	mg/L	1	AII1783	09/26/25	09/26/25	
Total Dissolved Solids	SM 2540C	730	5.0	mg/L	1	AII1926	09/30/25	09/30/25	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic - Dissolved (1)	EPA 200.8	3.2	2.0	ug/L	1	AIJ0076	10/01/25	10/03/25	
Calcium - Dissolved (1)	EPA 200.7	76	0.10	mg/L	1	AIJ0076	10/01/25	10/02/25	MS1.4
Iron - Dissolved (1)	EPA 200.7	ND	30	ug/L	1	AIJ0076	10/01/25	10/02/25	
Magnesium - Dissolved (1)	EPA 200.7	34	0.10	mg/L	1	AIJ0076	10/01/25	10/02/25	MS1.4
Manganese - Dissolved (1)	EPA 200.7	ND	10	ug/L	1	AIJ0076	10/01/25	10/02/25	
Potassium - Dissolved (1)	EPA 200.7	8.5	2.0	mg/L	1	AIJ0076	10/01/25	10/02/25	
Sodium - Dissolved (1)	EPA 200.7	78	1.0	mg/L	1	AIJ0076	10/01/25	10/02/25	MS1.4

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
<u>EDB and DBCP by GC-ECD</u>									
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	All1844	09/29/25	09/30/25	
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	All1844	09/29/25	09/30/25	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	99 %	Acceptable range: 70-130 %						
<u>1,2,3-Trichloropropane by GC-MS SIM</u>									
1,2,3-Trichloropropane	DWRL-123TCP	ND	0.0050	ua/L	1	AIJ0006	10/01/25	10/01/25	

October 17, 2025

BSK Associates Engineers & Laboratories
 687 N. Laverne Ave.
 Fresno, CA 93727

Description : Sample Ranch NW-4
 Project : AII3237

Lab No. : SP 2516569-001
 Customer No. : 2022939

Sampled On : September 25, 2025 at 08:30
 Sampled By : Cheryl Lassotovitch
 Received On : September 30, 2025 at 12:10
 Matrix : Water

Sample Results - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	DQF	Sample Preparation			Sample Analysis			
Radio Chemistry						Date	Time	Who	Method	Date	Time	Who
Gross Alpha (Dissolved)	6.43 ± 1.48	0.316	pCi/L		h	10/08/2025	08:00	jnr	EPA 900.0	10/08/2025	12:03	amr

DQF Flags Definition:

h The MS/MSD did not meet QC criteria.

ND=Non-Detected, RL=Reporting Level

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.

MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).

AV = Assigned Value(Gross Alpha Result + (0.84 x Error)). CCR Section 64442: Drinking Water Compliance Note: Do the following If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:

Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L

Uranium is less than or equal to 20 pCi/L

Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.



687 N. Laverne Ave., Fresno, CA 93727
(559) 497-2888 CA ELAP No. 1180
www.bskassociates.com

Turnaround Time Request

- ☒ Standard - 10 business days
☐ Rush (Surcharge may apply)
Date needed:

Alt3237 KenSe4412 09/25/2025



10

Temp: 10.4 °C Thermometer ID: #412

*Required Fields

Company/Client Name*: Ken Schmidt & Assoc		Report Attention*: Cheryl Lassotovitch		Invoice To*: PO#:		Phone*: (559) 224-4412		Fax*: (559) 224-4413	
Address*: 600 W. Shaw Ave Ste 250		City*: Fresno		State*: CA		Zip*: 93704		E-mail*: classotovitch@gmail.com	
Project: Sample Ranch		Project #:		Phase #:		Task #:			
Reporting Options: ☐ Trace (J-Flag) ☐ Swamp ☐ EDD Type: _____		Regulatory Carbon Copies ☐ SWRCB (Drinking Water) ☐ Merced Co ☐ Fresno Co ☐ Madera Co ☐ Tulare Co ☐ Other: _____		Regulatory Compliance ☐ EDT to California SWRCB (Drinking Water) System Number*: _____ ☐ Geotracker #: _____					
Sampler Name (Printed/Signature)*: Cheryl Lassotovitch		Matrix Types: SW=Surface Water BW=Bottled Water GW=Ground Water WW=Waste Water STW=Storm Water DW=Drinking Water SO=Solid							
#	Sample Description*	Sampled* Date Time		Matrix*	Comments / Station Code / WTRAX				
1	Sample Ranch NW-4	9/25/25 8:30am		W					
2	504 TB - #0925031								
3	TCP + B - # 0925026								
Received by: (Signature and Printed Name) Cheryl Lassotovitch		Company EDSA		Date 9/25	Time 11:12pm	Received by: (Signature and Printed Name)		Company	
Received by: (Signature and Printed Name)		Company		Date	Time	Received by: (Signature and Printed Name)		Company	
Received for Lab by: (Signature and Printed Name) [Signature]		Date 9/25		Time 7:30	Payment Received at Delivery: Date:		Amount:	PIA#	Check / Cash Init.
Shipping Method: GLS UPS WALK-IN FED EX PMS Courier:		Custody Seal: Y / N		Chilling Process Begun: Y / N					
Cooling Method: Wet Blue None									

Payment for services rendered as noted herein, are due in full within 30 days from the date invoiced. If not so paid, account balances are deemed delinquent. Delinquent balances are subject to monthly service charges and interest specified in BSK's current Standard Terms and Conditions for Laboratory Services. The person signing for the Client/Company acknowledges that they are either the Client or an authorized agent to the Client, that the Client agrees to be responsible for payment for the services on the Chain of Custody, and agrees to BSK's terms and conditions for laboratory services unless contractually bound otherwise. BSK's current terms and conditions can be found at www.bskassociates.com/BSKLabTermsConditions.pdf

SR-FL-0012-09

Certificate of Analysis

Sample ID: AIJ0342-01
 Sampled By: Cheryl Lassotovitch
 Sample Description: Sample Ranch NW-168

Sample Date - Time: 10/02/2025 - 08:30

Matrix: Water

Sample Type: Grab

NCP

BSK Associates Laboratory Fresno
General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Alkalinity as CaCO ₃	SM 2320B	140	3.0	mg/L	1	AIJ0505	10/07/25	10/07/25	
Bicarbonate as CaCO ₃	SM 2320B	140	3.0	mg/L	1	AIJ0505	10/07/25	10/07/25	
Carbonate as CaCO ₃	SM 2320B	ND	3.0	mg/L	1	AIJ0505	10/07/25	10/07/25	
Hydroxide as CaCO ₃	SM 2320B	ND	3.0	mg/L	1	AIJ0505	10/07/25	10/07/25	
Chloride	EPA 300.0	200	1.0	mg/L	1	AIJ0244	10/03/25	10/03/25	
Conductivity @ 25C	SM 2510B	860	5.0	umhos/cm	1	AIJ0505	10/07/25	10/07/25	
Nitrate as N	EPA 300.0	ND	0.23	mg/L	1	AIJ0244	10/03/25 18:37	10/03/25	
pH (1)	SM 4500-H+ B	7.9	0.0	pH Units	1	AIJ0505	10/07/25 20:19	10/07/25	
pH Temperature in °C		18.2							
Sulfate as SO ₄	EPA 300.0	9.8	1.0	mg/L	1	AIJ0244	10/03/25	10/03/25	
Total Dissolved Solids	SM 2540C	570	5.0	mg/L	1	AIJ0573	10/08/25	10/08/25	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic - Dissolved (1)	EPA 200.8	2.0	2.0	ug/L	1	AIJ0297	10/06/25	10/09/25	
Calcium - Dissolved (1)	EPA 200.7	75	0.10	mg/L	1	AIJ0297	10/06/25	10/16/25	B1.3
Iron - Dissolved (1)	EPA 200.7	ND	30	ug/L	1	AIJ0297	10/06/25	10/16/25	
Magnesium - Dissolved (1)	EPA 200.7	22	0.10	mg/L	1	AIJ0297	10/06/25	10/16/25	
Manganese - Dissolved (1)	EPA 200.7	52	10	ug/L	1	AIJ0297	10/06/25	10/16/25	
Potassium - Dissolved (1)	EPA 200.7	4.5	2.0	mg/L	1	AIJ0297	10/06/25	10/16/25	
Sodium - Dissolved (1)	EPA 200.7	82	1.0	mg/L	1	AIJ0297	10/06/25	10/16/25	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
<u>EDB and DBCP by GC-ECD</u>									
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	AIJ0394	10/07/25	10/07/25	
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	AIJ0394	10/07/25	10/07/25	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	104 %	Acceptable range: 70-130 %						
<u>1,2,3-Trichloropropane by GC-MS SIM</u>									
1,2,3-Trichloropropane	DWRL-123TCP	ND	0.0050	ug/L	1	AIJ0393	10/07/25	10/07/25	

October 23, 2025

BSK Associates Engineers & Laboratories
 687 N. Laverne Ave.
 Fresno, CA 93727

Description : Sample Ranch NW-168
 Project : AIJ0342

Lab No. : SP 2517057-001
 Customer No. : 2022939

Sampled On : October 2, 2025 at 08:30
 Sampled By : Cheryl Lassotovitch
 Received On : October 7, 2025 at 11:11
 Matrix : Water

Sample Results - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	DQF	Sample Preparation			Sample Analysis		
Radio Chemistry						Date	Time	Who	Method	Date	Time Who
Gross Alpha (Dissolved)	6.56 ± 1.46	0.301	pCi/L			10/16/2025	08:00	jnr	EPA 900.0	10/16/2025	14:09 amr

DQF Flags Definition:

ND=Non-Detected, RL=Reporting Level

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.

MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).

AV = Assigned Value(Gross Alpha Result + (0.84 x Error)). CCR Section 64442: Drinking Water Compliance Note: Do the following If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:

Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L

Uranium is less than or equal to 20 pCi/L

Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.

Certificate of Analysis

Sample ID: AIJ1314-01
Sampled By: Client
Sample Description: Sample Ranch NW-1

Sample Date - Time: 10/09/2025 - 09:00
Matrix: Water
Sample Type: Grab

Sample Qualifiers: SC1.10

BSK Associates Laboratory Fresno
General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Alkalinity as CaCO ₃	SM 2320B	220	3.0	mg/L	1	AIJ0885	10/13/25	10/13/25	
Bicarbonate as CaCO ₃	SM 2320B	220	3.0	mg/L	1	AIJ0885	10/13/25	10/13/25	
Carbonate as CaCO ₃	SM 2320B	ND	3.0	mg/L	1	AIJ0885	10/13/25	10/13/25	
Hydroxide as CaCO ₃	SM 2320B	ND	3.0	mg/L	1	AIJ0885	10/13/25	10/13/25	
Chloride	EPA 300.0	24	1.0	mg/L	1	AIJ0748	10/10/25	10/10/25	
Conductivity @ 25C	SM 2510B	540	5.0	umhos/cm	1	AIJ0885	10/13/25	10/13/25	
Nitrate as N	EPA 300.0	1.3	0.23	mg/L	1	AIJ0748	10/10/25 13:31	10/10/25	
pH (1)	SM 4500-H+ B	7.9	0.0	pH Units	1	AIJ0885	10/13/25 22:27	10/13/25	
pH Temperature in °C		19.3							
Sulfate as SO ₄	EPA 300.0	15	1.0	mg/L	1	AIJ0748	10/10/25	10/10/25	
Total Dissolved Solids	SM 2540C	320	5.0	mg/L	1	AIJ1103	10/15/25	10/15/25	

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Arsenic - Dissolved (1)	EPA 200.8	ND	2.0	ug/L	1	AIJ0914	10/14/25	10/17/25	
Calcium - Dissolved (1)	EPA 200.7	48	0.10	mg/L	1	AIJ0914	10/14/25	10/23/25	
Iron - Dissolved (1)	EPA 200.7	ND	30	ug/L	1	AIJ0914	10/14/25	10/23/25	
Magnesium - Dissolved (1)	EPA 200.7	25	0.10	mg/L	1	AIJ0914	10/14/25	10/23/25	
Manganese - Dissolved (1)	EPA 200.7	ND	10	ug/L	1	AIJ0914	10/14/25	10/23/25	
Potassium - Dissolved (1)	EPA 200.7	2.6	2.0	mg/L	1	AIJ0914	10/14/25	10/23/25	
Sodium - Dissolved (1)	EPA 200.7	29	1.0	mg/L	1	AIJ0914	10/14/25	10/23/25	

Organics

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
<u>EDB and DBCP by GC-ECD</u>									
Ethylene Dibromide (EDB)	EPA 504.1	ND	0.020	ug/L	1	AIJ0917	10/14/25	10/15/25	
Dibromochloropropane (DBCP)	EPA 504.1	ND	0.010	ug/L	1	AIJ0917	10/14/25	10/15/25	
Surrogate: 1-Br-2-Nitrobenzene	EPA 504.1	99 %	Acceptable range: 70-130 %						
<u>1,2,3-Trichloropropane by GC-MS SIM</u>									
1,2,3-Trichloropropane	DWRL-123TCP	ND	0.0050	ug/L	1	AIJ1125	10/16/25	10/16/25	

October 28, 2025

BSK Associates Engineers & Laboratories
 687 N. Laverne Ave.
 Fresno, CA 93727

Description : Sample Ranh NW-1
 Project : AIJ1314

Lab No. : SP 2517564-001
 Customer No. : 2022939

Sampled On : October 9, 2025 at 09:00
 Sampled By : Client
 Received On : October 14, 2025 at 11:00
 Matrix : Water

Sample Results - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	DQF	Sample Preparation			Sample Analysis		
Radio Chemistry						Date	Time	Who	Method	Date	Time Who
Gross Alpha (Dissolved)	4.64 ± 1.44	1.62	pCi/L			10/16/2025	08:00	jnr	EPA 900.0	10/20/2025	07:44 amr

DQF Flags Definition:

ND=Non-Detected, RL=Reporting Level

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.

MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).

AV = Assigned Value(Gross Alpha Result + (0.84 x Error)). CCR Section 64442: Drinking Water Compliance Note: Do the following If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

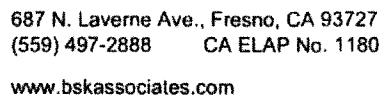
Drinking Water Compliance:

Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L

Uranium is less than or equal to 20 pCi/L

Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.



Temp: 9.2 °C Thermometer ID: 42

☒ Standard - 10 business days
☐ Rush (Surcharge may apply)
 Date needed:

Alf1314 KenSc4412 10/09/2025



1999

Page 13 of 18

Payment for services rendered is noted herein and due in full within 30 days from the date invoiced. If not so paid, account balances are deemed delinquent. Delinquent balances are subject to monthly service charges and interest specified in BSK's current Standard Terms and Conditions for Laboratory Services. The person signing for the Client/Company acknowledges that they are either the Client or an authorized agent to the Client, that the Client agrees to be responsible for payment of the services on this Chain of Custody, and agrees to BSK's terms and conditions for laboratory services unless contractually bound otherwise. BSK's current terms and conditions can be found at: www.bskscience.com/BSKLabTermsConditions

~~W - W/IN - 0~~



RUSSELL A. FRINK
rfrink@kmtg.com

ERIC N. ROBINSON
erobinson@kmtg.com

September 24, 2025

VIA E-MAIL AND U.S. MAIL

Austin Ewell
Ewell Group
695 W. Cromwell Avenue, Ste. 102
Fresno, CA 93711
E-Mail: austin@ewellgroup.com

Re: Riparian Water Rights Analysis for the Sample Ranch

Dear Mr. Ewell:

This letter contains the results of Kronick, Moskovitz, Tiedemann & Girard's ("KMTG") evaluation of riparian water rights for property in Fresno County, California, known as the "Sample Ranch," that consists of Assessor's Parcel Numbers 150-061-025, -026, -027, & -028 ("Subject Property") and totals approximately 390 acres.

The Subject Property is located north of Highway 168, immediately east of the Friant Kern Canal, and is bisected by Big Dry Creek, a tributary to the San Joaquin River, approximately 3 ½ miles upstream of the Big Dry Creek Dam. The focus of this analysis is the riparian right to divert water from Big Dry Creek for use on the Subject Property.

The analysis that follows is not a conclusive determination regarding the riparian water rights for the Subject Property but, rather, presents our opinion of the extent of riparian rights on the Subject Property, based on the information and legal principles summarized below.

We begin with an executive summary that outlines the findings of our analysis and then provide a detailed discussion that describes the facts that we relied on, the legal principles that govern riparian water rights, and the application of those principles to the facts.

I. EXECUTIVE SUMMARY

The Subject Property originally passed into private ownership through four separate patents, three of which included riparian rights at the time of patent because they were appurtenant¹ to Big Dry Creek. As discussed in detail below, based on our evaluation of relevant documents and historical information, the lands covered by these three riparian patents (approximately 320 out of 390 acres) retained riparian rights to divert from Big Dry Creek.

¹ This memorandum uses forms of the terms "appurtenant," "abut," and "contiguous," interchangeably.

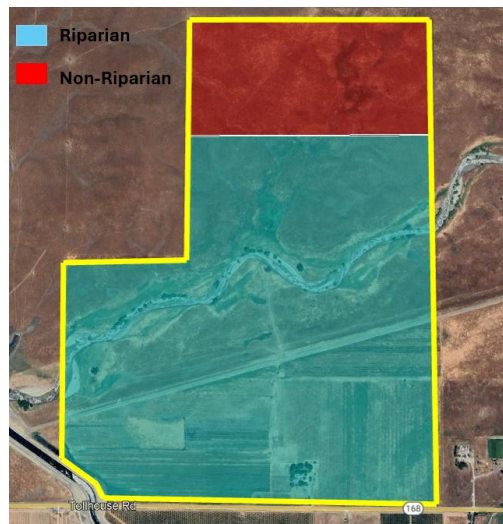


Figure 1. Satellite Image of Subject Property with Riparian Rights Boundary.

II. DETAILED DISCUSSION

This letter evaluates whether specific lands located on both sides of Big Dry Creek in Sections 20 and 21, Township 12 South, Range 22 East, Mount Diablo Base and Meridian in Fresno County have riparian water rights to Big Dry Creek.

The analysis below first involved identification and evaluation of the original patents that comprise the Subject Property to determine whether any portion of those patents abutted Big Dry Creek at the time of patent. For each patent that was riparian at the time of patent, the next step in the analysis involved a detailed review of all subsequent recorded sales and subdivisions of the lands from the time of patent to the modern day to confirm that these lands were not subdivided and sold such that they no longer abutted, or lost physical connection (or “contiguity”) with, Big Dry Creek.

A. Materials Relied On

This evaluation is based solely on a review of the following documents and resources:

- Patent and chain of title documents for the Subject Property.
- Fresno County Assessor’s Parcel Map data, available at:
<https://www.fresnocountyca.gov/Departments/Public-Works-and-Planning/divisions-of-public-works-and-planning/cds/gis-shapefiles>
- Public Land Survey System data provided by the Bureau of Land Management, available at:
<https://www.earthpoint.us/townships.aspx>
- Original survey maps from the Bureau of Land Management’s website.

- Personal interviews with certain descendants of former owners of the Subject Property.

These documents are on file with KMTG and can be provided upon request.

B. Legal Background

1. Basic Characteristics of Riparian Rights

In California, rights to surface water include both appropriative and riparian water rights. Riparian water rights apply to the smallest parcel in the chain of title that abuts a waterway, and which is within the drainage area of that waterway. (*Rancho Santa Margarita v. Vail* (1938) 11 Cal.2d 501, 529.)

Riparian water rights are “part and parcel” of the land, and are neither created by use of water, nor lost by the non-use of water. The riparian right only allows the diversion of natural flows, and not diversion of other flows in the waterway (e.g., imported water or stored water released from a reservoir). Water diverted under a riparian water right may be briefly stored for regulation (30 days) but may not be stored for seasonal regulation (for example, storing water from high winter flows for use in summer) or annual regulation (for example, storing wet-year water for use during a future dry year).

Unlike appropriative rights, for which water availability is governed by relative priority of competing appropriation dates, riparian rights are “correlative” with other riparian water rights on the same watercourse. (*Tehachapi-Cummings County Water District v. Armstrong* (1975) 49 Cal.App.3d 992, 1001-1002.) In essence, that means if there is not sufficient natural flow to meet all the reasonable beneficial uses of all riparian water rights holders, then the available water is to be equitably shared among the riparian water rights holders. (*Ibid.*) Separately, the relationship between riparian water rights and appropriative water rights is governed by the “California Doctrine,” which is discussed in more detail below. Ultimately, however, the extent of riparian rights on lands and their relative priority with respect to appropriative rights on the same watercourse can only be confirmed by a court.

2. Severance and Express and Implied Reservation of Riparian Rights

When land with a riparian water right is subdivided, the riparian right is lost on lands that have their contiguity severed from the riparian waterway. (*Anaheim Union Water Co. v. Fuller* (1907) 150 Cal. 327, 331 [“conveyance of part of a riparian tract not contiguous to the stream deprives the part so conveyed of riparian rights in the stream unless the conveyance declares to the contrary.”].) However, if there is an express or implied reservation of riparian rights at the time of the conveyance, then the riparian right is preserved and passes in all subsequent conveyances of that land. (*Strong v. Baldwin* (1908) 154 Cal. 150, 157; *Murphy Slough, supra*, at 657-658; *Modesto Irrigation Dist. v. Tanaka* (2020) 48 Cal.App. 5th 898, 912 (“*Tanaka*”).) Notably, the court in *Tanaka* made clear that *Murphy Slough* should not be interpreted by practitioners to require deed language that specifically references “riparian rights.” (*Tanaka, supra*, at 912.) As a result, it is not necessary that a deed specifically reference “riparian rights” in order for those rights to be retained following a transfer of non-adjacent land, if extrinsic evidence demonstrates that the parties intended to preserve the use of riparian rights following the transfer.



3. The Priority Date of a Riparian Right is Based on the Date of First Occupation, Patent Application, or the Date that Riparian Rights are Reserved by Grant

The “relation back” doctrine for riparian rights states that riparian rights can become vested for lands prior to the date that the patent is issued, and this doctrine has been applied in three different ways:

- (1) The riparian rights are vested as of the date that the patent application was filed (*Haight v. Costanich* (1920) 184 Cal. 426, 430);
- (2) the riparian rights attach to land subsequently acquired by patent and relate back to the time of bona fide settlement with the intention of subsequently acquiring a complete title by patent (*Pabst v. Finmand* (1922) 190 Cal. 124, 131); or
- (3) relation back to the date that the public lands were reserved from further adverse claims by an act of Congress. (See, e.g., *Winters v. United States* (1908) 207 U.S. 564, 577.)

The second of the three reservation doctrines, which applies from the time of bona fide settlement with the intention of subsequently acquiring a complete title by patent, is potentially relevant here.

4. California’s System of Dual Water Rights – Relative Priority Between Riparian Rights and Appropriative Rights

The landmark case of *Lux v. Haggin* determined that certain federal legislation passed in 1866, and amended in 1870, meant that public lands owned by the federal government are subject to prior interference with common law rights, including the riparian right to divert water. (*Lux v. Haggin* (1886) 69 Cal. 255, 345, 725-728.) In subsequent decisions applying this doctrine, courts determined that downstream appropriations did not acquire a superior right to riparian lands that were held in private ownership before the appropriation began. (*Hargrave v. Cook* (1895) 98 Cal. 63, 64-67.) Conversely, an appropriation initiated on public lands prior to the date that riparian lands passed into private ownership is superior to the riparian right that attaches to riparian lands at the time of patent (the riparian lands receive a patent that is subject to those preexisting claims). (*Duckworth v. Watsonville Water & Light Co.* (1907) 150 Cal. 520, 531; *San Joaquin & Kings River Canal and Irr. Co. v. Worswick* (1922) 187 Cal. 674, 685-686.) Appropriations initiated on private lands are only superior to downstream riparian owners whose lands passed into private ownership after the appropriation began. (*Hargrave v. Cook*, *supra*, 108 Cal. at 78.) As a result, the general rule is that appropriations made prior to the date that lands were passed into private ownership are superior to the riparian rights on those later-granted lands.

C. Summary of Riparian Rights

Our evaluation of the four patents that comprise the Subject Property revealed that three out of the four patents were riparian at the time of patent: (1) the 1873 Brawley Patent (N ½ of the SE ¼ & SE ¼ of the NE ¼, Section 20, T 12 S, R 22 E); (2) the 1873 Overstreet Patent (S ½ of the SE ¼, Section 20, T 12 S, R 22 E & SW ¼ of the SW ¼ Section 21, T 12 S, R 22 E); and (3) the 1874 Overstreet Patent (NW ¼ of the SW ¼ & SW ¼ of the NW ¼, Section 21, T 12 S, R 22 E).



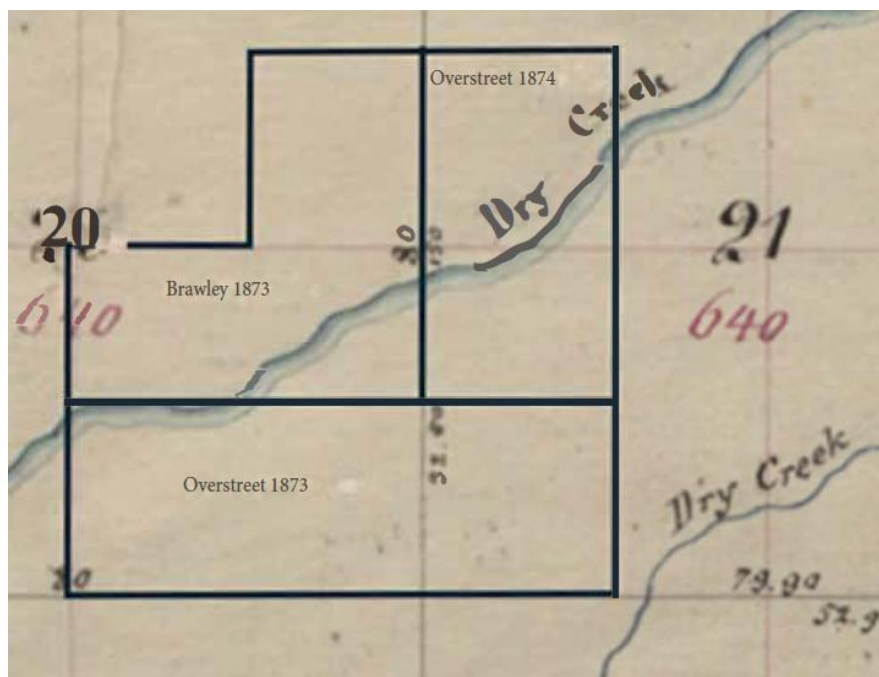


Figure 2. Riparian Patents Shown on 1854 Survey Map of T. 12 S, R. 22 E, Secs. 20 and 21



Figure 3. Riparian Patents Shown on 2023 Satellite Map (White = Brawley 1873; Orange = Overstreet 1873; and Green = Overstreet 1874)

The lands included in three patents above, and the lands in the fourth non-riparian patent, were purchased by Ira Stroud in 1872 and were owned as a contiguous parcel at the time of patent. Since that time, the Subject Property has been held in common ownership as a contiguous parcel (with a minor exception discussed below) and has not been subject to transactions that have resulted in a potential severance of the riparian rights that were acquired at the time of patent.

The minor exception mentioned above was a series of intra-family transfers that affected the southern portion of the Subject Property (the 1873 Overstreet patent). (See **Figure 4.**) The property shaded in yellow on **Figure 4**, below, was transferred to Bonner Sample by his parents, Harry and Edna Sample, between 1952-1961 and continued to be farmed and irrigated as a unit with the rest of the Subject Property. Therefore, all lands included in the three riparian patents, shown in **Figures 2 and 3**, have retained riparian water rights to divert from Big Dry Creek.

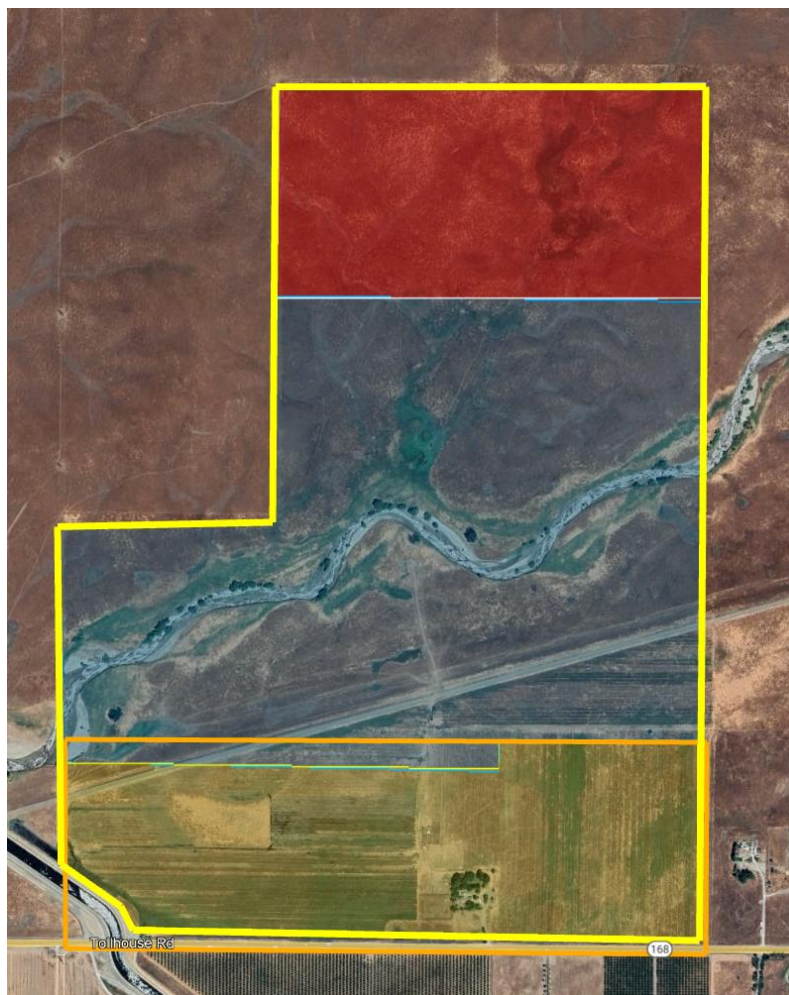


Figure 4. Area Subject to Intra-Family Transfers.

III. CONCLUSION

The Subject Property is comprised of four separate patents, three of which included riparian rights at the time of patent because they were each appurtenant to Big Dry Creek. As detailed above, based on our evaluation of relevant documents and historical information, the lands covered by these three riparian patents have retained riparian rights to divert a correlative share of natural flows from Big Dry Creek.

Very truly yours,

KRONICK, MOSKOVITZ, TIEDEMANN & GIRARD
A Professional Corporation



RUSSELL A. FRINK



Sample Ranch Residential Development

Traffic Impact Study
September 1, 2026

Prepared by:

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Sample Ranch Residential Development Traffic Impact Study

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Table of Contents

Section	Description
---------	-------------

1.0	Introduction
-----	--------------

- | | |
|-------|---------------------------------------|
| 1.1 | Description of the Region/Project |
| 1.1.1 | Project Access |
| 1.1.2 | Study Area |
| 1.1.3 | Study Scenarios |
| 1.2 | Methodology |
| 1.2.1 | Intersection Analysis |
| 1.3 | Policies to Maintain level of Service |
| 1.4 | VTM Analysis |

2.0	Project Traffic
-----	-----------------

- | | |
|-----|-------------------|
| 2.1 | Trip Generation |
| 2.2 | Trip Distribution |
| 2.3 | Project Traffic |

3.0	Traffic Impacts
-----	-----------------

- | | |
|-----|---|
| 3.1 | Existing Traffic and Level of Service (LOS) |
| 3.2 | Opening Year Traffic Conditions |
| 3.3 | Future Year Traffic Conditions |
| 3.4 | Queuing Analysis |

4.0	Mitigation
-----	------------

Appendices

- Appendix A – VMT Analysis
 - Appendix B – Traffic Count Data Worksheets
 - Appendix C – Synchro Worksheets
 - Appendix D – Signal Warrant Worksheets
 - Appendix E – Traffic Safety Analysis
-

List of Tables

1-1	Signalized Intersections Level of Service Definitions	7
1-2	Unsignalized Intersections Level of Service Definitions	8
2-1	Project Trip Generation	9
3-1	Intersection LOS – Existing & Opening Year	18
3-2	Intersection LOS – Future Year	28

List of Figures

1-1	Regional Location	4
1-2	Project Location	5
1-3	Site Plan	6
2-1	Project Trip Distribution	10
2-2	Project AM Peak Hour Traffic	11
2-3	Project PM Peak Hour Traffic	12
3-1	Existing (2025) Lane Geometry	15
3-2	Existing (2025) AM Peak Hour Traffic	16
3-3	Existing (2025) PM Peak Hour Traffic	17
3-4	Opening Year (2026) AM Peak Hour Traffic	19
3-5	Opening Year (2026) PM Peak Hour Traffic	20
3-6	Opening Year (2026) Plus Project AM Peak Hour Traffic	21
3-7	Opening Year (2026) Plus Project PM Peak Hour Traffic	22
3-8	Future Year (2046) Lane Geometry	23
3-9	Future Year (2046) AM Peak Hour Traffic	24
3-10	Future Year (2046) PM Peak Hour Traffic	25
3-11	Future Year (2046) Plus Project AM Peak Hour Traffic	26
3-12	Future Year (2046) Plus Project PM Peak Hour Traffic	27

1.0 Introduction

1.1 Description of the Region/Project

This Traffic Impact Study (TIS) has been prepared for the purpose of analyzing traffic conditions related to the proposed Sample Ranch Residential project (the Project) located in the County of Fresno. The TIS is intended to identify the extent to which the Project would affect traffic operations that may indicate a need for improvements within the study area and/or other measures to address traffic operations.

The project calls for the development of 44 single-family residential homes and the proposed subdivision will be located on the north side of Tollhouse Road/State Route 168 (SR 168) approximately 2 miles east of the signalized intersection of Tollhouse Road/SR 168 and E. Shepherd Avenue (west intersection). Figure 1-1 shows the regional context of the Project site while Figure 1-2 shows the Project location within Fresno County. Figure 1-3 shows the site plan of the proposed Project.

1.1.1 Project Access

The project proposes to build a new roadway on the east side of the project site that will form a new intersection with SR 168. This roadway will serve project traffic in the interim and may serve as a new circulation element roadway in the future. The project proposes to build a driveway to connect the project to the new access roadway.

1.1.2 Study Area

The study intersections included in this TIS are listed below and shown in Figure 1-2. The study intersections were developed in consultation with Fresno County and Caltrans staff. This TIS also includes an analysis of the Project driveway intersection.

Intersections

- ✓ Tollhouse Road/SR 168 and E. Shepherd Avenue (west signalized intersection)
- ✓ Tollhouse Road/SR 168 and E. Shepherd Avenue (east one-way stop-controlled intersection)
- ✓ Tollhouse Road/SR 168 and Project Entrance

1.1.3 Study Scenarios

This TIS includes level of service (LOS) analysis for the following traffic scenarios (Study Scenarios):

- ✓ Existing (2025) Conditions

- ✓ Opening Year 2026 Without Project
- ✓ Opening Year 2026 Plus Project
- ✓ Future 20-Year (2046) Without Project
- ✓ Future 20-Year (2046) Plus Project

1.2 Methodology

This TIS was prepared using general principles outlined in the County of Fresno's Traffic Impact Study Report Guidelines modified as described in the Traffic Impact Study Scoping Document to be consistent with current conditions. In analyzing street and intersection capacities, the Level of Service (LOS) methodologies are applied. LOS standards are applied by transportation agencies to quantitatively assess a street and highway system's performance. In addition, safety concerns are analyzed to determine the need for appropriate mitigation resulting from increased traffic near sensitive uses and other evaluations such as the need for signalized intersections or other improvements. Guidelines incorporated in the Highway Capacity Manual (HCM), 7th Edition, were also used in the development of this TIS.

1.2.1 Intersection Analysis

Intersection LOS analysis was conducted using the Synchro software program. Synchro supports HCM methodologies and is deemed an acceptable program by County of Fresno and Caltrans staff for assessment of traffic impacts. LOS can be determined for both signalized and unsignalized intersections.

Tables 1-1 and 1-2 define LOS "A" to "F" by indicating the ranges in the amounts of average delay for a vehicle at signalized and unsignalized intersections for each level of service ranging from LOS "A" to "F".

When an intersection does not meet target LOS standards (LOS A, B, C, or D), analysis is conducted to determine whether improvements are needed.

In addition, for unsignalized intersections that do not meet acceptable LOS standards, an evaluation would be conducted to determine whether signal warrants would indicate the need for a traffic signal. Signal warrants are numerical thresholds used by traffic engineers to determine whether a traffic signal is needed. If signal warrants are not met, the typical conclusion is that the intersection is operating at an acceptable LOS. The California Manual on Uniform Traffic Control Devices (California MUTCD) introduces standards for determining the need for traffic signals. The California MUTCD indicates that the satisfaction of one or more traffic signal warrants does not in itself require the installation of a traffic signal. In addition to the warrant analysis, an engineering study of the current or expected traffic conditions should be conducted to determine whether the installation of a traffic signal is justified.

1.3 Policies to Maintain Level of Service

In accordance with standard TIS practice, the goal of the project is to achieve a target LOS D or better for street segments and intersections.

1.4 VMT Analysis

Senate Bill 743 (SB 743) went into effect throughout California on July 1, 2020. This legislation changed the performance measure for CEQA transportation studies from level of service to vehicle miles traveled (VMT). An assessment of potential VMT impacts associated with the Project is provided in Appendix A to address changes in CEQA requirements.

Table 1-1
Signalized Intersections Level of Service Definitions
(Highway Capacity Manual)

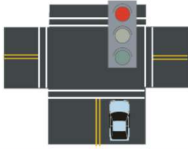
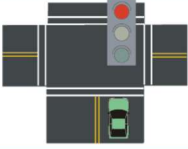
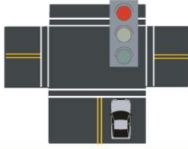
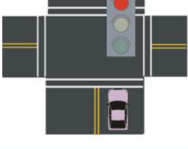
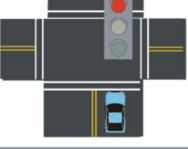
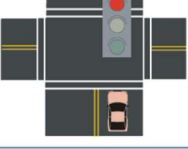
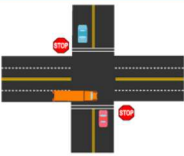
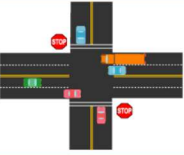
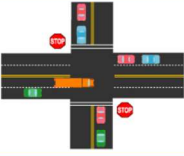
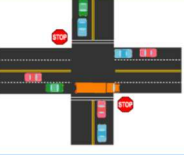
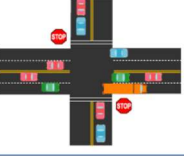
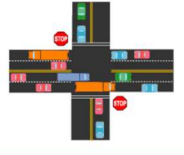
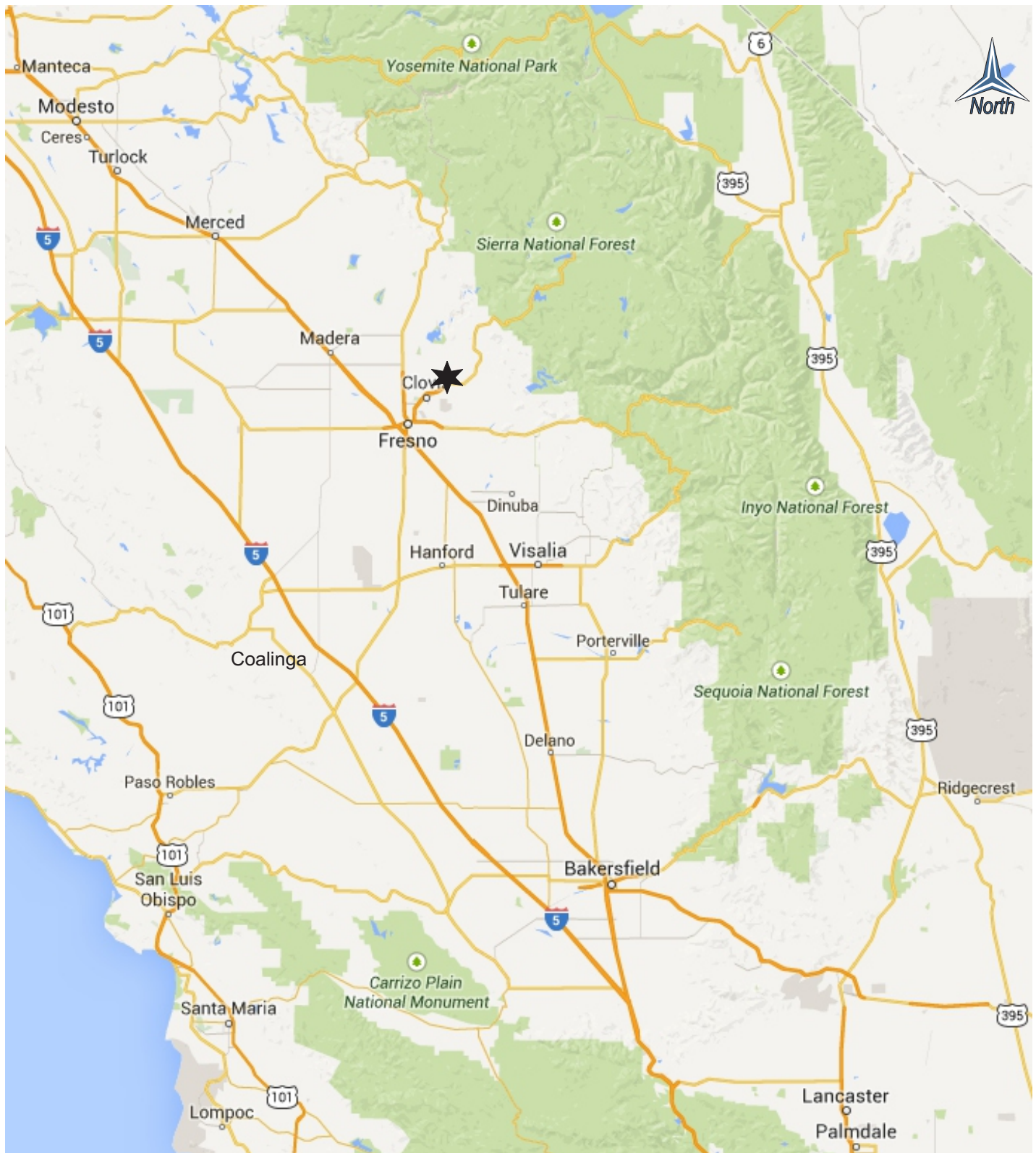
LEVEL OF SERVICE	DEFINITION		AVERAGE TOTAL DELAY (sec/veh)
A	Describes operations with very low delay. This level of service occurs when there is no conflicting traffic for a minor street.		≤ 10.0
B	Describes operations with moderately low delay. This level generally occurs with a small amount of conflicting traffic causing higher levels of average delay.		$> 10.0 - 20.0$
C	Describes operations with average delays. These higher delays may result from a moderate amount of minor street traffic. Queues begin to get longer.		$> 20.0 - 35.0$
D	Describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from shorter gaps on the mainline and an increase of minor street traffic. The queues of vehicles are increasing.		$> 35.0 - 55.0$
E	Describes operations at or near capacity. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor gaps for the minor street to cross and large queues.		$> 55.0 - 80.0$
F	Describes operations that are at the failure point. This level, considered to be unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of the intersection. Insufficient gaps of suitable size exist to allow minor traffic to cross the intersection safely.		> 80.0

Table 1-2
Unsignalized Intersections Level of Service Definitions
(Highway Capacity Manual)

LEVEL OF SERVICE	DEFINITION		AVERAGE TOTAL DELAY (sec/veh)
A	No delay for stop-controlled approaches.		0 - 10.0
B	Describes operations with minor delay.		> 10.0 - 15.0
C	Describes operations with moderate delays.		> 15.0 - 25.0
D	Describes operations with some delays.		> 25.0 - 35.0
E	Describes operations with high delays and long queues.		> 35.0 - 50.0
F	Describes operations with extreme congestion, with very high delays and long queues unacceptable to most drivers.		> 50.0

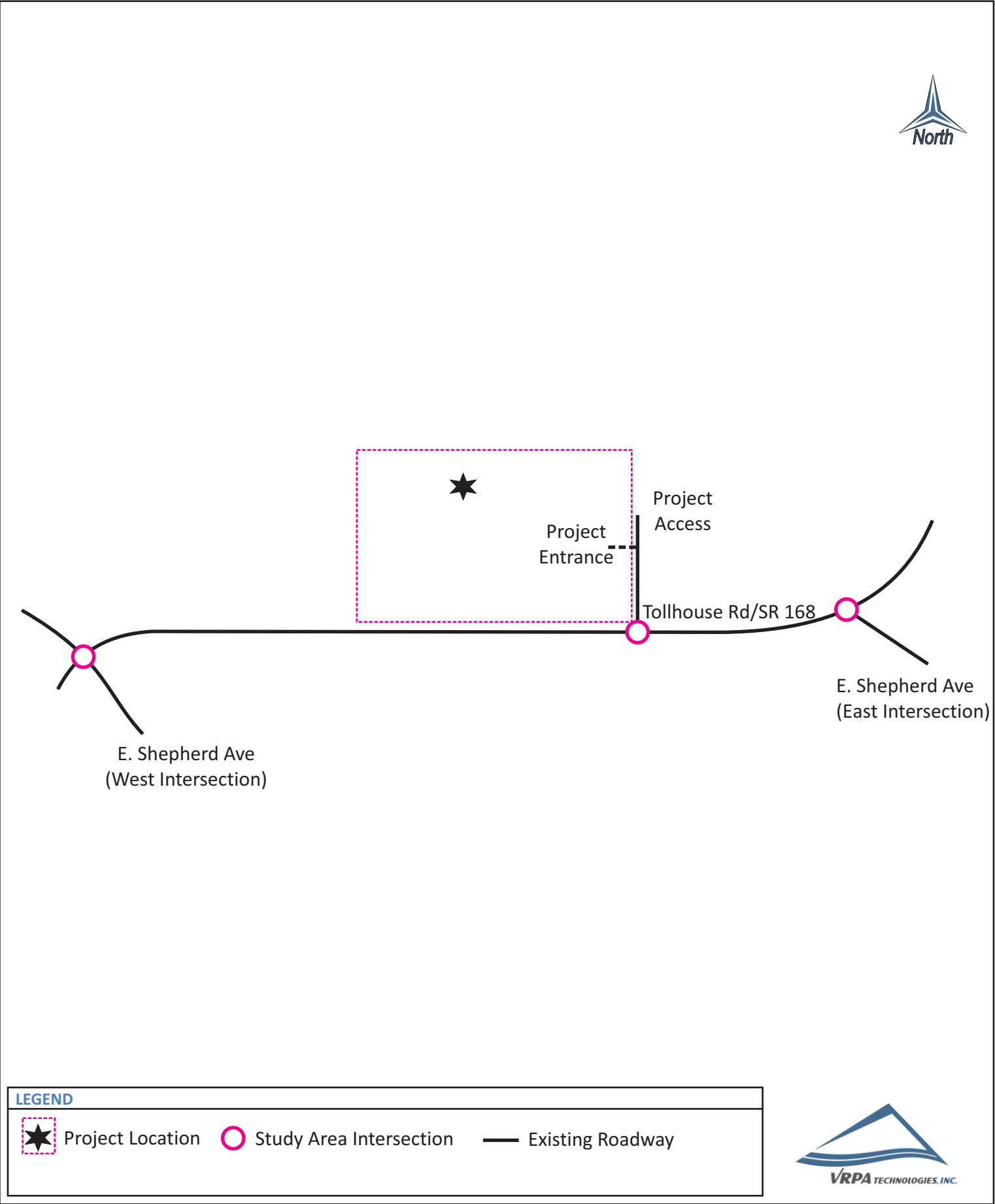
Sample Ranch Residential Development Regional Location

Figure
1-1



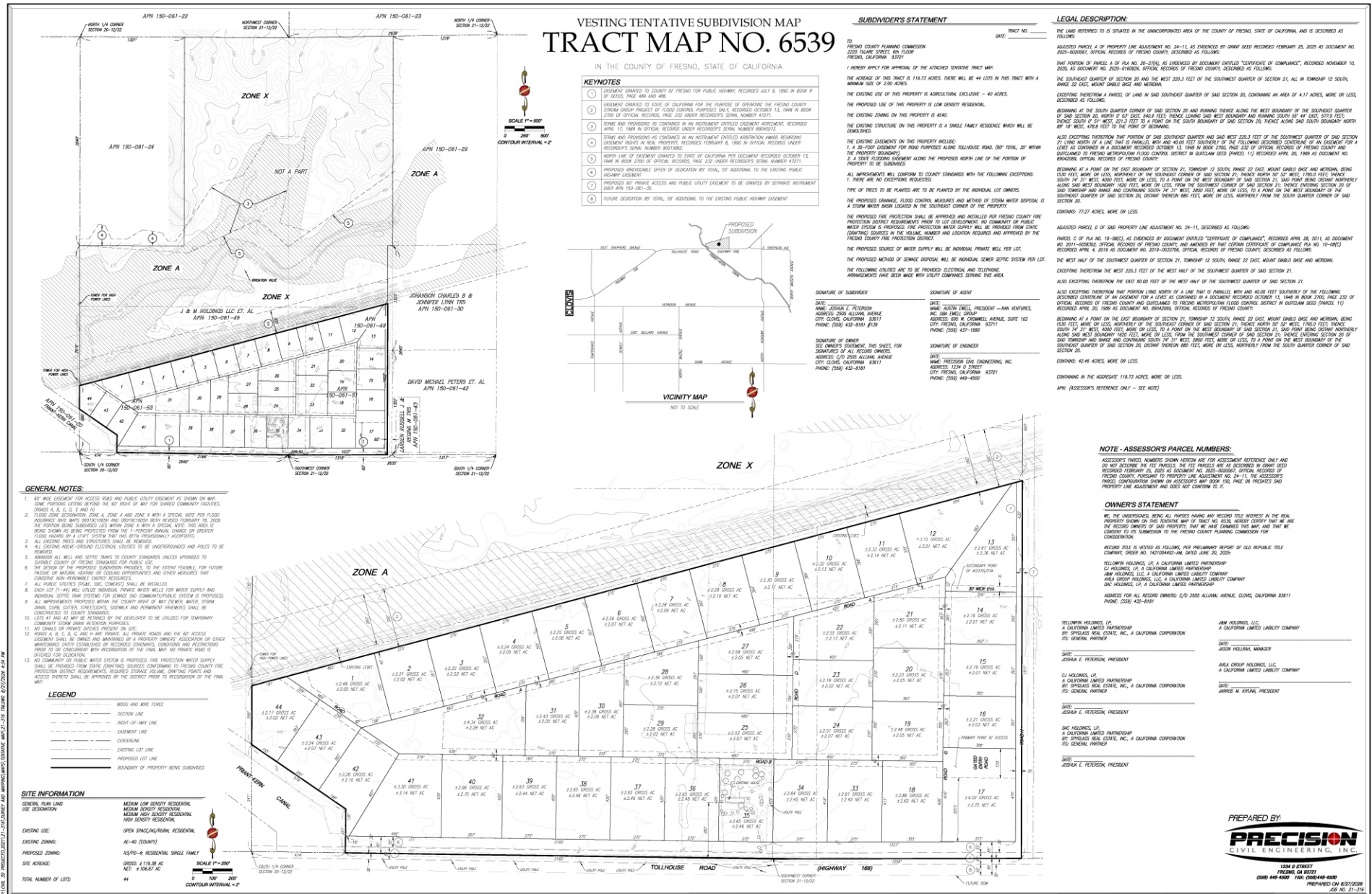
LEGEND

★ Project Location



Sample Ranch Residential Development Site Plan

Figure 1-3



2.0 Project Traffic

2.1 Trip Generation

To assess the impact that the Project may have on the surrounding roadway network, the first step is to determine Project trip generation. Project trip generation was determined using trip generation rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition). The considerations described above led to the recommended trip generation for weekday AM (7:00-9:00am) and PM (4:00-6:00pm) peak hours shown in Table 2-1.

Table 2-1
Project Trip Generation

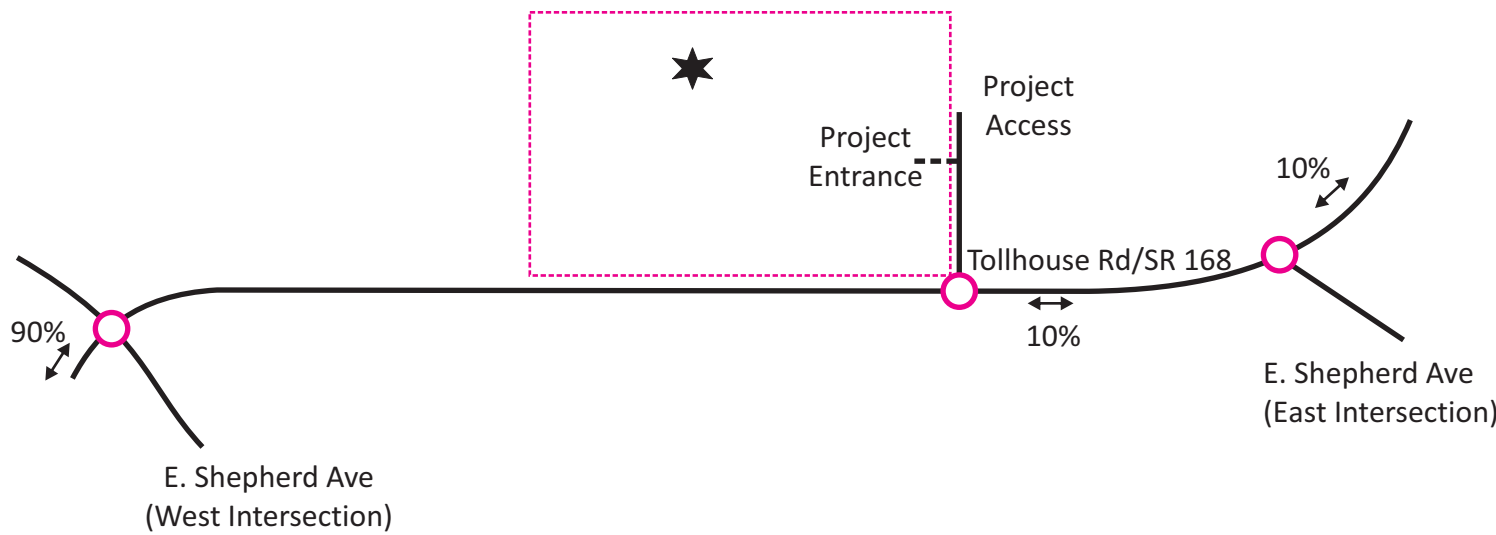
LAND USE/ ITE LAND USE CODE	QUANTITY	DAILY TRIP ENDS	(ADT)	WEEKDAY AM PEAK HOUR					WEEKDAY PM PEAK HOUR				
		RATE	VOLUME	RATE	IN:OUT SPLIT	VOLUME			RATE	IN:OUT SPLIT	VOLUME		
						IN	OUT	TOTAL			IN	OUT	TOTAL
Residential Single-Family (210)	44 Units	10.78	474	0.79	25:75	9	26	35	1.04	63:37	29	17	46
TOTAL TRIP GENERATION			474			9	26	35			29	17	46

2.2 Trip Distribution

Project trip distribution percentages are shown in Figure 2-1. These percentages are based upon knowledge of the study area, engineering judgement, prevailing traffic patterns in the study area, major routes, population centers, and other existing development.

2.3 Project Traffic

Project traffic as shown in Table 2-1 was distributed to the roadway system using the trip distribution percentages shown in Figure 2-1. A graphical representation of the resulting AM and PM peak hour Project trips is shown in Figures 2-2, and 2-3.



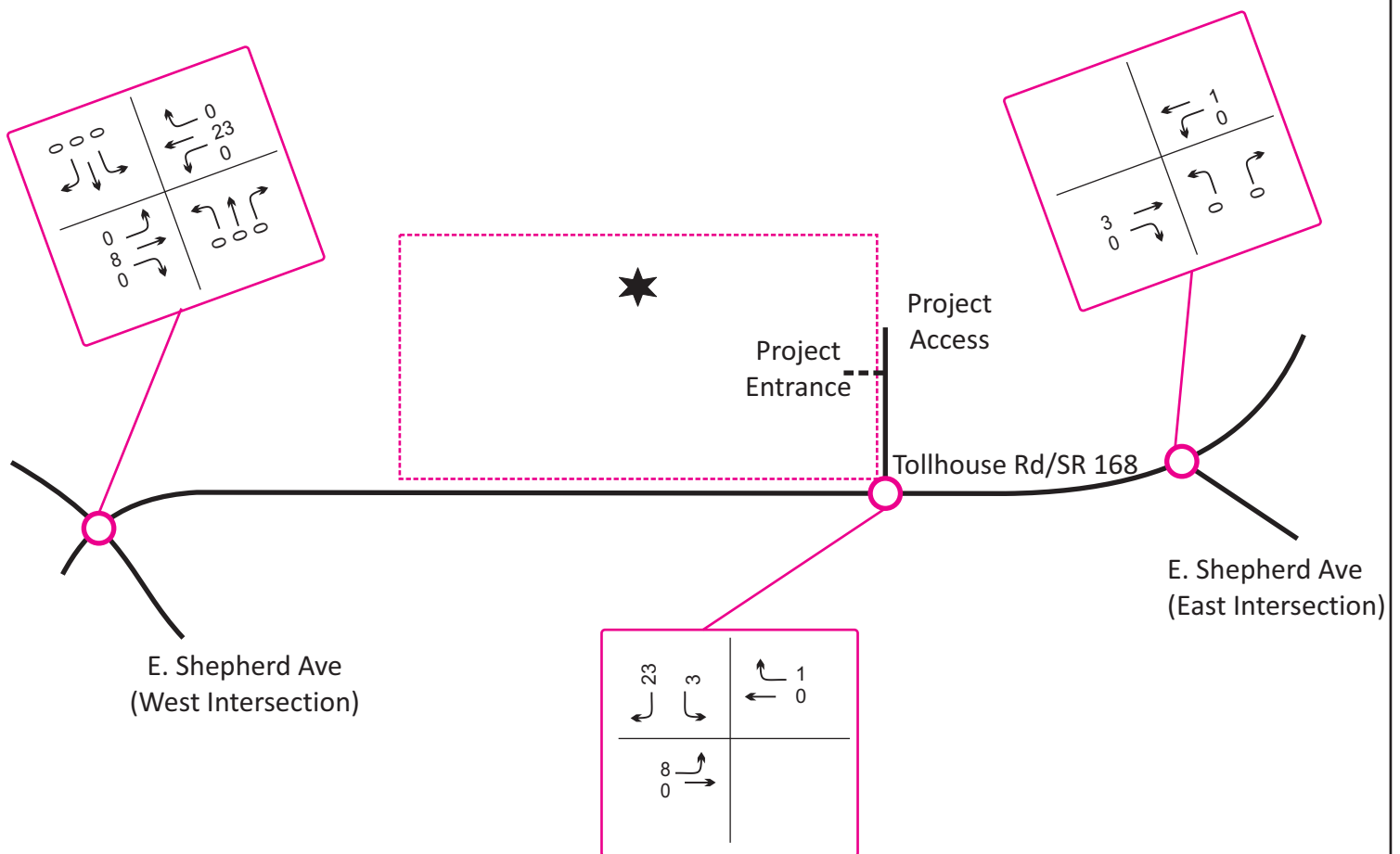
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-  Project Location  Project Intersection  xx% Trip Distribution



Sample Ranch Residential Development Project AM Peak Hour Trips

Figure
2-2



LEGEND



Project Location



Project Intersection

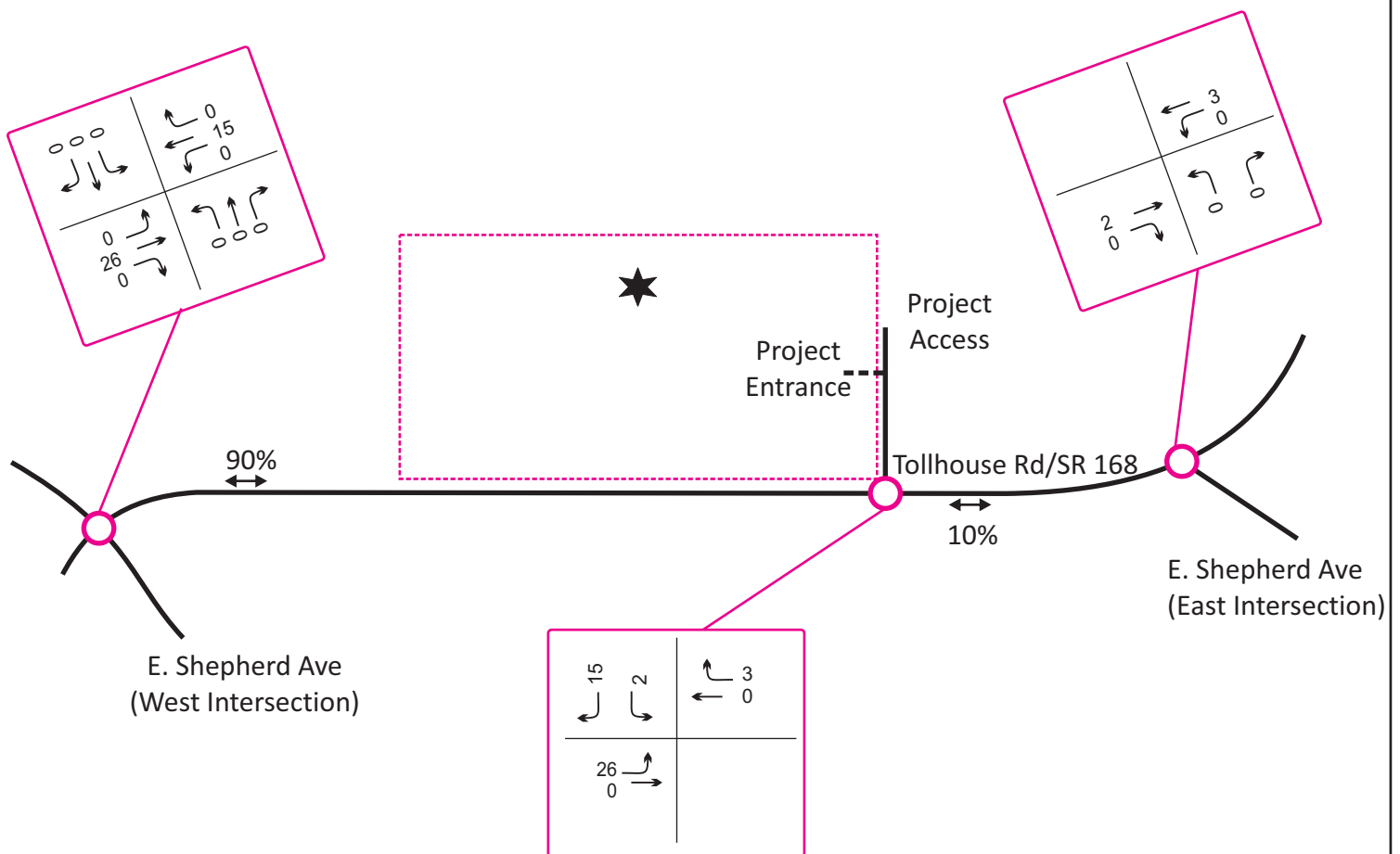


← XX Peak Hour Project Trips



Sample Ranch Residential Development Project PM Peak Hour Trips

Figure
2-3



LEGEND



Project Location



Project Intersection



← XX Peak Hour Project Trips



3.0 Traffic Impacts

3.1 Existing Traffic and Level of Service (LOS)

Existing AM and PM peak hour turning movements were collected by VRPA at the intersections of Tollhouse Road/SR 168 and E. Shepherd Avenue (west intersection) on Thursday, April 3, 2025, and the intersection of Tollhouse Road/SR 168 and E. Shepherd Avenue (east intersection) on Wednesday/Thursday, May 21/22, 2025. Intersection turning movement counts were conducted for the peak hour periods of 7:00-9:00 AM and 4:00-6:00 PM. Existing roadway lane geometry is shown in Figure 3-1. Existing traffic is shown in Figures 3-2 and 3-3. Traffic count data worksheets are provided in Appendix B.

Intersection operations for Existing and Opening Year (2026) conditions are shown in Table 3-1. All study area intersections for these conditions operate at level of service D or better.

3.2 Opening Year Traffic Conditions

Traffic conditions with and without the Project for the assumed opening year of 2026 were estimated by applying a growth rate of 2% per year to the existing traffic volumes. The resulting traffic for the Opening Year scenario is shown in Figures 3-4 and 3-5.

Project traffic, as calculated in Chapter 2, was added to Opening Year traffic to determine Opening Year Plus Project traffic as shown in Figures 3-6, and 3-7. Intersection operations for Opening Year conditions with and without Project traffic are shown in Table 3-1. All study area intersections are expected to operate at level of service D or better.

3.3 Future Year Traffic Conditions

Future Year traffic conditions with and without the Project in the Year 2046 (20 years from Opening Year conditions) were estimated by taking the larger of the traffic volumes from the following conditions:

- ✓ Applying a growth rate of 2% per year to the existing traffic volumes
- ✓ 2046 Fresno COG Regional Model with segment growth factors (taken by comparing the regional model future daily traffic to the existing average daily traffic)

When comparing the traffic generated from these varying conditions, it was determined that traffic generated from the Fresno COG Regional Model controlled. The Future Year (2046) lane geometry is shown in Figure 3-8. The resulting traffic for the Future Year scenario is shown in Figures 3-9 and 3-10.

Project traffic, as calculated in Chapter 2, was added to Future Year traffic to determine Future Year Plus Project traffic as shown in Figures 3-11 and 3-12.

The following future roadway improvements are planned for this scenario:

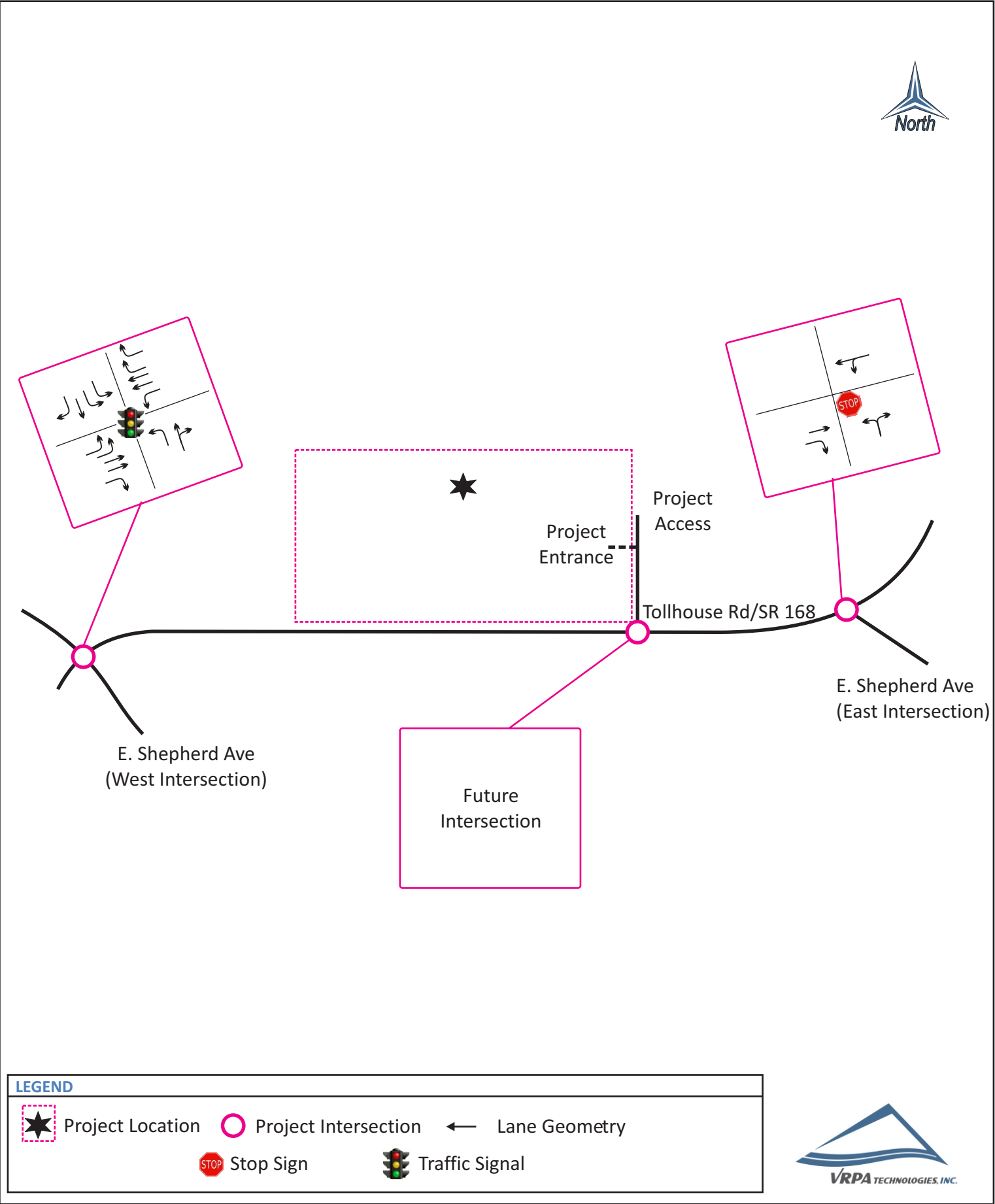
- ✓ As requested by Caltrans, it is proposed that separate right and left turn lanes be added by the Project at its access point with SR 168
- ✓ The project access to SR 168 will be stop controlled with available width for right and left turn lanes to be made separately

Intersection operations for Future Year conditions with and without Project traffic are shown in Table 3-2.

3.4 Queuing Analysis

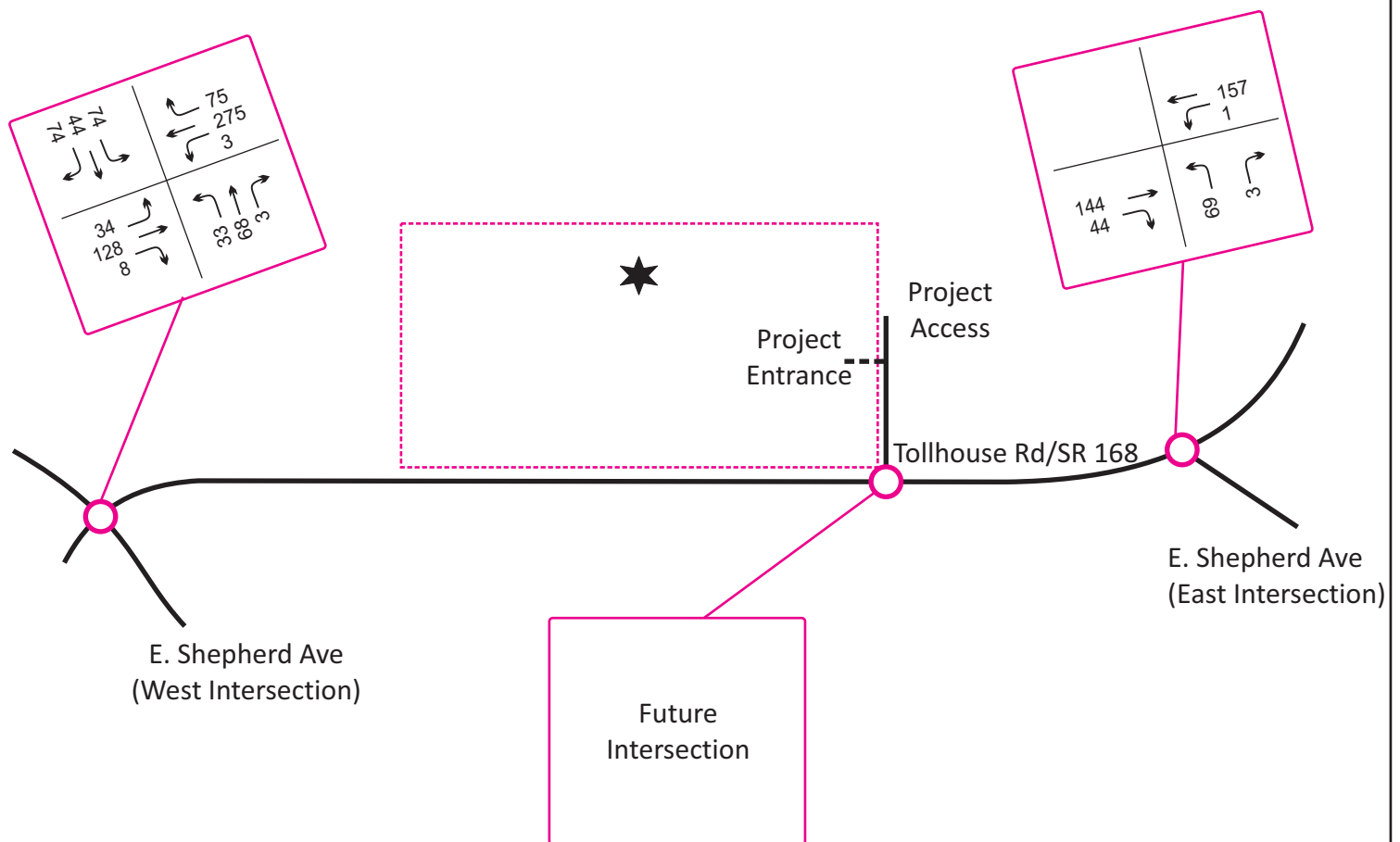
Tables 3-3 and 3-4 provide a queue length summary for left and right turn lanes at the study intersections for all study scenarios as noted above. Queuing analysis was performed at study intersections utilizing the Synchro software program. Synchro provides the 95th percentile queue for signalized intersections and shows the length of the queue in feet.

Caltrans also requested that this TIS analyze the required stacking length outside the gated project entrance to ensure that vehicle queues do not impact SR 168. Based on an assumed gate opening duration of 15 seconds and assuming entry of one car at a time, the project entrance has an inflow capacity of 240 vehicles per hour. Per Table 2-1, the maximum number of vehicles entering the site per hour (weekday PM) is 29 therefore the project entrance has sufficient capacity and will not result in stacked vehicles impacting SR 168.



Sample Ranch Residential Development Exiting (2025) AM Peak Hour Traffic

Figure
3-2



LEGEND



Project Location



Project Intersection

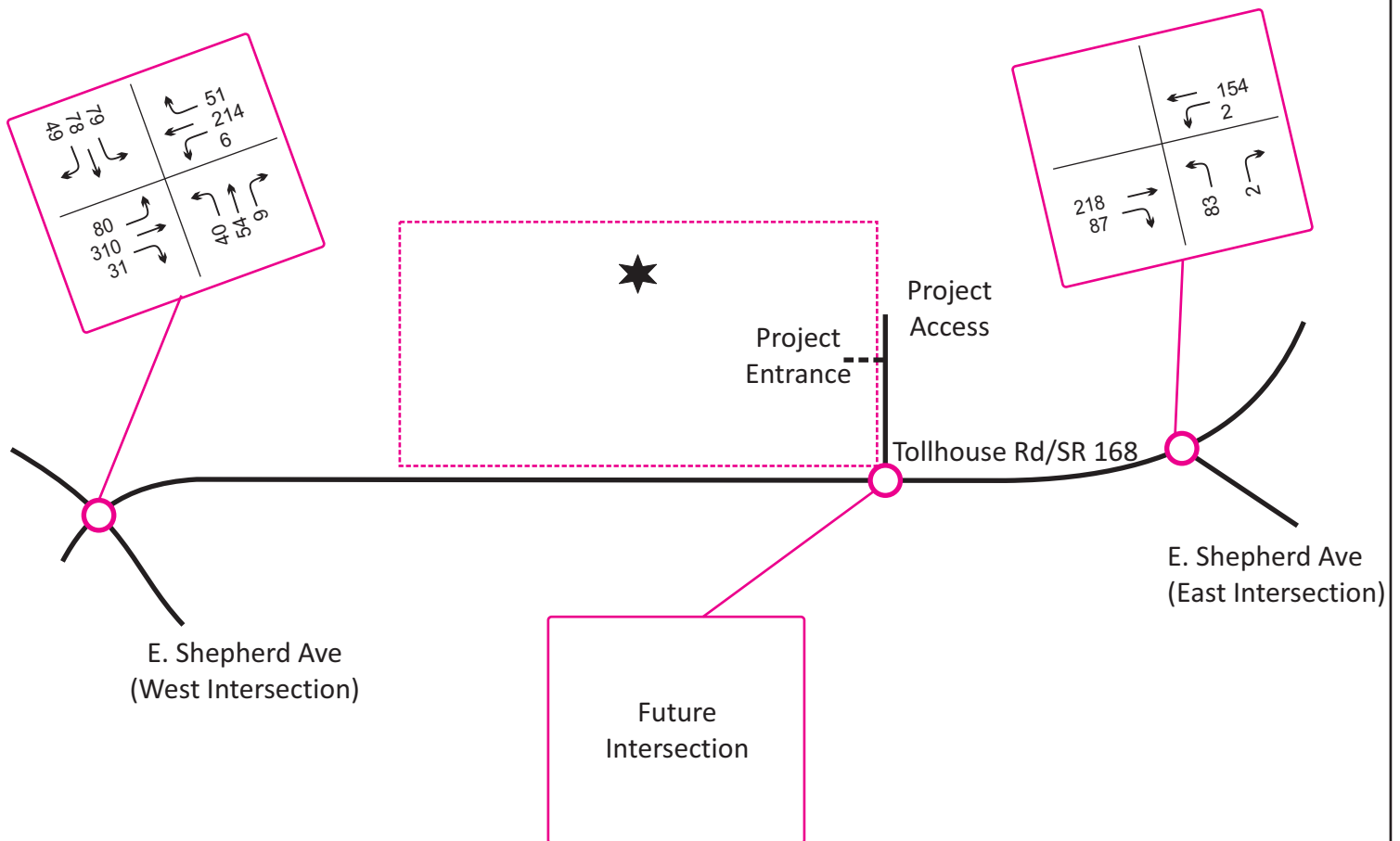


XX Peak Hour Traffic Volumes



Sample Ranch Residential Development Exiting (2024) PM Peak Hour Traffic

Figure
3-3



LEGEND



Project Location

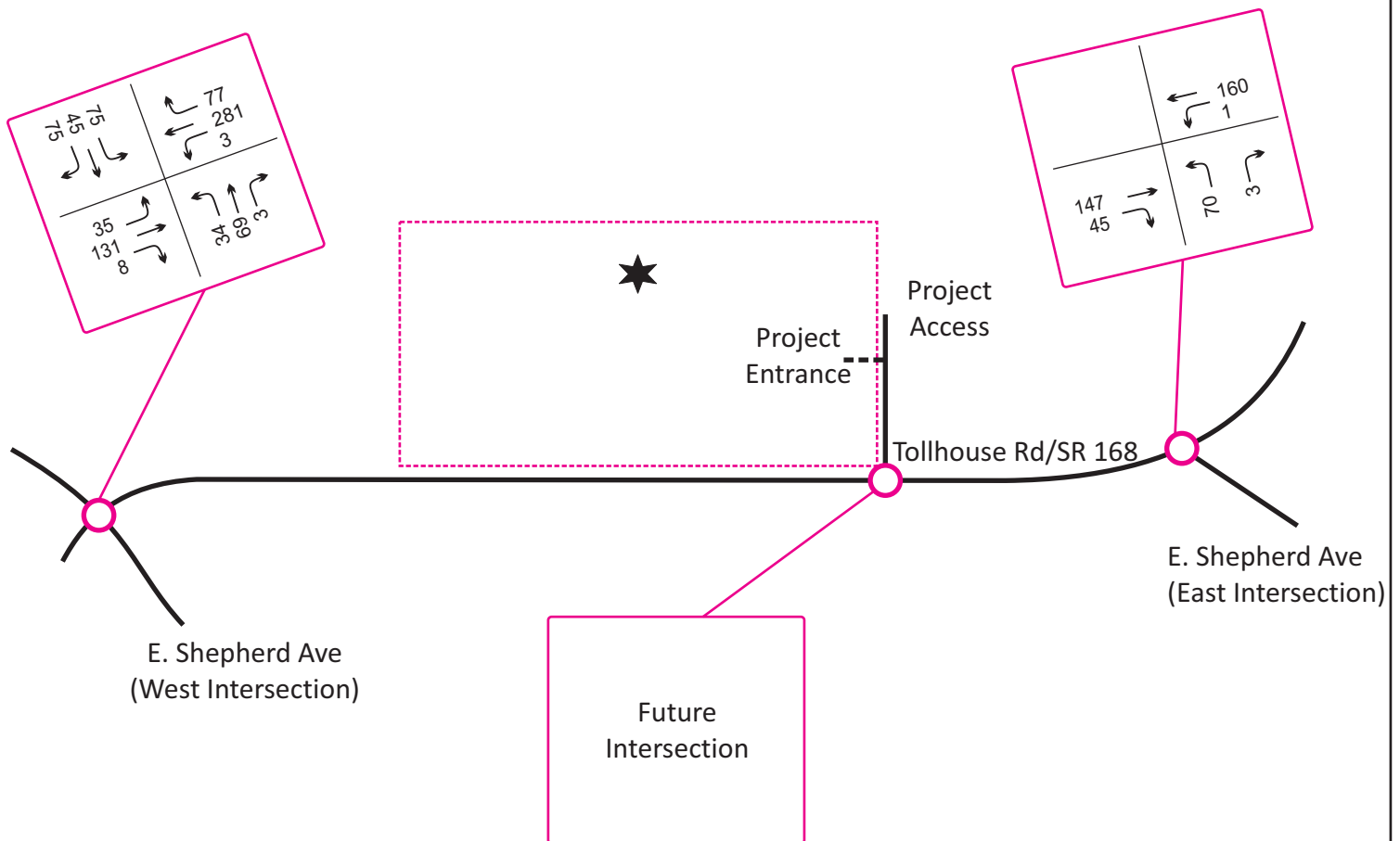


Project Intersection



XX Peak Hour Traffic Volumes





LEGEND



Project Location



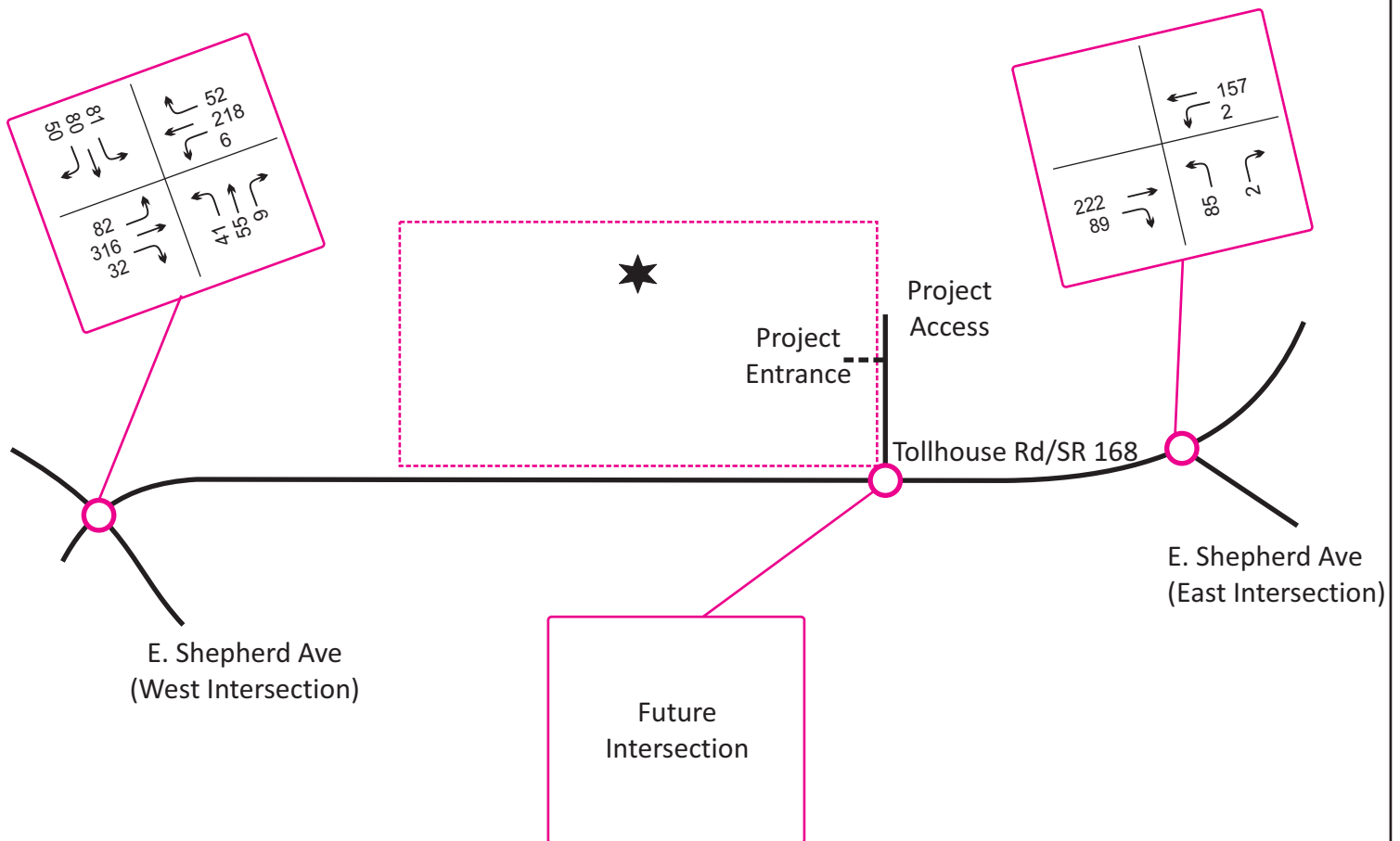
Project Intersection



XX Peak Hour Traffic Volumes

Sample Ranch Residential Development Opening Year (2026) PM Peak Hour Traffic

Figure
3-5



LEGEND



Project Location



Project Intersection

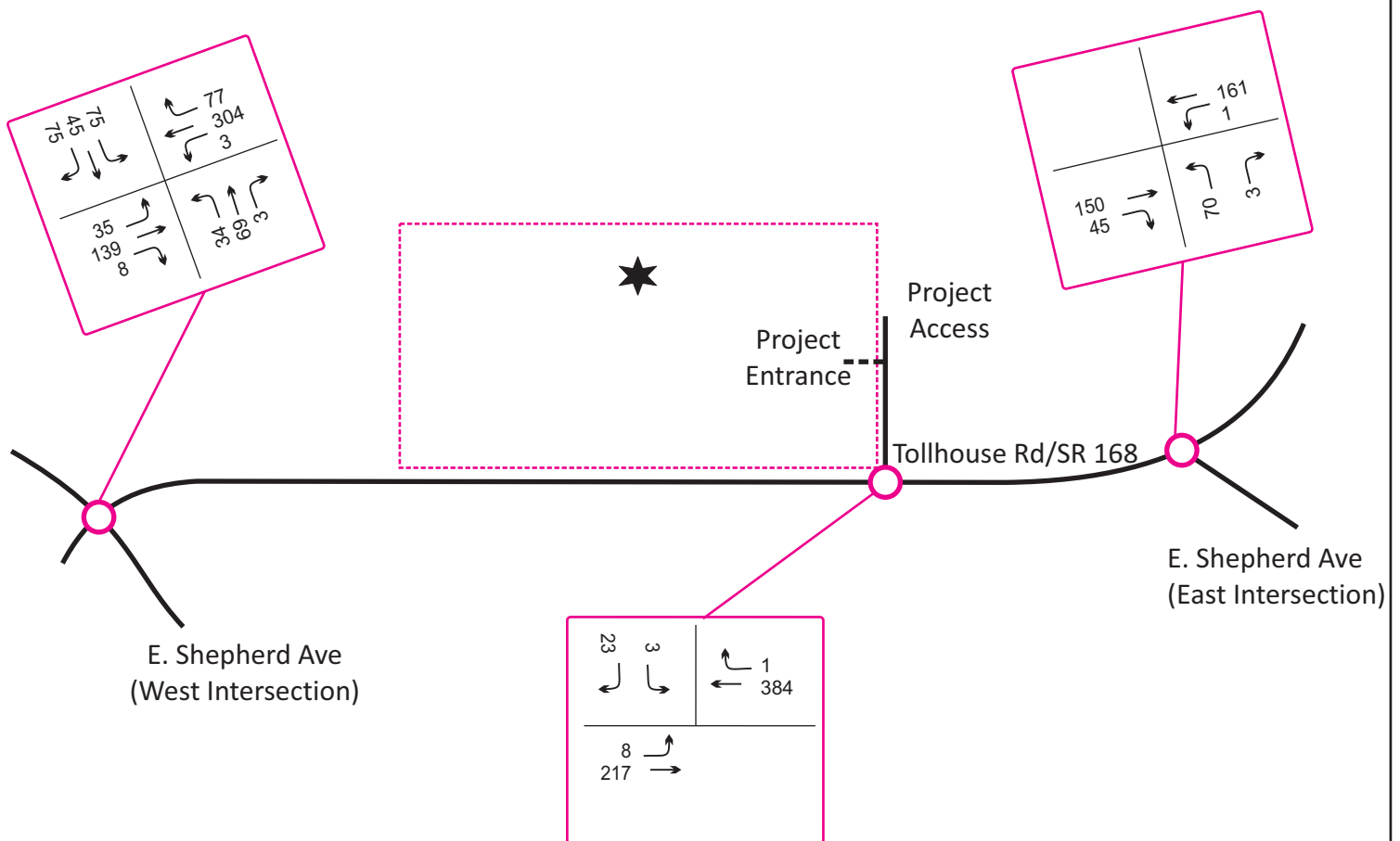


← XX Peak Hour Traffic Volumes



Sample Ranch Residential Development Opening Year (2026) Plus Project AM Peak Hour Traffic

Figure
3-6



LEGEND



Project Location



Project Intersection

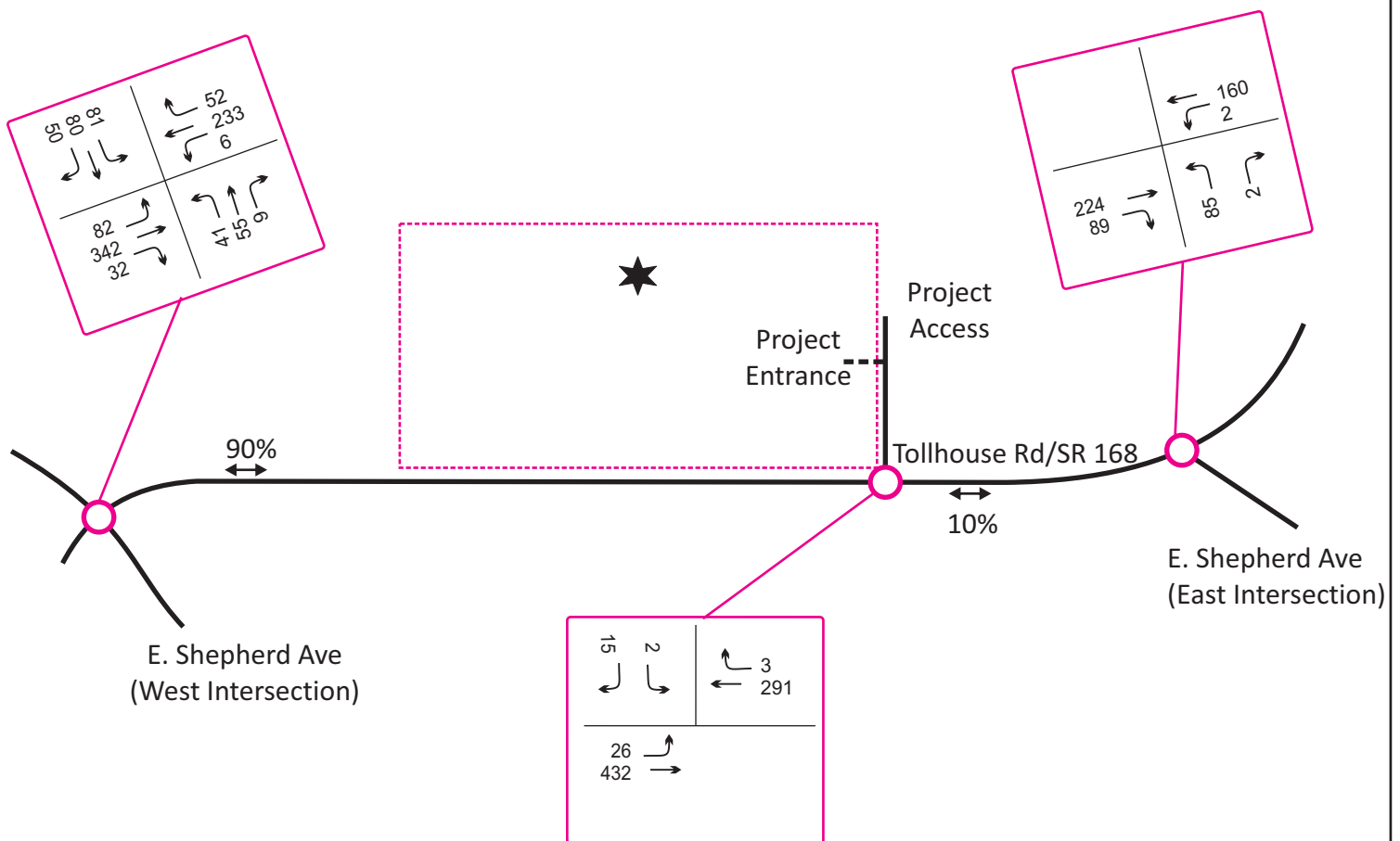


← XX Peak Hour Traffic Volumes



Sample Ranch Residential Development Opening Year (2026) Plus Project PM Peak Hour Traffic

Figure
3-7



LEGEND



Project Location

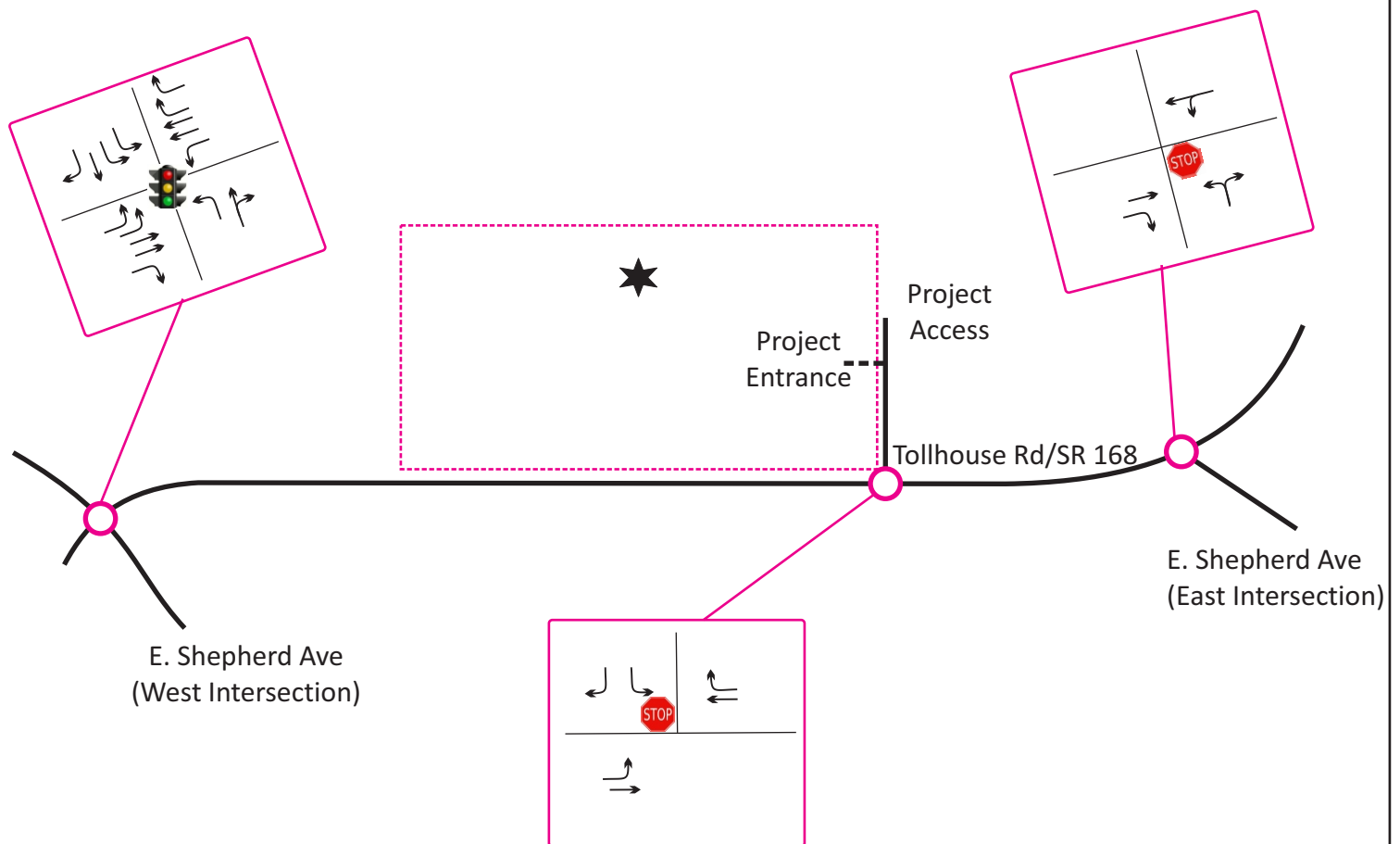


Project Intersection



← XX Peak Hour Traffic Volumes





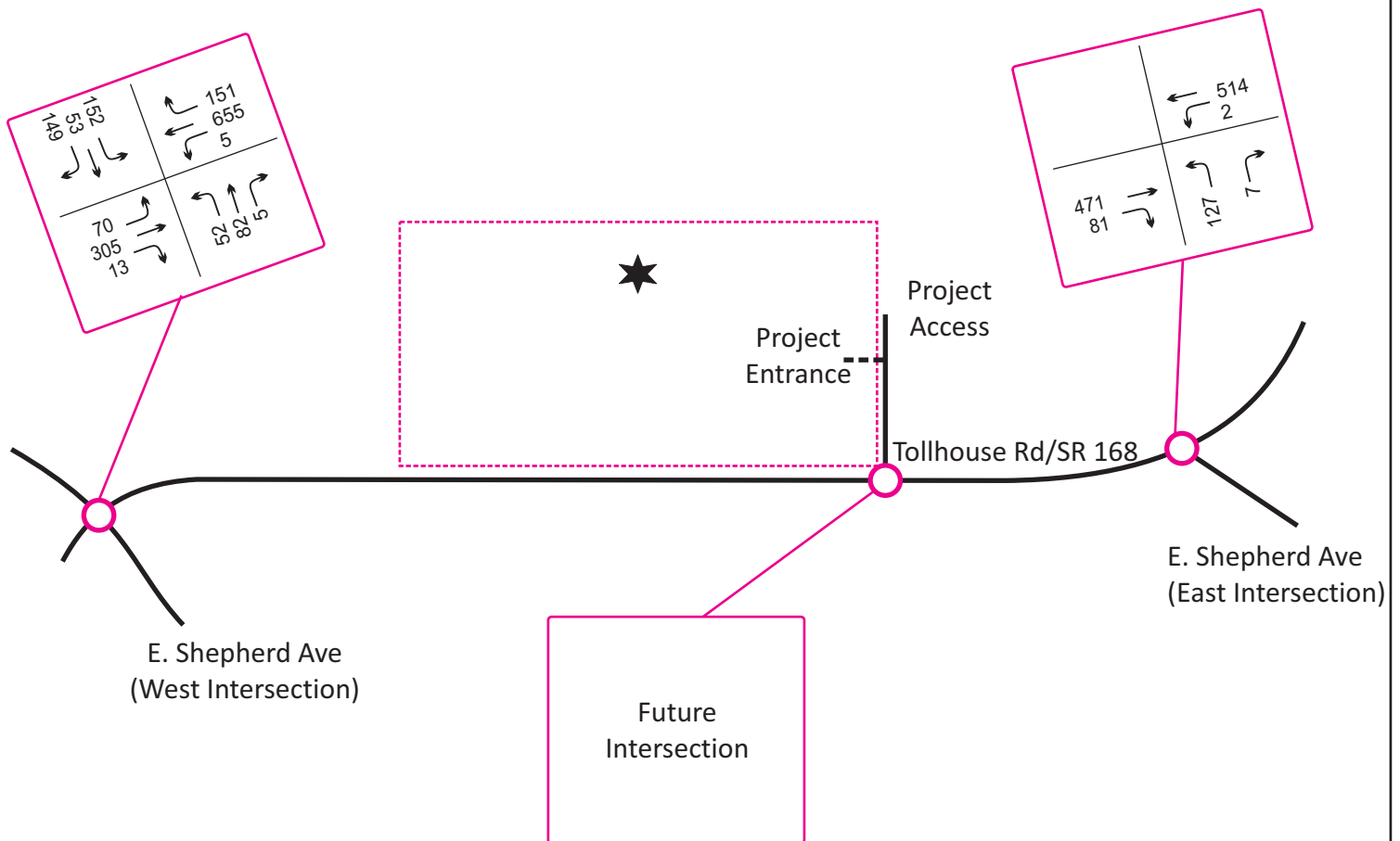
LEGEND

-  Project Location
-  Project Intersection
-  Lane Geometry
-  Stop Sign
-  Signal

Sample Ranch Residential Development

Future Year (2046) AM Peak Hour Traffic

Figure
3-9



LEGEND



Project Location

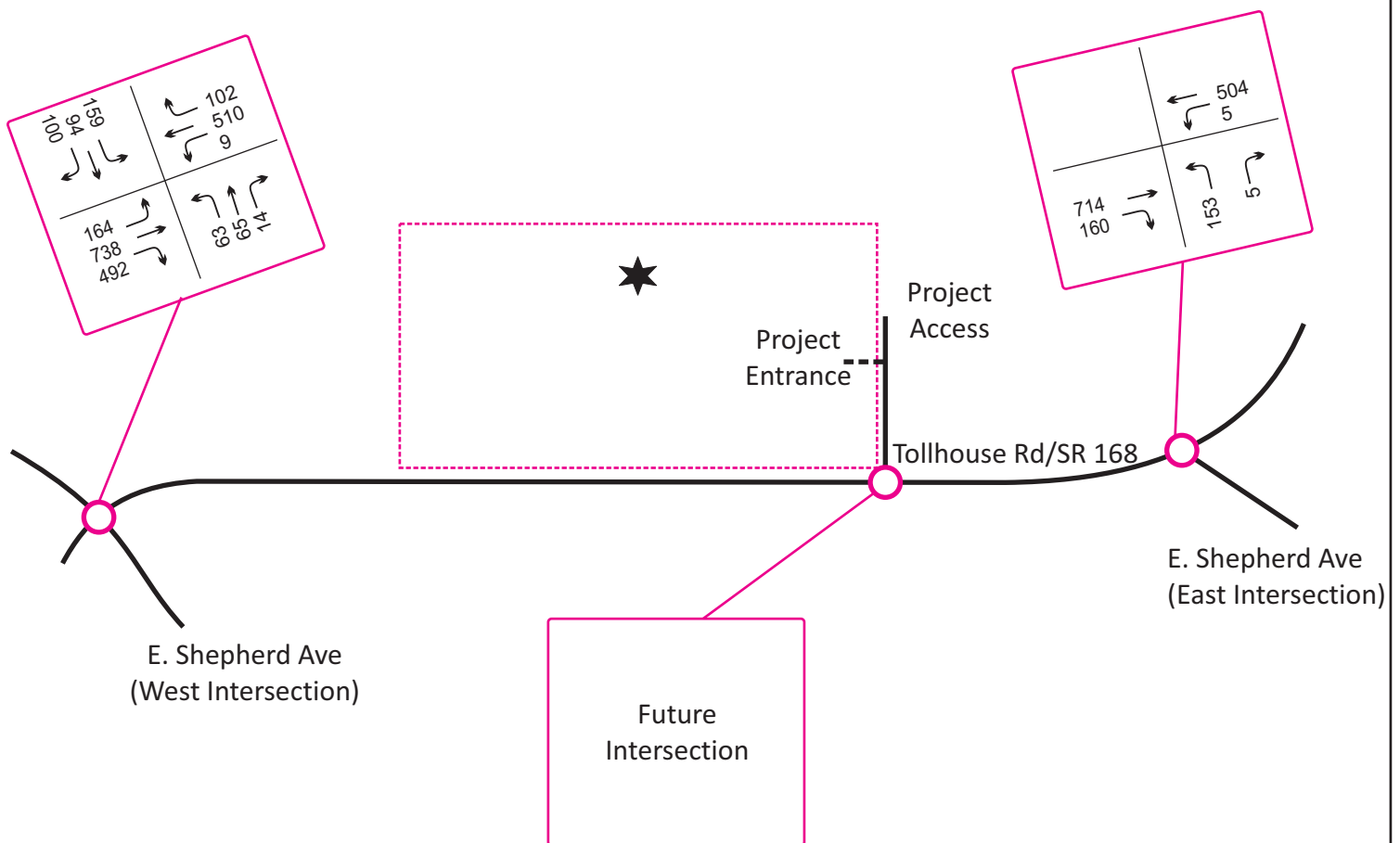


Project Intersection



← XX Peak Hour Traffic Volumes





LEGEND



Project Location



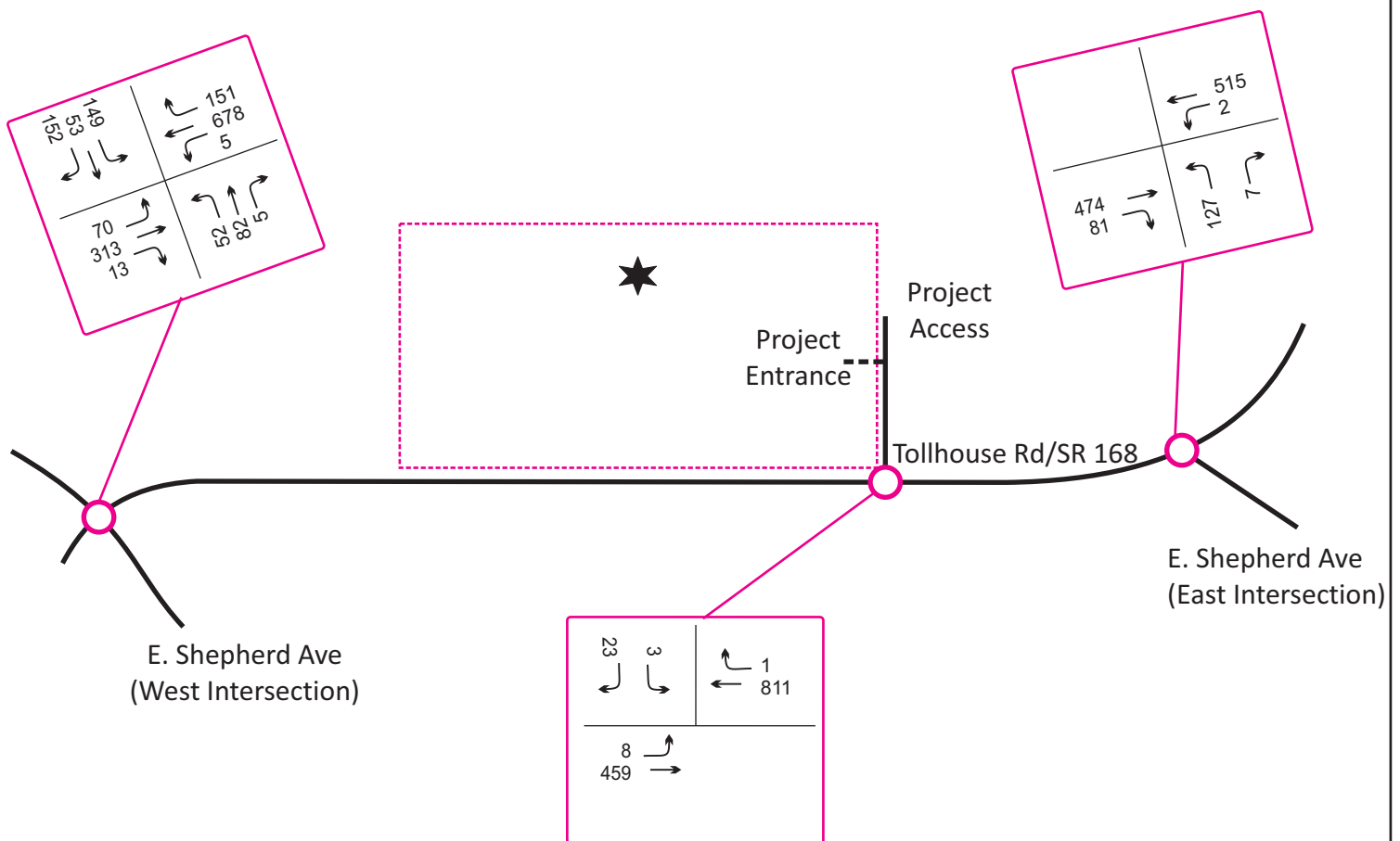
Project Intersection



← XX Peak Hour Traffic Volumes

Sample Ranch Residential Development Future Year (2046) Plus Project AM Peak Hour Traffic

Figure
3-11



LEGEND



Project Location



Project Intersection



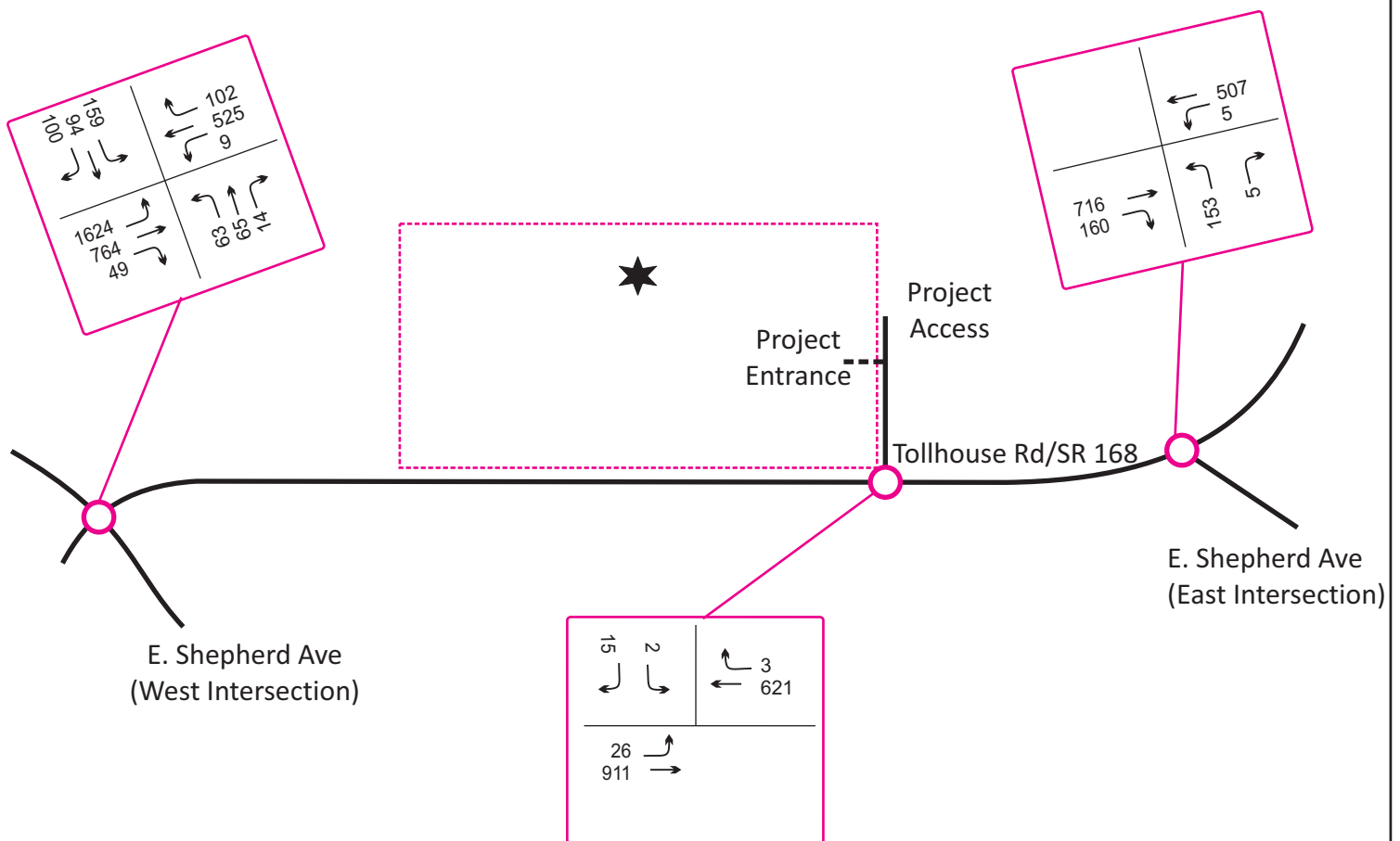
← XX Peak Hour Traffic Volumes



Sample Ranch Residential Development

Future Year (2046) Plus Project PM Peak Hour Traffic

Figure
3-12



LEGEND



Project Location



Project Intersection



← XX Peak Hour Traffic Volumes



Table 3-1
Intersection LOS - Existing & Opening Year

INTERSECTION	CONTROL	TARGET LOS	PEAK HOUR	EXISTING		OPENING YEAR		OPENING YEAR + PROJECT	
				DELAY	LOS	DELAY	LOS	DELAY	LOS
1. Tollhouse/SR168 and E. Shepherd Ave (West Intersection)	Signalized	D	AM	19.5	B	19.6	B	19.2	B
			PM	19.3	B	19.2	B	19.2	B
2. Tollhouse/SR168 and E. Shepherd Ave (East Intersection)	One-Way Stop	D	AM	11.1	B	11.2	B	11.2	B
			PM	12.1	B	12.2	B	12.3	B
3. Tollhouse/SR168 and Project Driveway	One-Way Stop	D	AM	Future Int.		Future Int.		13.7	B
			PM					16.2	C

DELAY is measured in seconds

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

For signalized intersections, delay results show the average for the entire intersection. For one-way stop controlled intersections, delay results show the delay for the worst movement.

+ Does not meet peak hour signal warrant - LOS D assumed

Table 3-2
Intersection LOS - Future Year

INTERSECTION	CONTROL	TARGET LOS	PEAK HOUR	FUTURE YEAR 2046		FUTURE YEAR 2046 + PROJECT	
				DELAY	LOS	DELAY	LOS
1. Tollhouse Rd/SR168 and E. Shepherd Ave (West Intersection)	Signalized	D	AM	21.8	C	21.8	C
			PM	16.2	B	16.3	B
2. Tollhouse Rd/SR168 and E. Shepherd Ave (East Intersection)	One-Way Stop	D	AM	38.3	E	38.6	E
			PM	126.6	F	128.7	F
3. Tollhouse Rd/SR168 and Project Driveway	One-Way Stop	D	AM	Future Int.		29.2	D
			PM			43.8	E

DELAY is measured in seconds

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

For signalized intersections, delay results show the average for the entire intersection. For one-way stop controlled intersections, delay results show the delay for the worst movement.

+ Does not meet peak hour signal warrant - LOS D assumed.

Table 3-3
Queuing Operations - Existing & Opening Year

INTERSECTION	EXISTING QUEUE STORAGE LENGTH (ft)		EXISTING		OPENING YEAR		OPENING YEAR PLUS PROJECT	
			AM Queue	PM Queue	AM Queue	PM Queue	AM Queue	PM Queue
1. Tollhouse Rd/SR168 and E. Shepherd Ave (West Signalized Intersection)	NB Left	150	51	15	52	16	52	16
	SB Left	2 @625	45	12	46	12	46	13
	SB Right	400	9	10	11	10	11	10
	EB Left	2 @925	26	34	27	35	27	34
	EB Right	475	0	21	0	22	0	21
	WB Left	450	11	12	11	12	11	12
	WB Right	2 @550	3	14	3	15	3	14

Queue is measured in feet /
BOLD denotes exceedance

Table 3-4
Queuing Operations - Future Year 2046

INTERSECTION	EXISTING QUEUE STORAGE LENGTH (ft)		FUTURE YEAR 2046		FUTURE YEAR 2046 PLUS PROJECT	
			AM Queue	PM Queue	AM Queue	PM Queue
1. Tollhouse Rd/SR168 and E. Shepherd Ave (West Signalized Intersection)	NB Left	150	80	38	81	40
	SB Left	2 @625	90	39	91	41
	SB Right	400	61	24	61	25
	EB Left	2 @925	51	53	51	53
	EB Right	475	0	19	0	19
	WB Left	450	16	12	16	12
	WB Right	2 @550	21	15	22	15

Queue is measured in feet / **BOLD** denotes
exceedance

4.0 Mitigation

As discussed in Chapter 3.0, Traffic Impacts, all study area intersections are expected to operate at level of service D or better under the Existing and Opening Year scenarios.

Except for the west signalized intersection of Tollhouse Road/SR 168 and E. Shepherd Avenue, all study area intersections (with or without the Project for Future Year 2046 conditions) are expected to exceed a level of service D. However, by 2046, a traffic signal is expected to be needed at the east intersection of Tollhouse Road/SR 168 and E. Shepherd Avenue and based on the Synchro analysis, the Project is not expected to reduce the LOS or delay at this intersection. Therefore, the Project is not responsible for any fair share cost for the installation of the traffic signal at this intersection.

At the intersection of Tollhouse Road/SR 168 and the Project Access Roadway, although the Future Year 2046 Plus Project traffic exceeds LOS D, this intersection does not meet peak hour signal warrants (California MUTCD Peak Hour Warrant – Warrant 3) because the minor approach (the Project Driveway) does not carry enough traffic to justify signalization (see Appendix D for Signal Warrant Worksheet).

APPENDIX A

VMT Analysis

MEMORANDUM

TO: Austin Ewell, Ewell Group

FROM: Erik Ruehr, VRPA Technologies, Inc.

DATE: June 5, 2025

RE: Sample Ranch
Vehicle Miles Traveled (VMT) Analysis

This memorandum provides a vehicle miles traveled (VMT) analysis for the proposed Sample Ranch project located near the intersection of E. Shepherd Avenue and Tollhouse Road/State Route 168 (SR 168) in Fresno County. The analysis was conducted to meet the requirements for transportation analysis under the California Environmental Quality Act (CEQA). The remainder of the memorandum includes sections describing background information, the project description, trip generation, VMT significance criteria, and VMT analysis.

BACKGROUND INFORMATION

Per the requirements of Senate Bill 743 (SB 743), VMT is the new performance measure used in CEQA transportation analysis. VMT became the required performance measure on July 1, 2020 replacing the previous performance measure which was level of service (LOS). The VMT generated by land development projects is compared to various screening criteria and significance thresholds to determine whether the level of VMT would be considered to be significant. Additional detail on this process is provided in the sections that follow.

PROJECT DESCRIPTION

The project is located along the north side of Tollhouse Road/SR 168 approximately 2 miles east of the intersection of Tollhouse Road/SR 168 and E. Shepherd Avenue (west intersection). Exhibits 1 through 3 show the regional location, project location, and site plan. Plans call for development of 44 single-family residential units.

TRIP GENERATION

The expected trip generation for the project was determined by the Institute of Transportation Engineers Trip Generation Manual, 10th Edition. A total of 474 daily trips, 35 AM peak hour trips, and 46 PM peak hour trips are expected to be generated.

VMT SIGNIFICANCE CRITERIA

The State of California Governor's Office of Planning and Research (OPR) document titled *Technical Advisory on Evaluating Transportation Impacts in CEQA* dated December 2018 (OPR Guidelines) indicates

that projects generating fewer than 110 trips per day generally may be presumed to cause a less than significant transportation impact. This recommendation is considered to apply in the absence of local data that would indicate a different threshold. Per CEQA, lead agencies are authorized to determine appropriate significance criteria and should be able to present substantial evidence for the significance criteria that they select.

The Fresno Council of Governments (Fresno COG) has completed a document titled *Fresno County SB 743 Implementation Regional Guidelines* dated January 2021 that presents substantial evidence that projects generating fewer than 500 trips per day may be presumed to cause a less than significant transportation impact (see pages 7 to 12). Incidentally, this threshold is already utilized by the County of Fresno to determine whether a traffic impact study is required as described in Section 1.3 of the *Guidelines for the Preparation of Traffic Impact Studies Within County of Fresno* dated August 2012.

VMT ANALYSIS

The project is expected to generate 474 trips per day. Therefore, the Project is considered to cause a less than significant transportation impact per the Fresno COG guidelines. Project trips will be less than 500 per day and substantial evidence exists as presented by Fresno COG, that projects generating less than 500 trips per day may be presumed to cause a less than significant transportation impact.

Please contact me if you have any questions. I can be reached by email at eruehr@vrpatechnologies.com or by phone at 858/361-7151.

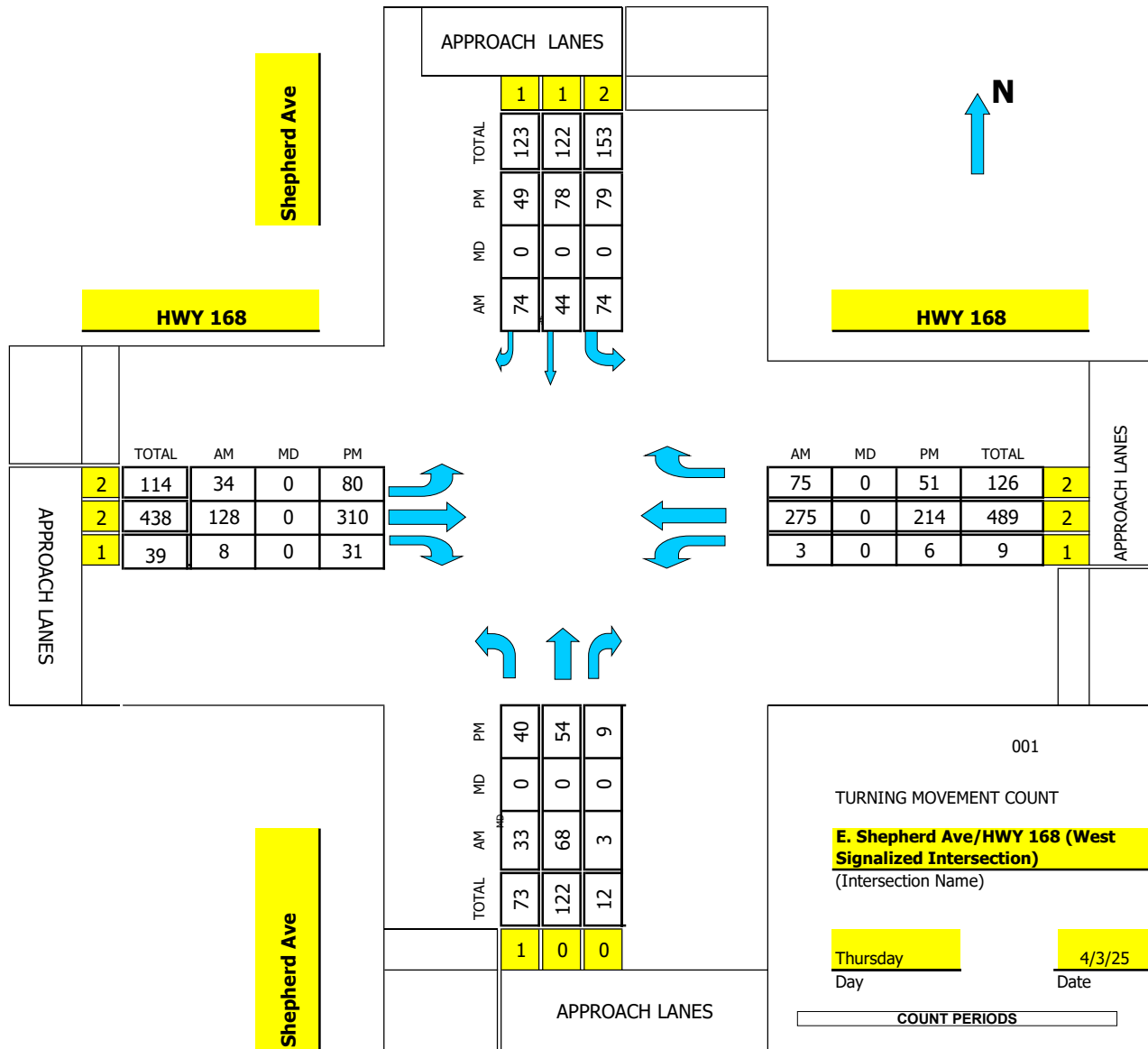


APPENDIX B

Traffic Count Data Worksheets

TMC Summary of Shepherd Ave/HWY 168

Project #:



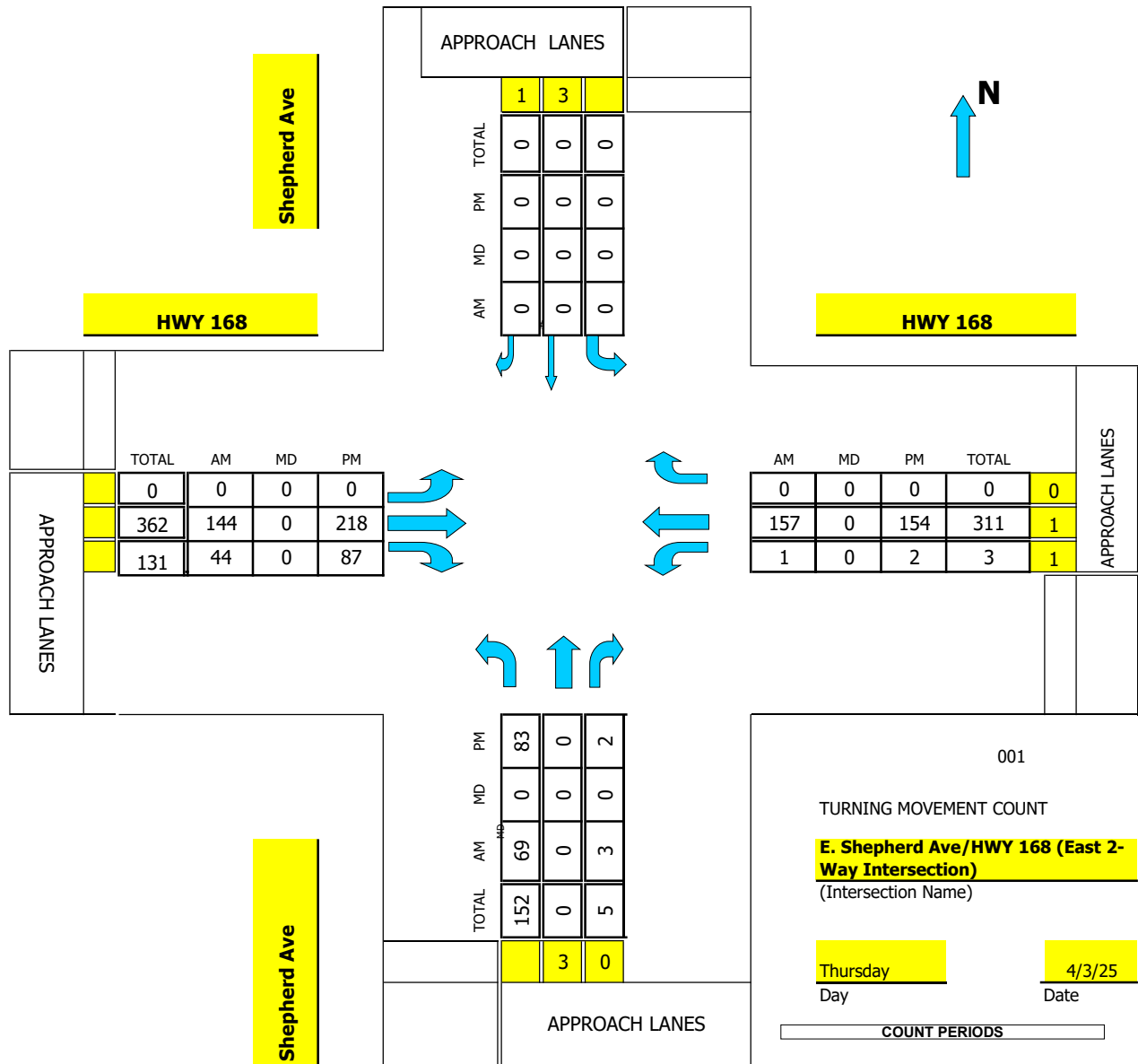
AM PEAK HOUR 730 AM

NOON PEAK HOUR 0 AM

PM PEAK HOUR 430 PM

TMC Summary of Shepherd Ave/HWY 168

Project #:



AM PEAK HOUR 730 AM

NOON PEAK HOUR 0 AM

PM PEAK HOUR 430 PM

APPENDIX C

Synchro Worksheets

EXISTING CONDITIONS

Queues

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	37	139	9	3	299	82	36	77	80	48	80
v/c Ratio	0.14	0.06	0.01	0.02	0.14	0.05	0.23	0.39	0.26	0.19	0.24
Control Delay	38.3	7.7	0.0	39.3	10.3	0.6	40.1	40.1	38.2	35.6	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	7.7	0.0	39.3	10.3	0.6	40.1	40.1	38.2	35.6	3.0
Queue Length 50th (ft)	8	12	0	1	41	0	17	35	19	22	0
Queue Length 95th (ft)	26	36	0	11	73	3	51	86	45	60	9
Internal Link Dist (ft)		72			542			233		189	
Turn Bay Length (ft)				150		150					
Base Capacity (vph)	877	2384	1097	209	2181	1769	342	636	663	639	631
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.06	0.01	0.01	0.14	0.05	0.11	0.12	0.12	0.08	0.13

Intersection Summary

HCM 6th Signalized Intersection Summary

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	128	8	3	275	75	33	68	3	74	44	74
Future Volume (veh/h)	34	128	8	3	275	75	33	68	3	74	44	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	37	139	9	3	299	82	36	74	3	80	48	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	218	2256	1006	7	2047	1607	62	124	5	182	164	139
Arrive On Green	0.06	0.64	0.64	0.00	0.58	0.58	0.03	0.07	0.07	0.05	0.09	0.09
Sat Flow, veh/h	3428	3526	1572	1767	3526	2768	1767	1771	72	3428	1856	1572
Grp Volume(v), veh/h	37	139	9	3	299	82	36	0	77	80	48	80
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1767	1763	1384	1767	0	1843	1714	1856	1572
Q Serve(g_s), s	0.8	1.1	0.2	0.1	3.0	1.0	1.6	0.0	3.1	1.7	1.9	3.8
Cycle Q Clear(g_c), s	0.8	1.1	0.2	0.1	3.0	1.0	1.6	0.0	3.1	1.7	1.9	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	218	2256	1006	7	2047	1607	62	0	129	182	164	139
V/C Ratio(X)	0.17	0.06	0.01	0.42	0.15	0.05	0.59	0.00	0.60	0.44	0.29	0.58
Avail Cap(c_a), veh/h	909	2256	1006	217	2047	1607	354	0	655	687	660	559
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	5.2	5.0	38.4	7.4	7.0	36.8	0.0	34.9	35.5	33.0	33.9
Incr Delay (d2), s/veh	0.4	0.1	0.0	34.9	0.2	0.1	8.5	0.0	4.3	1.7	1.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.3	0.0	0.1	0.9	0.3	0.8	0.0	1.5	0.8	0.9	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.6	5.3	5.1	73.4	7.6	7.1	45.3	0.0	39.2	37.2	34.0	37.6
LnGrp LOS	C	A	A	E	A	A	D	A	D	D	C	D
Approach Vol, veh/h	185			384			113			208		
Approach Delay, s/veh	11.1			8.0			41.2			36.6		
Approach LOS	B			A			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.8	54.0	7.2	11.3	9.4	49.4	8.6	9.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	49.5	15.5	27.5	20.5	38.5	15.5	27.5				
Max Q Clear Time (g_c+I1), s	2.1	3.1	3.6	5.8	2.8	5.0	3.7	5.1				
Green Ext Time (p_c), s	0.0	0.8	0.0	0.4	0.1	2.0	0.1	0.3				
Intersection Summary												
HCM 6th Ctrl Delay	19.5											
HCM 6th LOS	B											

Intersection

Int Delay, s/veh 2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	144	44	1	157	69	3
Future Vol, veh/h	144	44	1	157	69	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	157	48	1	171	75	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	157
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.13
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.227
Pot Cap-1 Maneuver	-	0	1417
Stage 1	-	0	-
Stage 2	-	0	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1417
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	669	-	1417	-
HCM Lane V/C Ratio	0.117	-	0.001	-
HCM Control Delay (s)	11.1	-	7.5	0
HCM Lane LOS	B	-	A	A
HCM 95th %tile Q(veh)	0.4	-	0	-

Queues

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	87	337	34	7	233	55	43	69	86	85	53
v/c Ratio	0.23	0.55	0.11	0.05	0.38	0.10	0.05	0.06	0.05	0.07	0.05
Control Delay	25.5	29.2	9.9	23.7	26.6	7.9	4.1	3.7	3.9	4.1	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	29.2	9.9	23.7	26.6	7.9	4.1	3.7	3.9	4.1	1.5
Queue Length 50th (ft)	16	68	0	2	46	0	5	6	4	9	0
Queue Length 95th (ft)	34	106	21	12	76	14	15	20	12	25	10
Internal Link Dist (ft)		72			542			233		189	
Turn Bay Length (ft)				150		150					
Base Capacity (vph)	2010	3244	1453	806	3244	2558	896	1251	1764	1277	1101
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.10	0.02	0.01	0.07	0.02	0.05	0.06	0.05	0.07	0.05
Intersection Summary											

HCM 6th Signalized Intersection Summary

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	310	31	6	214	51	40	54	9	79	78	49
Future Volume (veh/h)	80	310	31	6	214	51	40	54	9	79	78	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	87	337	34	7	233	55	43	59	10	86	85	53
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	440	589	263	186	589	463	957	1083	183	1976	1299	1101
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	2100	3526	1572	1003	3526	2768	1241	1546	262	2563	1856	1572
Grp Volume(v), veh/h	87	337	34	7	233	55	43	0	69	86	85	53
Grp Sat Flow(s),veh/h/ln	1050	1763	1572	1003	1763	1384	1241	0	1808	1282	1856	1572
Q Serve(g_s), s	2.6	6.0	1.2	0.4	4.0	1.1	0.8	0.0	0.8	0.7	1.0	0.7
Cycle Q Clear(g_c), s	6.6	6.0	1.2	6.4	4.0	1.1	1.7	0.0	0.8	1.5	1.0	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	440	589	263	186	589	463	957	0	1266	1976	1299	1101
V/C Ratio(X)	0.20	0.57	0.13	0.04	0.40	0.12	0.04	0.00	0.05	0.04	0.07	0.05
Avail Cap(c_a), veh/h	2054	3300	1472	957	3300	2590	957	0	1266	1976	1299	1101
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.1	26.0	24.0	29.0	25.2	24.0	3.5	0.0	3.2	3.4	3.2	3.2
Incr Delay (d2), s/veh	0.2	0.9	0.2	0.1	0.4	0.1	0.1	0.0	0.1	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.3	0.4	0.1	1.5	0.3	0.2	0.0	0.2	0.1	0.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.4	26.9	24.3	29.0	25.6	24.1	3.6	0.0	3.3	3.5	3.3	3.2
LnGrp LOS	C	C	C	C	C	C	A	A	A	A	A	A
Approach Vol, veh/h	458			295			112			224		
Approach Delay, s/veh	27.0			25.4			3.4			3.3		
Approach LOS	C			C			A			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	52.0			15.8			52.0			15.8		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	47.5			63.5			47.5			63.5		
Max Q Clear Time (g_c+I1), s	3.7			8.6			3.5			8.4		
Green Ext Time (p_c), s	0.5			2.7			1.0			1.6		
Intersection Summary												
HCM 6th Ctrl Delay	19.3											
HCM 6th LOS	B											

Intersection

Int Delay, s/veh 2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	218	87	2	154	83	2
Future Vol, veh/h	218	87	2	154	83	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	237	95	2	167	90	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	- 237	0 408 237
Stage 1	-	-	- 237 -
Stage 2	-	-	- 171 -
Critical Hdwy	-	- 4.13	- 6.43 6.23
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	-	- 2.227	- 3.527 3.327
Pot Cap-1 Maneuver	-	0 1324	- 597 800
Stage 1	-	0	- 800 -
Stage 2	-	0	- 857 -
Platoon blocked, %	-		-
Mov Cap-1 Maneuver	-	- 1324	- 596 800
Mov Cap-2 Maneuver	-	-	- 596 -
Stage 1	-	-	- 800 -
Stage 2	-	-	- 855 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	600	-	1324	-
HCM Lane V/C Ratio	0.154	-	0.002	-
HCM Control Delay (s)	12.1	-	7.7	0
HCM Lane LOS	B	-	A	A
HCM 95th %tile Q(veh)	0.5	-	0	-

OPENING YEAR 2026

Queues

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	38	142	9	3	305	84	37	78	82	49	82
v/c Ratio	0.14	0.06	0.01	0.02	0.14	0.05	0.24	0.39	0.26	0.19	0.25
Control Delay	38.4	7.7	0.0	39.3	10.3	0.6	40.2	40.2	38.3	35.7	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	7.7	0.0	39.3	10.3	0.6	40.2	40.2	38.3	35.7	3.3
Queue Length 50th (ft)	9	12	0	1	41	0	17	35	19	22	0
Queue Length 95th (ft)	27	37	0	11	75	3	52	87	46	62	11
Internal Link Dist (ft)		72			542			233		189	
Turn Bay Length (ft)				150		150					
Base Capacity (vph)	876	2383	1096	209	2179	1767	341	635	662	638	631
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.06	0.01	0.01	0.14	0.05	0.11	0.12	0.12	0.08	0.13

Intersection Summary

HCM 6th Signalized Intersection Summary

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	131	8	3	281	77	34	69	3	75	45	75
Future Volume (veh/h)	35	131	8	3	281	77	34	69	3	75	45	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	38	142	9	3	305	84	37	75	3	82	49	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	218	2254	1005	7	2044	1605	63	125	5	183	165	140
Arrive On Green	0.06	0.64	0.64	0.00	0.58	0.58	0.04	0.07	0.07	0.05	0.09	0.09
Sat Flow, veh/h	3428	3526	1572	1767	3526	2768	1767	1772	71	3428	1856	1572
Grp Volume(v), veh/h	38	142	9	3	305	84	37	0	78	82	49	82
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1767	1763	1384	1767	0	1843	1714	1856	1572
Q Serve(g_s), s	0.8	1.2	0.2	0.1	3.1	1.0	1.6	0.0	3.2	1.8	1.9	3.9
Cycle Q Clear(g_c), s	0.8	1.2	0.2	0.1	3.1	1.0	1.6	0.0	3.2	1.8	1.9	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	218	2254	1005	7	2044	1605	63	0	130	183	165	140
V/C Ratio(X)	0.17	0.06	0.01	0.42	0.15	0.05	0.59	0.00	0.60	0.45	0.30	0.59
Avail Cap(c_a), veh/h	908	2254	1005	217	2044	1605	354	0	654	686	659	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	5.2	5.1	38.5	7.5	7.1	36.8	0.0	34.9	35.5	33.0	33.9
Incr Delay (d2), s/veh	0.4	0.1	0.0	34.9	0.2	0.1	8.6	0.0	4.3	1.7	1.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.3	0.0	0.1	0.9	0.3	0.8	0.0	1.6	0.8	0.9	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.7	5.3	5.1	73.4	7.6	7.1	45.4	0.0	39.3	37.2	34.0	37.8
LnGrp LOS	C	A	A	E	A	A	D	A	D	D	C	D
Approach Vol, veh/h	189			392				115			213	
Approach Delay, s/veh	11.2			8.0				41.2			36.7	
Approach LOS	B			A				D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.8	54.0	7.2	11.4	9.4	49.4	8.6	10.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	49.5	15.5	27.5	20.5	38.5	15.5	27.5				
Max Q Clear Time (g_c+I1), s	2.1	3.2	3.6	5.9	2.8	5.1	3.8	5.2				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.4	0.1	2.0	0.1	0.3				
Intersection Summary												
HCM 6th Ctrl Delay	19.6											
HCM 6th LOS	B											

Intersection

Int Delay, s/veh 2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	147	45	1	160	70	3
Future Vol, veh/h	147	45	1	160	70	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	160	49	1	174	76	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	- 160	0 336 160
Stage 1	-	-	- 160 -
Stage 2	-	-	- 176 -
Critical Hdwy	-	- 4.13	- 6.43 6.23
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	-	- 2.227	- 3.527 3.327
Pot Cap-1 Maneuver	-	0 1413	- 657 882
Stage 1	-	0	- 866 -
Stage 2	-	0	- 852 -
Platoon blocked, %	-		-
Mov Cap-1 Maneuver	-	- 1413	- 656 882
Mov Cap-2 Maneuver	-	-	- 656 -
Stage 1	-	-	- 866 -
Stage 2	-	-	- 851 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	663	-	1413	-
HCM Lane V/C Ratio	0.12	-	0.001	-
HCM Control Delay (s)	11.2	-	7.5	0
HCM Lane LOS	B	-	A	A
HCM 95th %tile Q(veh)	0.4	-	0	-

Queues

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	89	343	35	7	237	57	45	70	88	87	54
v/c Ratio	0.23	0.55	0.11	0.05	0.38	0.11	0.05	0.06	0.05	0.07	0.05
Control Delay	25.5	29.2	9.8	23.7	26.6	7.8	4.1	3.7	4.0	4.1	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	29.2	9.8	23.7	26.6	7.8	4.1	3.7	4.0	4.1	1.5
Queue Length 50th (ft)	17	70	0	2	46	0	5	7	4	9	0
Queue Length 95th (ft)	35	108	22	12	77	15	16	20	12	25	10
Internal Link Dist (ft)		72			542			233		189	
Turn Bay Length (ft)				150		150					
Base Capacity (vph)	1995	3236	1450	792	3236	2553	893	1249	1757	1274	1099
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.11	0.02	0.01	0.07	0.02	0.05	0.06	0.05	0.07	0.05
Intersection Summary											

HCM 6th Signalized Intersection Summary

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	316	32	6	218	52	41	55	9	81	80	50
Future Volume (veh/h)	82	316	32	6	218	52	41	55	9	81	80	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	89	343	35	7	237	57	45	60	10	88	87	54
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	441	599	267	186	599	470	951	1082	180	1968	1295	1097
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	2089	3526	1572	997	3526	2768	1238	1551	258	2561	1856	1572
Grp Volume(v), veh/h	89	343	35	7	237	57	45	0	70	88	87	54
Grp Sat Flow(s),veh/h/ln	1044	1763	1572	997	1763	1384	1238	0	1809	1280	1856	1572
Q Serve(g_s), s	2.7	6.1	1.3	0.4	4.1	1.2	0.8	0.0	0.8	0.8	1.0	0.7
Cycle Q Clear(g_c), s	6.8	6.1	1.3	6.5	4.1	1.2	1.8	0.0	0.8	1.6	1.0	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	441	599	267	186	599	470	951	0	1263	1968	1295	1097
V/C Ratio(X)	0.20	0.57	0.13	0.04	0.40	0.12	0.05	0.00	0.06	0.04	0.07	0.05
Avail Cap(c_a), veh/h	2035	3289	1467	947	3289	2582	951	0	1263	1968	1295	1097
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	26.0	24.0	29.0	25.1	23.9	3.5	0.0	3.2	3.5	3.3	3.2
Incr Delay (d2), s/veh	0.2	0.9	0.2	0.1	0.4	0.1	0.1	0.0	0.1	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.4	0.4	0.1	1.5	0.3	0.2	0.0	0.2	0.1	0.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.4	26.8	24.2	29.1	25.6	24.1	3.6	0.0	3.3	3.5	3.4	3.3
LnGrp LOS	C	C	C	C	C	C	A	A	A	A	A	A
Approach Vol, veh/h	467			301			115			229		
Approach Delay, s/veh	26.9			25.4			3.4			3.4		
Approach LOS	C			C			A			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	52.0			16.1			52.0			16.1		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	47.5			63.5			47.5			63.5		
Max Q Clear Time (g_c+I1), s	3.8			8.8			3.6			8.5		
Green Ext Time (p_c), s	0.6			2.8			1.0			1.6		
Intersection Summary												
HCM 6th Ctrl Delay	19.2											
HCM 6th LOS	B											

Intersection

Int Delay, s/veh 2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	222	89	2	157	85	2
Future Vol, veh/h	222	89	2	157	85	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	241	97	2	171	92	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	- 241	0 416 241
Stage 1	-	-	- 241 -
Stage 2	-	-	- 175 -
Critical Hdwy	-	- 4.13	- 6.43 6.23
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	-	- 2.227	- 3.527 3.327
Pot Cap-1 Maneuver	-	0 1320	- 591 795
Stage 1	-	0	- 797 -
Stage 2	-	0	- 853 -
Platoon blocked, %	-		-
Mov Cap-1 Maneuver	-	- 1320	- 590 795
Mov Cap-2 Maneuver	-	-	- 590 -
Stage 1	-	-	- 797 -
Stage 2	-	-	- 851 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	594	- 1320	-	-
HCM Lane V/C Ratio	0.159	- 0.002	-	-
HCM Control Delay (s)	12.2	- 7.7	0	
HCM Lane LOS	B	- A	A	
HCM 95th %tile Q(veh)	0.6	- 0	-	

OPENING YEAR 2026 PLUS PROJECT

Queues

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	38	151	9	3	330	84	37	78	82	49	82
v/c Ratio	0.14	0.06	0.01	0.02	0.15	0.05	0.24	0.39	0.26	0.19	0.25
Control Delay	38.4	7.7	0.0	39.3	10.4	0.6	40.2	40.2	38.3	35.7	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	7.7	0.0	39.3	10.4	0.6	40.2	40.2	38.3	35.7	3.3
Queue Length 50th (ft)	9	13	0	1	45	0	17	35	19	22	0
Queue Length 95th (ft)	27	39	0	11	81	3	52	87	46	62	11
Internal Link Dist (ft)		72			542			233		189	
Turn Bay Length (ft)				150		150					
Base Capacity (vph)	876	2383	1096	209	2179	1767	341	635	662	638	631
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.06	0.01	0.01	0.15	0.05	0.11	0.12	0.12	0.08	0.13

Intersection Summary

HCM 6th Signalized Intersection Summary

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	139	8	3	304	77	34	69	3	75	45	75
Future Volume (veh/h)	35	139	8	3	304	77	34	69	3	75	45	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	38	151	9	3	330	84	37	75	3	82	49	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	218	2254	1005	7	2043	1604	63	125	5	183	165	140
Arrive On Green	0.06	0.64	0.64	0.00	0.58	0.58	0.04	0.07	0.07	0.05	0.09	0.09
Sat Flow, veh/h	3428	3526	1572	1767	3526	2768	1767	1772	71	3428	1856	1572
Grp Volume(v), veh/h	38	151	9	3	330	84	37	0	78	82	49	82
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1767	1763	1384	1767	0	1843	1714	1856	1572
Q Serve(g_s), s	0.8	1.2	0.2	0.1	3.4	1.0	1.6	0.0	3.2	1.8	1.9	3.9
Cycle Q Clear(g_c), s	0.8	1.2	0.2	0.1	3.4	1.0	1.6	0.0	3.2	1.8	1.9	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	218	2254	1005	7	2043	1604	63	0	130	183	165	140
V/C Ratio(X)	0.17	0.07	0.01	0.42	0.16	0.05	0.59	0.00	0.60	0.45	0.30	0.59
Avail Cap(c_a), veh/h	908	2254	1005	217	2043	1604	354	0	654	686	659	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	5.3	5.1	38.5	7.5	7.1	36.8	0.0	34.9	35.5	33.0	33.9
Incr Delay (d2), s/veh	0.4	0.1	0.0	34.9	0.2	0.1	8.6	0.0	4.3	1.7	1.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.3	0.0	0.1	1.0	0.3	0.8	0.0	1.6	0.8	0.9	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.7	5.3	5.1	73.4	7.7	7.1	45.4	0.0	39.3	37.2	34.0	37.8
LnGrp LOS	C	A	A	E	A	A	D	A	D	D	C	D
Approach Vol, veh/h	198			417				115			213	
Approach Delay, s/veh	10.9			8.1				41.2			36.7	
Approach LOS	B			A				D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.8	54.0	7.2	11.4	9.4	49.4	8.6	10.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	9.5	49.5	15.5	27.5	20.5	38.5	15.5	27.5				
Max Q Clear Time (g_c+I1), s	2.1	3.2	3.6	5.9	2.8	5.4	3.8	5.2				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.4	0.1	2.2	0.1	0.3				
Intersection Summary												
HCM 6th Ctrl Delay	19.2											
HCM 6th LOS	B											

Intersection

Int Delay, s/veh 2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	150	45	1	161	70	3
Future Vol, veh/h	150	45	1	161	70	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	163	49	1	175	76	3

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	- 163	0 340 163
Stage 1	-	-	- 163 -
Stage 2	-	-	- 177 -
Critical Hdwy	-	- 4.13	- 6.43 6.23
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	-	- 2.227	- 3.527 3.327
Pot Cap-1 Maneuver	-	0 1410	- 654 879
Stage 1	-	0	- 864 -
Stage 2	-	0	- 851 -
Platoon blocked, %	-		-
Mov Cap-1 Maneuver	-	- 1410	- 653 879
Mov Cap-2 Maneuver	-	-	- 653 -
Stage 1	-	-	- 864 -
Stage 2	-	-	- 850 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	660	-	1410	-
HCM Lane V/C Ratio	0.12	-	0.001	-
HCM Control Delay (s)	11.2	-	7.6	0
HCM Lane LOS	B	-	A	A
HCM 95th %tile Q(veh)	0.4	-	0	-

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	217	384	1	3	23
Future Vol, veh/h	8	217	384	1	3	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	250	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	9	236	417	1	3	25
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	418	0	-	0	671	417
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	254	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1136	-	-	-	420	634
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	786	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1136	-	-	-	417	634
Mov Cap-2 Maneuver	-	-	-	-	417	-
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	786	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.3	0		11.2		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1136	-	-	-	417	634
HCM Lane V/C Ratio	0.008	-	-	-	0.008	0.039
HCM Control Delay (s)	8.2	-	-	-	13.7	10.9
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0	-	-	-	0	0.1

Queues

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	89	372	35	7	253	57	45	70	88	87	54
v/c Ratio	0.22	0.57	0.11	0.05	0.39	0.10	0.05	0.06	0.05	0.07	0.05
Control Delay	24.8	28.8	9.4	23.0	26.0	7.6	4.4	3.9	4.2	4.3	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	28.8	9.4	23.0	26.0	7.6	4.4	3.9	4.2	4.3	1.6
Queue Length 50th (ft)	16	75	0	2	49	0	5	7	5	10	0
Queue Length 95th (ft)	34	114	21	12	80	14	16	21	13	26	10
Internal Link Dist (ft)		72			542			233		189	
Turn Bay Length (ft)				150		150					
Base Capacity (vph)	2012	3313	1484	758	3313	2612	881	1233	1733	1257	1085
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.11	0.02	0.01	0.08	0.02	0.05	0.06	0.05	0.07	0.05
Intersection Summary											

HCM 6th Signalized Intersection Summary 2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	342	32	6	233	52	41	55	9	81	80	50
Future Volume (veh/h)	82	342	32	6	233	52	41	55	9	81	80	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	89	372	35	7	253	57	45	60	10	88	87	54
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	449	627	280	185	627	492	940	1068	178	1945	1278	1083
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.69	0.69	0.69	0.69	0.69	0.69
Sat Flow, veh/h	2058	3526	1572	971	3526	2768	1238	1551	258	2561	1856	1572
Grp Volume(v), veh/h	89	372	35	7	253	57	45	0	70	88	87	54
Grp Sat Flow(s),veh/h/ln	1029	1763	1572	971	1763	1384	1238	0	1809	1280	1856	1572
Q Serve(g_s), s	2.7	6.5	1.3	0.5	4.3	1.2	0.8	0.0	0.8	0.8	1.0	0.7
Cycle Q Clear(g_c), s	7.0	6.5	1.3	7.0	4.3	1.2	1.9	0.0	0.8	1.6	1.0	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	449	627	280	185	627	492	940	0	1246	1945	1278	1083
V/C Ratio(X)	0.20	0.59	0.13	0.04	0.40	0.12	0.05	0.00	0.06	0.05	0.07	0.05
Avail Cap(c_a), veh/h	2049	3368	1502	940	3368	2644	940	0	1246	1945	1278	1083
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	25.5	23.3	28.7	24.6	23.3	3.7	0.0	3.4	3.7	3.4	3.4
Incr Delay (d2), s/veh	0.2	0.9	0.2	0.1	0.4	0.1	0.1	0.0	0.1	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.5	0.4	0.1	1.6	0.3	0.2	0.0	0.2	0.2	0.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.9	26.4	23.5	28.8	25.0	23.4	3.8	0.0	3.5	3.7	3.5	3.5
LnGrp LOS	C	C	C	C	C	C	A	A	A	A	A	A
Approach Vol, veh/h	496			317			115			229		
Approach Delay, s/veh	26.5			24.8			3.6			3.6		
Approach LOS	C			C			A			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	51.0			16.5			51.0			16.5		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	46.5			64.5			46.5			64.5		
Max Q Clear Time (g_c+I1), s	3.9			9.0			3.6			9.0		
Green Ext Time (p_c), s	0.5			3.0			1.0			1.7		
Intersection Summary												
HCM 6th Ctrl Delay	19.2											
HCM 6th LOS	B											

Intersection

Int Delay, s/veh 2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	224	89	2	160	85	2
Future Vol, veh/h	224	89	2	160	85	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	243	97	2	174	92	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	- 243	0 421 243
Stage 1	-	-	- 243 -
Stage 2	-	-	- 178 -
Critical Hdwy	-	- 4.13	- 6.43 6.23
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	-	- 2.227	- 3.527 3.327
Pot Cap-1 Maneuver	-	0 1317	- 587 793
Stage 1	-	0	- 795 -
Stage 2	-	0	- 850 -
Platoon blocked, %	-		-
Mov Cap-1 Maneuver	-	- 1317	- 586 793
Mov Cap-2 Maneuver	-	-	- 586 -
Stage 1	-	-	- 795 -
Stage 2	-	-	- 848 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	590	-	1317	-
HCM Lane V/C Ratio	0.16	-	0.002	-
HCM Control Delay (s)	12.3	-	7.7	0
HCM Lane LOS	B	-	A	A
HCM 95th %tile Q(veh)	0.6	-	0	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	26	432	291	3	2	15
Future Vol, veh/h	26	432	291	3	2	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	250	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	28	470	316	3	2	16
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	319	0	-	0	842	316
Stage 1	-	-	-	-	316	-
Stage 2	-	-	-	-	526	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1235	-	-	-	333	722
Stage 1	-	-	-	-	737	-
Stage 2	-	-	-	-	591	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1235	-	-	-	325	722
Mov Cap-2 Maneuver	-	-	-	-	325	-
Stage 1	-	-	-	-	720	-
Stage 2	-	-	-	-	591	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.5	0		10.8		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1235	-	-	-	325	722
HCM Lane V/C Ratio	0.023	-	-	-	0.007	0.023
HCM Control Delay (s)	8	-	-	-	16.2	10.1
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0	0.1

FUTURE YEAR 2046

Queues

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	76	332	14	5	712	164	57	94	162	58	165
v/c Ratio	0.28	0.15	0.01	0.05	0.36	0.10	0.36	0.47	0.45	0.26	0.49
Control Delay	46.0	8.5	0.0	47.4	14.3	3.2	49.2	48.3	45.2	42.5	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	8.5	0.0	47.4	14.3	3.2	49.2	48.3	45.2	42.5	12.1
Queue Length 50th (ft)	22	36	0	3	128	2	32	52	46	31	0
Queue Length 95th (ft)	51	88	0	16	211	21	80	115	90	78	61
Internal Link Dist (ft)		72			542			233		189	
Turn Bay Length (ft)				150		150					
Base Capacity (vph)	719	2271	1049	123	1977	1622	237	428	534	470	522
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.15	0.01	0.04	0.36	0.10	0.24	0.22	0.30	0.12	0.32
Intersection Summary											

HCM 6th Signalized Intersection Summary

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	305	13	5	655	151	52	82	5	149	53	152
Future Volume (veh/h)	70	305	13	5	655	151	52	82	5	149	53	152
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	76	332	14	5	712	164	57	89	5	162	58	165
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	182	2225	992	12	2061	1618	74	177	10	238	241	204
Arrive On Green	0.05	0.63	0.63	0.01	0.58	0.58	0.04	0.10	0.10	0.07	0.13	0.13
Sat Flow, veh/h	3428	3526	1572	1767	3526	2768	1767	1740	98	3428	1856	1572
Grp Volume(v), veh/h	76	332	14	5	712	164	57	0	94	162	58	165
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1767	1763	1384	1767	0	1838	1714	1856	1572
Q Serve(g_s), s	2.0	3.6	0.3	0.3	9.9	2.5	3.0	0.0	4.6	4.4	2.6	9.6
Cycle Q Clear(g_c), s	2.0	3.6	0.3	0.3	9.9	2.5	3.0	0.0	4.6	4.4	2.6	9.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	182	2225	992	12	2061	1618	74	0	187	238	241	204
V/C Ratio(X)	0.42	0.15	0.01	0.43	0.35	0.10	0.78	0.00	0.50	0.68	0.24	0.81
Avail Cap(c_a), veh/h	709	2225	992	122	2061	1618	234	0	419	527	463	392
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.2	7.1	6.5	46.7	10.2	8.6	44.7	0.0	40.1	42.8	36.8	39.9
Incr Delay (d2), s/veh	1.5	0.1	0.0	23.8	0.5	0.1	15.8	0.0	2.1	3.4	0.5	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.2	0.1	0.2	3.2	0.7	1.6	0.0	2.2	1.9	1.2	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.8	7.2	6.5	70.4	10.7	8.8	60.5	0.0	42.1	46.2	37.4	47.3
LnGrp LOS	D	A	A	E	B	A	E	A	D	D	D	D
Approach Vol, veh/h	422			881			151			385		
Approach Delay, s/veh	14.0			10.6			49.1			45.3		
Approach LOS	B			B			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.1	64.0	8.4	16.7	9.5	59.6	11.0	14.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.5	59.5	12.5	23.5	19.5	46.5	14.5	21.5				
Max Q Clear Time (g_c+I1), s	2.3	5.6	5.0	11.6	4.0	11.9	6.4	6.6				
Green Ext Time (p_c), s	0.0	2.2	0.0	0.6	0.1	5.3	0.3	0.3				
Intersection Summary												
HCM 6th Ctrl Delay	21.8											
HCM 6th LOS	C											

Intersection

Int Delay, s/veh 4.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	471	81	2	514	127	7
Future Vol, veh/h	471	81	2	514	127	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	512	88	2	559	138	8

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	512
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.13
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.227
Pot Cap-1 Maneuver	-	0	1048
Stage 1	-	0	-
Stage 2	-	0	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1048
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	38.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	248	-	1048	-
HCM Lane V/C Ratio	0.587	-	0.002	-
HCM Control Delay (s)	38.3	-	8.4	0
HCM Lane LOS	E	-	A	A
HCM 95th %tile Q(veh)	3.4	-	0	-

Queues

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	178	802	53	10	554	111	68	86	173	102	109
v/c Ratio	0.41	0.68	0.09	0.08	0.47	0.11	0.10	0.09	0.13	0.10	0.12
Control Delay	20.0	22.4	5.0	16.1	18.8	3.7	9.9	8.8	9.4	9.6	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	22.4	5.0	16.1	18.8	3.7	9.9	8.8	9.4	9.6	2.8
Queue Length 50th (ft)	28	146	0	3	92	0	13	14	17	19	0
Queue Length 95th (ft)	53	200	19	12	132	15	38	42	39	50	24
Internal Link Dist (ft)		72			542			233		189	
Turn Bay Length (ft)				150		150					
Base Capacity (vph)	1299	3505	1568	380	3505	2760	676	957	1331	979	883
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.23	0.03	0.03	0.16	0.04	0.10	0.09	0.13	0.10	0.12
Intersection Summary											

HCM 6th Signalized Intersection Summary

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	738	49	9	510	102	63	65	14	159	94	100
Future Volume (veh/h)	164	738	49	9	510	102	63	65	14	159	94	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	178	802	53	10	554	111	68	71	15	173	102	109
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	576	1297	579	219	1297	1018	654	749	158	1414	936	793
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	1484	3526	1572	640	3526	2768	1161	1485	314	2524	1856	1572
Grp Volume(v), veh/h	178	802	53	10	554	111	68	0	86	173	102	109
Grp Sat Flow(s),veh/h/ln	742	1763	1572	640	1763	1384	1161	0	1799	1262	1856	1572
Q Serve(g_s), s	7.2	13.1	1.6	0.9	8.3	1.9	2.3	0.0	1.8	2.7	2.0	2.6
Cycle Q Clear(g_c), s	15.5	13.1	1.6	14.0	8.3	1.9	4.3	0.0	1.8	4.5	2.0	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	576	1297	579	219	1297	1018	654	0	907	1414	936	793
V/C Ratio(X)	0.31	0.62	0.09	0.05	0.43	0.11	0.10	0.00	0.09	0.12	0.11	0.14
Avail Cap(c_a), veh/h	1620	3780	1686	670	3780	2968	654	0	907	1414	936	793
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	18.2	14.6	23.9	16.7	14.6	10.3	0.0	9.1	10.2	9.2	9.3
Incr Delay (d2), s/veh	0.3	0.5	0.1	0.1	0.2	0.0	0.3	0.0	0.2	0.2	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	4.6	0.5	0.1	2.8	0.5	0.6	0.0	0.7	0.7	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	18.7	14.6	24.0	16.9	14.7	10.6	0.0	9.3	10.4	9.4	9.7
LnGrp LOS	C	B	B	C	B	B	B	A	A	B	A	A
Approach Vol, veh/h	1033			675			154			384		
Approach Delay, s/veh	19.2			16.6			9.9			9.9		
Approach LOS	B			B			A			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	40.0			30.4			40.0			30.4		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	35.5			75.5			35.5			75.5		
Max Q Clear Time (g_c+I1), s	6.3			17.5			6.5			16.0		
Green Ext Time (p_c), s	0.7			8.4			1.7			4.1		
Intersection Summary												
HCM 6th Ctrl Delay	16.2											
HCM 6th LOS	B											

Intersection

Int Delay, s/veh 14.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	714	160	5	504	153	5
Future Vol, veh/h	714	160	5	504	153	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	776	174	5	548	166	5

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	776
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.13
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.227
Pot Cap-1 Maneuver	-	0	836
Stage 1	-	0	-
Stage 2	-	0	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	836
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	126.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	170	-	836	-
HCM Lane V/C Ratio	1.01	-	0.007	-
HCM Control Delay (s)	126.6	-	9.3	0
HCM Lane LOS	F	-	A	A
HCM 95th %tile Q(veh)	8.1	-	0	-

FUTURE YEAR 2046 PLUS PROJECT

Queues

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	76	340	14	5	737	164	57	94	162	58	165
v/c Ratio	0.28	0.15	0.01	0.05	0.37	0.10	0.36	0.47	0.45	0.26	0.49
Control Delay	46.6	8.5	0.0	48.0	14.3	3.3	49.8	49.0	45.9	43.1	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.6	8.5	0.0	48.0	14.3	3.3	49.8	49.0	45.9	43.1	12.2
Queue Length 50th (ft)	22	37	0	3	134	2	33	52	47	32	0
Queue Length 95th (ft)	51	91	0	16	220	22	81	116	91	79	61
Internal Link Dist (ft)		72			542			233		189	
Turn Bay Length (ft)				150		150					
Base Capacity (vph)	710	2282	1054	122	1991	1632	234	423	491	445	503
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.15	0.01	0.04	0.37	0.10	0.24	0.22	0.33	0.13	0.33
Intersection Summary											

HCM 6th Signalized Intersection Summary

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	313	13	5	678	151	52	82	5	149	53	152
Future Volume (veh/h)	70	313	13	5	678	151	52	82	5	149	53	152
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	76	340	14	5	737	164	57	89	5	162	58	165
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	180	2235	997	11	2073	1628	74	177	10	236	240	203
Arrive On Green	0.05	0.63	0.63	0.01	0.59	0.59	0.04	0.10	0.10	0.07	0.13	0.13
Sat Flow, veh/h	3428	3526	1572	1767	3526	2768	1767	1740	98	3428	1856	1572
Grp Volume(v), veh/h	76	340	14	5	737	164	57	0	94	162	58	165
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1767	1763	1384	1767	0	1838	1714	1856	1572
Q Serve(g_s), s	2.0	3.7	0.3	0.3	10.4	2.5	3.0	0.0	4.6	4.4	2.7	9.7
Cycle Q Clear(g_c), s	2.0	3.7	0.3	0.3	10.4	2.5	3.0	0.0	4.6	4.4	2.7	9.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	180	2235	997	11	2073	1628	74	0	187	236	240	203
V/C Ratio(X)	0.42	0.15	0.01	0.44	0.36	0.10	0.77	0.00	0.50	0.69	0.24	0.81
Avail Cap(c_a), veh/h	701	2235	997	120	2073	1628	231	0	414	485	438	371
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	7.1	6.4	47.2	10.2	8.6	45.3	0.0	40.6	43.4	37.3	40.4
Incr Delay (d2), s/veh	1.6	0.1	0.0	23.8	0.5	0.1	15.7	0.0	2.1	3.5	0.5	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.2	0.1	0.2	3.4	0.7	1.6	0.0	2.2	2.0	1.2	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.4	7.2	6.5	71.0	10.7	8.7	61.0	0.0	42.6	46.9	37.9	48.0
LnGrp LOS	D	A	A	E	B	A	E	A	D	D	D	D
Approach Vol, veh/h	430			906			151			385		
Approach Delay, s/veh	13.9			10.7			49.6			46.0		
Approach LOS	B			B			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.1	65.0	8.5	16.8	9.5	60.6	11.1	14.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.5	60.5	12.5	22.5	19.5	47.5	13.5	21.5				
Max Q Clear Time (g_c+I1), s	2.3	5.7	5.0	11.7	4.0	12.4	6.4	6.6				
Green Ext Time (p_c), s	0.0	2.2	0.0	0.6	0.1	5.5	0.3	0.3				
Intersection Summary												
HCM 6th Ctrl Delay	21.8											
HCM 6th LOS	C											

Intersection

Int Delay, s/veh 4.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	474	81	2	515	127	7
Future Vol, veh/h	474	81	2	515	127	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	515	88	2	560	138	8

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	515
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.13
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.227
Pot Cap-1 Maneuver	-	0	1046
Stage 1	-	0	-
Stage 2	-	0	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1046
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	38.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	247	-	1046	-
HCM Lane V/C Ratio	0.59	-	0.002	-
HCM Control Delay (s)	38.6	-	8.4	0
HCM Lane LOS	E	-	A	A
HCM 95th %tile Q(veh)	3.4	-	0	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	459	811	1	3	23
Future Vol, veh/h	8	459	811	1	3	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	250	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	9	499	882	1	3	25
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	883	0	-	0	1399	882
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	517	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	762	-	-	-	154	344
Stage 1	-	-	-	-	403	-
Stage 2	-	-	-	-	596	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	762	-	-	-	152	344
Mov Cap-2 Maneuver	-	-	-	-	152	-
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	596	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		17.8		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	762	-	-	-	152	344
HCM Lane V/C Ratio	0.011	-	-	-	0.021	0.073
HCM Control Delay (s)	9.8	-	-	-	29.2	16.3
HCM Lane LOS	A	-	-	-	D	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.2

Queues

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	178	830	53	10	571	111	68	86	173	102	109
v/c Ratio	0.41	0.69	0.09	0.08	0.47	0.11	0.10	0.09	0.13	0.11	0.12
Control Delay	19.7	22.2	4.9	15.9	18.6	3.5	10.5	9.4	10.0	10.2	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	22.2	4.9	15.9	18.6	3.5	10.5	9.4	10.0	10.2	3.0
Queue Length 50th (ft)	28	153	0	3	96	0	13	15	17	20	0
Queue Length 95th (ft)	53	207	19	12	135	15	40	44	41	53	25
Internal Link Dist (ft)		72			542			233		189	
Turn Bay Length (ft)				150		150					
Base Capacity (vph)	1263	3495	1564	362	3495	2752	666	944	1311	965	872
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.24	0.03	0.03	0.16	0.04	0.10	0.09	0.13	0.11	0.13

Intersection Summary

HCM 6th Signalized Intersection Summary

2: Tollhouse/SR 168 & E Shepherd West Int

06/04/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	764	49	9	525	102	63	65	14	159	94	100
Future Volume (veh/h)	164	764	49	9	525	102	63	65	14	159	94	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	178	830	53	10	571	111	68	71	15	173	102	109
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	574	1324	591	215	1324	1039	646	740	156	1396	924	783
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	1460	3526	1572	624	3526	2768	1161	1485	314	2524	1856	1572
Grp Volume(v), veh/h	178	830	53	10	571	111	68	0	86	173	102	109
Grp Sat Flow(s),veh/h/ln	730	1763	1572	624	1763	1384	1161	0	1799	1262	1856	1572
Q Serve(g_s), s	7.4	13.7	1.6	0.9	8.6	1.9	2.4	0.0	1.8	2.8	2.1	2.7
Cycle Q Clear(g_c), s	16.0	13.7	1.6	14.7	8.6	1.9	4.4	0.0	1.8	4.6	2.1	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	574	1324	591	215	1324	1039	646	0	896	1396	924	783
V/C Ratio(X)	0.31	0.63	0.09	0.05	0.43	0.11	0.11	0.00	0.10	0.12	0.11	0.14
Avail Cap(c_a), veh/h	1573	3735	1666	642	3735	2932	646	0	896	1396	924	783
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	18.2	14.4	24.2	16.6	14.5	10.7	0.0	9.4	10.6	9.5	9.6
Incr Delay (d2), s/veh	0.3	0.5	0.1	0.1	0.2	0.0	0.3	0.0	0.2	0.2	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.9	0.5	0.1	2.9	0.5	0.6	0.0	0.7	0.7	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	18.7	14.4	24.2	16.8	14.5	11.0	0.0	9.6	10.8	9.7	10.0
LnGrp LOS	C	B	B	C	B	B	B	A	A	B	A	B
Approach Vol, veh/h	1061			692			154			384		
Approach Delay, s/veh	19.2			16.5			10.2			10.3		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	40.0			31.3			40.0			31.3		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	35.5			75.5			35.5			75.5		
Max Q Clear Time (g_c+I1), s	6.4			18.0			6.6			16.7		
Green Ext Time (p_c), s	0.7			8.8			1.7			4.2		
Intersection Summary												
HCM 6th Ctrl Delay	16.3											
HCM 6th LOS	B											

Intersection

Int Delay, s/veh 14.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	716	160	5	507	153	5
Future Vol, veh/h	716	160	5	507	153	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	150	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	778	174	5	551	166	5

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	- 778	0 1339 778
Stage 1	-	-	- 778 -
Stage 2	-	-	- 561 -
Critical Hdwy	-	- 4.13	- 6.43 6.23
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	-	- 2.227	- 3.527 3.327
Pot Cap-1 Maneuver	-	0 834	- 168 395
Stage 1	-	0	- 451 -
Stage 2	-	0	- 569 -
Platoon blocked, %	-		-
Mov Cap-1 Maneuver	-	- 834	- ~ 166 395
Mov Cap-2 Maneuver	-	-	- ~ 166 -
Stage 1	-	-	- 451 -
Stage 2	-	-	- 564 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	128.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	169	-	834	-
HCM Lane V/C Ratio	1.016	-	0.007	-
HCM Control Delay (s)	128.7	-	9.3	0
HCM Lane LOS	F	-	A	A
HCM 95th %tile Q(veh)	8.2	-	0	-

Notes

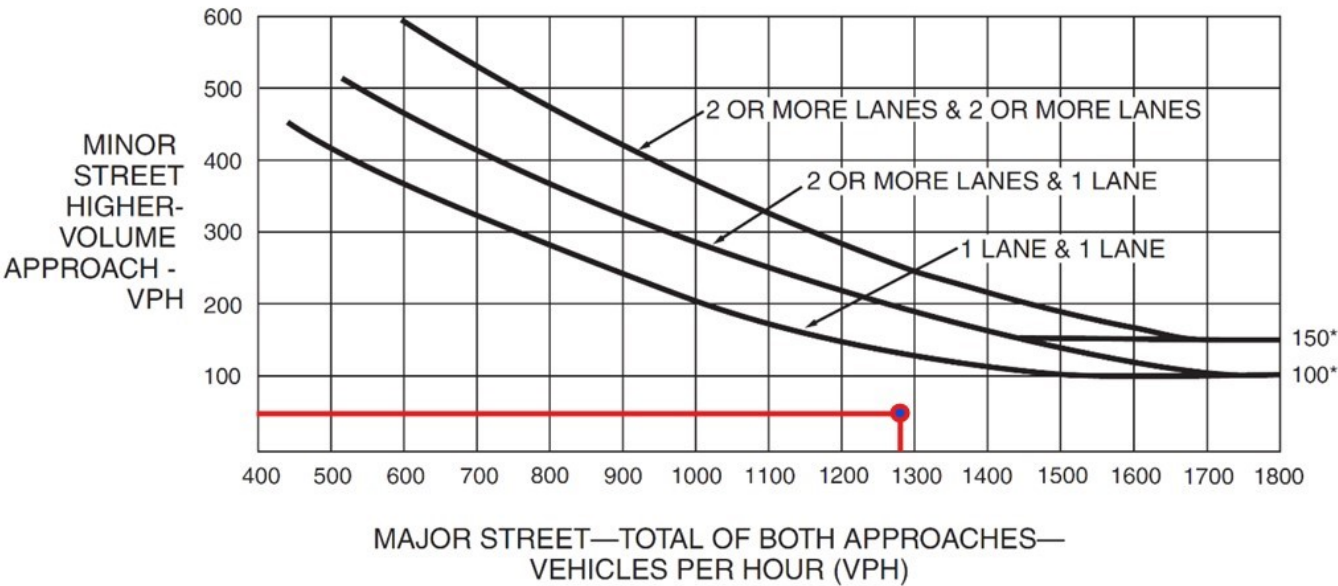
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	26	911	621	3	2	15
Future Vol, veh/h	26	911	621	3	2	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	250	-	-	250	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	28	990	675	3	2	16
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	678	0	-	0	1721	675
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	1046	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	909	-	-	-	98	452
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	337	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	909	-	-	-	95	452
Mov Cap-2 Maneuver	-	-	-	-	95	-
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	337	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.3	0		16.9		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	909	-	-	-	95	452
HCM Lane V/C Ratio	0.031	-	-	-	0.023	0.036
HCM Control Delay (s)	9.1	-	-	-	43.8	13.3
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	0.1

APPENDIX D

Signal Warrant Worksheets

Figure 4C-3. Warrant 3, Peak Hour



*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.

APPENDIX E

Traffic Safety Analysis

MEMORANDUM

TO: Austin Ewell
Ewell Group

FROM: Erik Ruehr
VRPA Technologies, Inc.

DATE: April 28, 2026

RE: Sample Ranch Residential Development
Traffic Safety Review

This traffic safety review is provided as part of a Traffic Impact Study (TIS) conducted for the Sample Ranch project in the County of Fresno. The project proposes to provide 44 single-family residential units located on the north side of Tollhouse Road/State Route 168 (SR 168) approximately 2 miles east of the signalized intersection of Tollhouse Road/SR 168 and E. Shepherd Avenue (west intersection). The Transportation Impact Study dated June 5, 2025 includes details regarding trip generation, trip distribution, project trips, and roadway capacity analysis.

The purpose of this memorandum is to provide a traffic safety analysis for portions of the State highway system where the project would be expected to provide a substantial increase in trips. The remainder of the memorandum includes background information, a description of the methodology used, safety analysis, traffic operations analysis, and recommendations.

BACKGROUND

Based on the project's TIS, project traffic is expected to contribute traffic to the following locations along the State highway system:

- ✓ Tollhouse Road/SR 168 and E. Shepard Avenue (west signalized intersection)
- ✓ Tollhouse Road/SR 168 and E. Shepard Avenue (east one-way stop-controlled intersection)
- ✓ Tollhouse Road/SR 168 and Project Access Roadway

This memorandum provides a traffic safety analysis as described in the Caltrans February 2024 Local Development Review (LDR) Safety Review Practitioners Guide.

METHODOLOGY

The methodology for conducting the safety analysis can be summarized as follows:

- ✓ Roadway accident data along SR 168 between PM 13.4 and PM 13.6 between October 1, 2021 to September 30, 2024 was reviewed to determine whether there are any safety issues exist that could be corrected through traffic operational improvements.
- ✓ Project traffic based on the TIS was reviewed to determine whether the addition of project traffic would add to the need for safety-related improvements.
- ✓ Roadway capacity and queuing analysis from the TIS was used to analyze the context for future traffic growth and potential roadway improvements that relate to safety conditions.

SAFETY ANALYSIS

A Traffic Accident Surveillance and Accident Summary (TASAS) report and a Collision Data Summary were provided by Caltrans for PM 13.4 to PM 13.6 along St. The information was provided for the most recently available three-year period from January 1, 2022 to December 31, 2024 and the results are shown in Attachment A

After reviewing the available information, the following conclusions were noted:

- ✓ There were no accidents along SR 168 between PM 13.4 and PM 13.6 in the three-year period identified above. Therefore, the average collision rates for all types of accidents were below statewide averages.

RECOMMENDATIONS

The analysis described above leads to the following recommendations.

- ✓ No mitigation is needed to address short-term safety concerns since the number of accidents experienced at study area intersections is relatively low and not indicative of correctable patterns.

Please contact me if you have any questions. I can be reached by email at eruehr@vrpatech.com or by phone at 858/361-7151.



**ATTACHMENT A
COLLISION REPORTS**

June 20, 2025
06-Fre-168
PM 13.4 to 13.6

**Traffic Accident Surveillance and Analysis System (TASAS)
Collision Data Summary**

The data provided is protected by 23 U.S.C. § 407, and shall not be subject to discovery, nor admitted as evidence in any applicable legal proceeding against the State of California. By allowing the release of this information, the State of California, Department of Transportation does not waive any rights it has under 23 U.S.C. § 407.

SR 168 PM 13.4 to 13.6

Table 1 summarizes collision rates along State Route 168 (SR 168) between PM 13.4 and PM 13.6 in the County of Fresno. The Table B reports were generated on June 20, 2025, and they depict existing collision rates per million vehicle miles for the most recent 36-month period from October 1, 2021, to September 30, 2024, from the Traffic Accident Surveillance and Analysis System (TASAS).

**Table 1
TASAS Table B Collision Rates**

Highway Segment	TOTAL No. of Collisions	ACTUAL (per million vehicle miles)			AVERAGE (per million vehicle miles)		
		Fatal Collisions	Fatal + Injury Collisions	Total ⁽¹⁾	Fatal Collisions	Fatal + Injury Collisions	Total ⁽¹⁾
SR 168 PM 13.4 to PM 13.6	0	0.000	0.00	0.00	0.030	0.60	1.30

(1) All reported collisions (includes Property Damage Only (PO) Collisions)

Analysis of the TASAS Table B records shows a total of 0 collisions within the segment of SR 168 from PM 13.4 to 13.6 and study periods summarized above. Table 1 reflects that the Actual Fatal, Actual Fatal + Injury, and Actual Total collision rates are below the average for similar facilities statewide.

TASAS Table B shows that there was 0 Hit Object type of collision.

End of summary.

KW/CW