

**APPENDIX A:
NOTICE OF PREPARATION AND SCOPING COMMENTS**

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Notice of Preparation Environmental Impact Report City of Los Banos

Date: January 18, 2022

To: State Clearinghouse
State Responsible Agencies
State Trustee Agencies
Other Public Agencies
Interested Organizations

From: Stacy Souza Elms, Community & Economic Development Director
City of Los Banos
Community & Economic Development Department
520 J Street
Los Banos, CA 93635

Subject: Notice of Preparation (NOP) of the Environmental Impact Report (EIR) for the General Plan 2042

Lead Agency: City of Los Banos Community & Economic Development Department

Project Title: General Plan 2042

Project Area: City of Los Banos

Notice is hereby given that the City of Los Banos (City) will prepare an EIR for the Los Banos General Plan 2042 (proposed project) and will hold a public meeting to receive comments on the scope of the EIR, as detailed below. Pursuant to the California Environmental Quality Act (CEQA) Guidelines Section 15206, the proposed project is considered a project of statewide, regional, or areawide significance. The City, acting as the lead agency, determined that the proposed project could result in potentially significant environmental impacts and that an EIR is required.

The City will prepare an EIR to address the potential environmental impacts associated with the project at a programmatic level consistent with CEQA Guidelines Section 15168. The program-level EIR will evaluate the proposed project for potential impacts on the environment and analyze the proposed policies to determine the potential environmental consequences of future change. An evaluation of project alternatives that could reduce significant impacts will be included in the EIR. The proposed project, its location, and potential environmental effects are described below.

The City is requesting comments and guidance on the scope and content of the EIR from interested public agencies, organizations, and individuals. With respect to the views of Responsible and Trustee Agencies as to significant environmental issues, the City needs to know the reasonable alternatives and mitigation measures that are germane to each agency's statutory responsibilities in connection with the proposed project.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date, but no later than the close of the 30-day NOP review period at **5:00 p.m. on Wednesday, February 16, 2022**. If you submit comments on the scope of the EIR, you will automatically be added to the City's distribution list for future notices and information about the environmental review process for proposed project. If you do not wish to submit comments on the scope of the EIR, but would like to be added to the City's mailing list, you can submit your contact information, including email address with a request to be added to the mailing list.

Please send your written comments to Stacy Souza Elms, at the address shown above or email to stacy.souza@losbanos.org with "Los Banos General Plan 2042 EIR" as the subject. Public agencies providing comments are asked to include a contact person for the agency.

A Scoping Meeting to accept oral comments regarding the environmental issues to be addressed in the EIR will be held before the Los Banos Planning Commission on **Wednesday, January 26, 2022 at 6:00 pm**. The City Hall Council Chambers remain closed to the public. In accordance with Assembly Bill 361, all members of the Planning Commission and City staff will join the meeting via phone/video conference and no teleconference locations are required. The public can attend the scoping meeting and provide comment virtually using the instructions included in the agenda and provided on the City's website at <https://losbanos.org/category/planning-commission/>.

PROJECT LOCATION, DESCRIPTION, AND OBJECTIVES

This section describes the location, project description, and overall objective of the proposed project. A copy of this NOP, information about the project, including relevant documents, information on upcoming meetings, and ways you can provide feedback can be viewed: 1) on line at <http://losbanos2040.org/>, or 2) City Hall (520 J Street, Los Banos, CA 93635). The Community and Economic Development counter is open Monday through Friday from 8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 5:00 p.m.

Project Location

Los Banos is an incorporated city situated in western Merced County. The project encompasses the Los Banos all land within the city limits, urban growth boundary, and adjacent land in the City's proposed 2042 Sphere of Influence (SOI) boundary.

Lead Agency Contact

Stacy Souza Elms, Community & Economic Development Director
City of Los Banos
Community & Economic Development Department
520 J Street
Los Banos, CA 93635
(209) 827-2433
stacy.souza@losbanos.org

Project Sponsor

City of Los Banos

Project Description and Objectives

Often described as each city's "constitution," general plans are required by State law to guide land use and development, typically within a 20-year horizon. General plans must be periodically updated to respond to new state laws, changing conditions, and emerging issues and opportunities. Los Banos' existing General Plan was adopted in 2009 with a horizon year of 2030. This general plan update is being prepared over 10 years since that document with a new horizon year set to 2042.

The proposed General Plan 2042 is a targeted update to the current General Plan 2030 and will bring the general plan up to date with latest State and federal legislation around urban development, transportation, climate resilience, and safety and address the city's growth, economic development, sustainability, and conservation of open space and land resources. The plan intends to respond to local and regional housing needs, promote economic growth, foster local job creation, enhance quality of life, and protect natural and agricultural resources. In addition to citywide planning issues, General Plan 2042 will provide goals and policies for enhancing downtown Los Banos as the vibrant center of the city and community.

Environmental Review

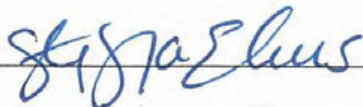
The Los Banos General Plan 2042 EIR will determine whether implementation of the proposed project may result in environmental impacts that require mitigation measures to offset potential impacts. General Plan 2042 itself will incorporate implementation provisions (goals, policies, and actions) that focus on reducing environmental impacts in order to reduce the need for separate EIR mitigation measures, improve the efficiency of implementation, and increase the likelihood that development within the study area will be environmentally sustainable. In accordance with CEQA, the cumulative impacts discussion will be based on review of other plans shaping development outside of the study area. CEQA requires that an EIR evaluate alternatives to a project that could reasonably attain the project objectives while reducing any significant impact of the project, as well as considering the "No Project" Alternative (i.e., what could happen if the project were not approved).

Environmental Factors Potentially Affected

The EIR will address the proposed project's potential impacts to the following environmental topics:

- Aesthetics
- Agricultural and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources/Tribal Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Parks and Recreation
- Transportation
- Utilities and Service Systems
- Wildfire

Date 1/14/22

Signature 

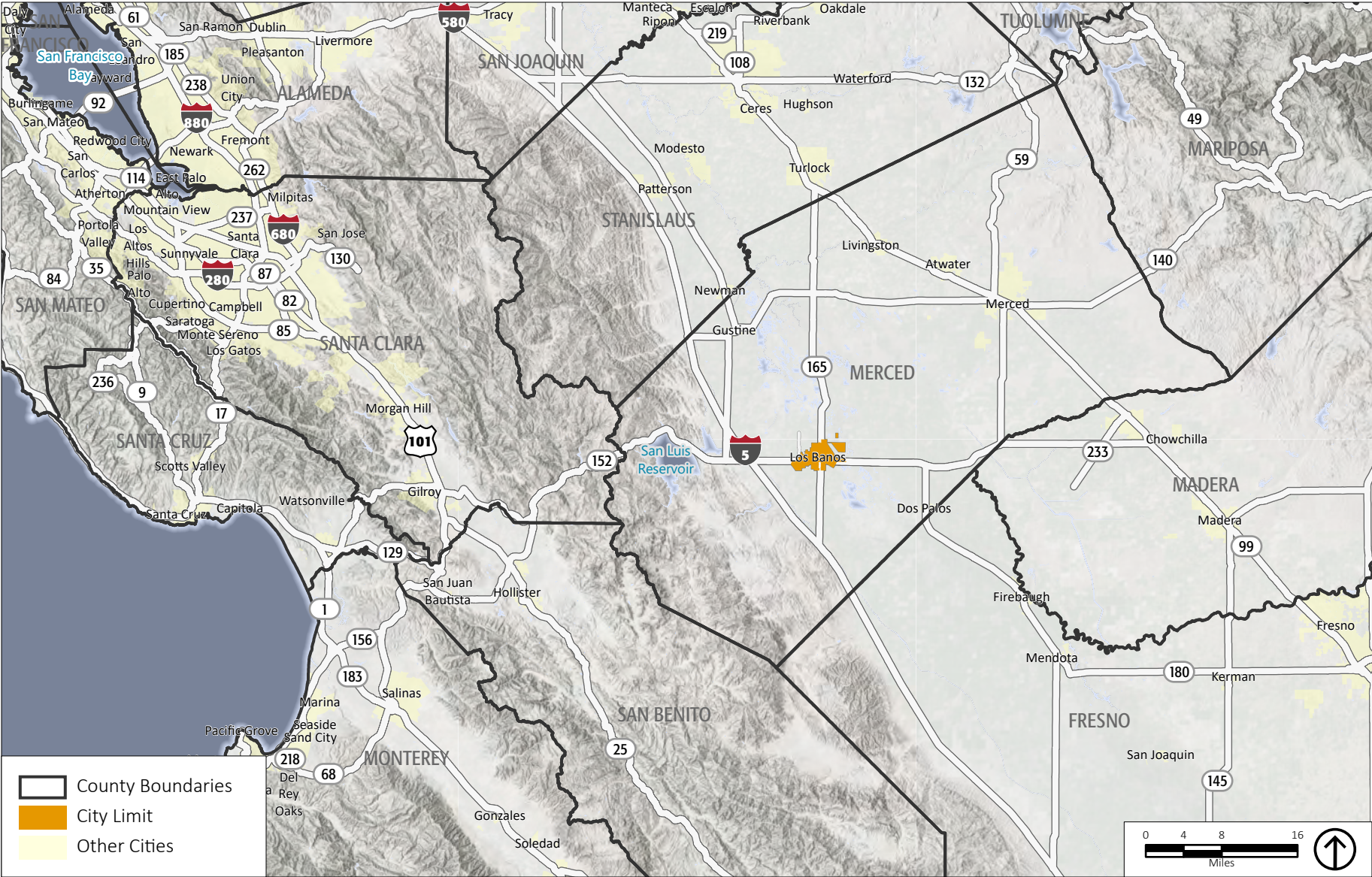
Title Community Development Director

Attachments:

Figure 1: Regional and Vicinity Map

Figure 2: EIR Study Area

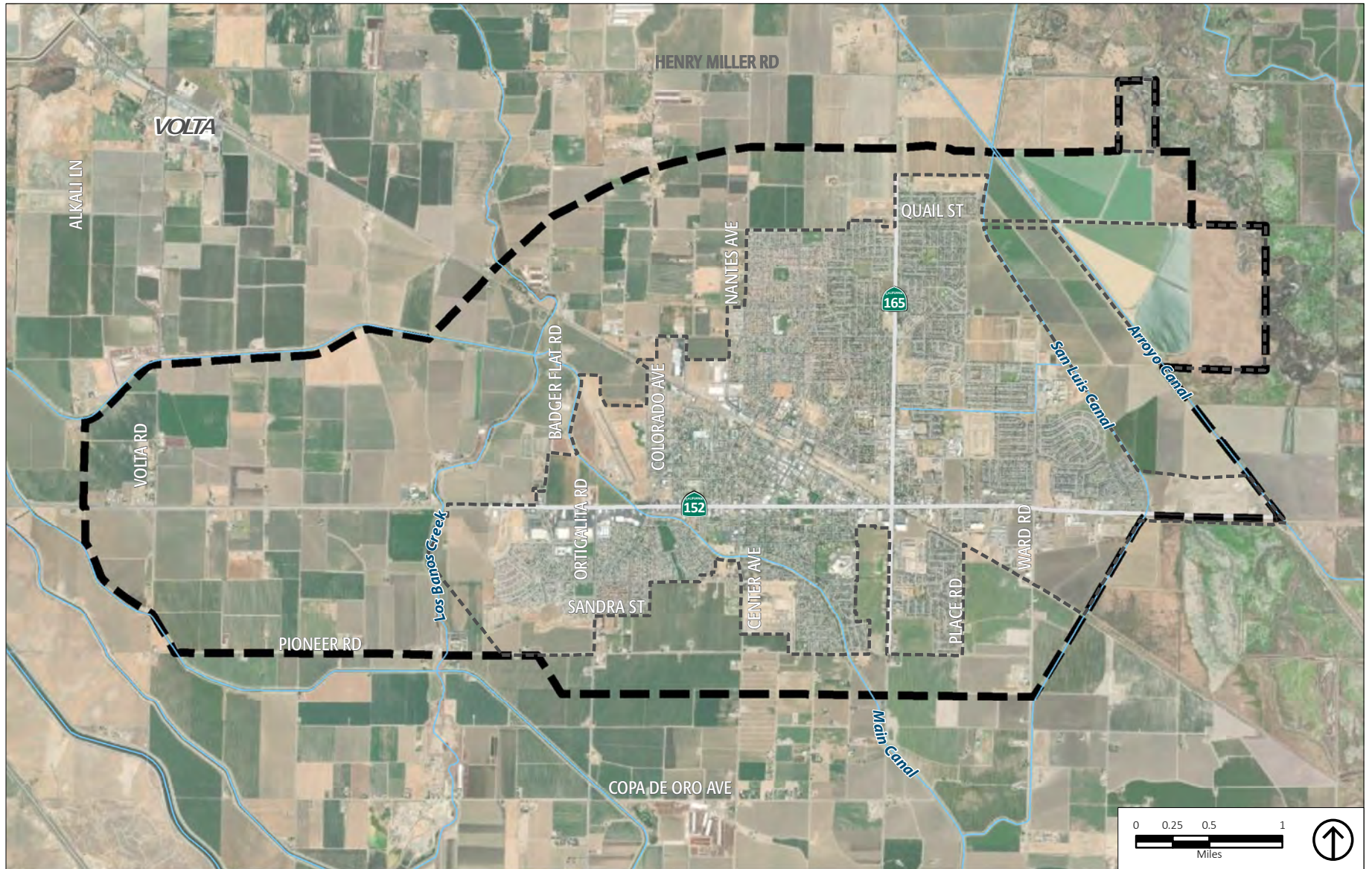
Notice of Preparation



Source: Merced County, 2018; PlaceWorks, 2020.

Figure 1
Regional and Vicinity Map

Notice of Preparation



Source: California Department of Conservation, 2016; ESRI, 2018; Merced County, 2018; PlaceWorks, 2019.

- City Limits
- EIR Study Area

Figure 2
EIR Study Area

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JANUARY 28, 2022

VIA EMAIL: STACY.SOUZA@LOSBANOS.ORG

Stacy Souza Elms, Community & Economic Development Director
City of Los Banos
Community & Economic Development Department
520 J Street
Los Banos, CA 93635

Dear Ms. Souza Elms:

**NOTICE OF PREPARATION OF THE ENVIRONMENTAL IMPACT REPORT FOR THE LOS BANOS
GENERAL PLAN 2042 PROJECT, SCH#2022010254**

The Department of Conservation's (Department) Division of Land Resource Protection (Division) has reviewed the Notice of Preparation of the Environmental Impact Report for the Los Banos General Plan 2042 Project (Project). The Division monitors farmland conversion on a statewide basis, provides technical assistance regarding the Williamson Act, and administers various agricultural land conservation programs. We offer the following comments and recommendations with respect to the project's potential impacts on agricultural land and resources.

Project Description

The proposed General Plan 2042 is a targeted update to the current General Plan 2030 and will bring the general plan up to date with latest State and federal legislation around urban development, transportation, climate resilience, and safety and address the city's growth, economic development, sustainability, and conservation of open space and land resources. The plan intends to respond to local and regional housing needs, promote economic growth, foster local job creation, enhance quality of life, and protect natural and agricultural resources. In addition to citywide planning issues, General Plan 2042 will provide goals and policies for enhancing downtown Los Banos as the vibrant center of the city and community.

Department Comments

The conversion of agricultural land represents a permanent reduction and significant impact to California's agricultural land resources. CEQA requires that all feasible and reasonable mitigation be reviewed and applied to projects. Under CEQA, a lead

agency should not approve a project if there are feasible alternatives or feasible mitigation measures available that would lessen the significant effects of the project.

All mitigation measures that are potentially feasible should be included in the project's environmental review. A measure brought to the attention of the lead agency should not be left out unless it is infeasible based on its elements.

Consistent with CEQA Guidelines, the Department recommends the County consider agricultural conservation easements, among other measures, as potential mitigation. (See Cal. Code Regs., tit. 14, § 15370 [mitigation includes "compensating for the impact by replacing or providing substitute resources or environments, including through permanent protection of such resources in the form of conservation easements."])

Mitigation through agricultural easements can take at least two forms: the outright purchase of easements or the donation of mitigation fees to a local, regional, or statewide organization or agency whose purpose includes the acquisition and stewardship of agricultural easements. The conversion of agricultural land should be deemed an impact of at least regional significance. Hence, the search for replacement lands should not be limited strictly to lands within the project's surrounding area.

A helpful source for regional and statewide agricultural mitigation banks is the California Council of Land Trusts. They provide helpful insight into farmland mitigation policies and implementation strategies, including a guidebook with model policies and a model local ordinance. The guidebook can be found at:

<https://www.calandtrusts.org/resources/conserving-californias-harvest/>

Of course, the use of conservation easements is only one form of mitigation that should be considered. Any other feasible mitigation measures should also be considered. Indeed, the recent judicial opinion in *King and Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814 ("KG Farms") holds that agricultural conservation easements on a 1 to 1 ratio are not alone sufficient to adequately mitigate a project's conversion of agricultural land. KG Farms does not stand for the proposition that agricultural conservation easements are irrelevant as mitigation. Rather, the holding suggests that to the extent they are considered, they may need to be applied at a greater than 1 to 1 ratio, or combined with other forms of mitigation (such as restoration of some land not currently used as farmland).

Conclusion

The Department recommends further discussion of the following issues:

- Type, amount, and location of farmland conversion resulting directly and indirectly from implementation of the proposed project.

- Impacts on any current and future agricultural operations in the vicinity; e.g., land-use conflicts, increases in land values and taxes, loss of agricultural support infrastructure such as processing facilities, etc.
- Incremental impacts leading to cumulative impacts on agricultural land. This would include impacts from the proposed project, as well as impacts from past, current, and likely future projects.
- Proposed mitigation measures for all impacted agricultural lands within the proposed project area.
- Projects compatibility with lands within an agricultural preserve and/or enrolled in a Williamson Act contract.
- If applicable, notification of Williamson Act contract non-renewal and/or cancellation.

Thank you for giving us the opportunity to comment on the Notice of Preparation of the Environmental Impact Report for the Los Banos General Plan 2042 Project. Please provide this Department with notices of any future hearing dates as well as any staff reports pertaining to this project. If you have any questions regarding our comments, please contact Farl Grundy, Associate Environmental Planner via email at Farl.Grundy@conservation.ca.gov.

Sincerely,

Monique Wilber

Monique Wilber

Conservation Program Support Supervisor



NATIVE AMERICAN HERITAGE COMMISSION

January 25, 2022

Stacy Souza Elms
City of Los Banos
520 J Street
Los Banos, CA 93635

Re: 2022010254, Los Banos General Plan 2042 Project, Merced County

Dear Ms. Souza Elms:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b) (CEQA Guidelines § 15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

PARLIAMENTARIAN
Russell Attebery
Karuk

COMMISSIONER
William Mungary
Paiute/White Mountain
Apache

COMMISSIONER
Isaac Bojorquez
Ohlone-Costanoan

COMMISSIONER
Sara Dutschke
Miwok

COMMISSIONER
Buffy McQuillen
Yokayo Pomo, Yuki,
Nomlaki

COMMISSIONER
Wayne Nelson
Luiseño

COMMISSIONER
Stanley Rodriguez
Kumeyaay

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Pomo

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West Sacramento,
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nahc@nahc.ca.gov
NAHC.ca.gov

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

- 1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project:** Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

 - a. A brief description of the project.
 - b. The lead agency contact information.
 - c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
 - d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

- 2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report:** A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

 - a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

- 3. Mandatory Topics of Consultation If Requested by a Tribe:** The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

 - a. Alternatives to the project.
 - b. Recommended mitigation measures.
 - c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

- 4. Discretionary Topics of Consultation:** The following topics are discretionary topics of consultation:

 - a. Type of environmental review necessary.
 - b. Significance of the tribal cultural resources.
 - c. Significance of the project's impacts on tribal cultural resources.
 - d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

- 5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process:** With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

- 6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document:** If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

 - a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
 - b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

- 7. Conclusion of Consultation:** Consultation with a tribe shall be considered concluded when either of the following occurs:
- a.** The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
 - b.** A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).
- 8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document:** Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).
- 9. Required Consideration of Feasible Mitigation:** If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).
- 10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:**
- a.** Avoidance and preservation of the resources in place, including, but not limited to:
 - i.** Planning and construction to avoid the resources and protect the cultural and natural context.
 - ii.** Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
 - b.** Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
 - i.** Protecting the cultural character and integrity of the resource.
 - ii.** Protecting the traditional use of the resource.
 - iii.** Protecting the confidentiality of the resource.
 - c.** Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
 - d.** Protecting the resource. (Pub. Resource Code §21084.3 (b)).
 - e.** Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
 - f.** Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).
- 11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource:** An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
- a.** The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
 - b.** The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
 - c.** The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. **Tribal Consultation:** If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. **No Statutory Time Limit on SB 18 Tribal Consultation.** There is no statutory time limit on SB 18 tribal consultation.
3. **Confidentiality:** Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. **Conclusion of SB 18 Tribal Consultation:** Consultation should be concluded at the point in which:
 - a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
 - b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: <http://nahc.ca.gov/resources/forms/>.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:


1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
 - a. If part or all of the APE has been previously surveyed for cultural resources.
 - b. If any known cultural resources have already been recorded on or adjacent to the APE.
 - c. If the probability is low, moderate, or high that cultural resources are located in the APE.
 - d. If a survey is required to determine whether previously unrecorded cultural resources are present.
2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
 - a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
 - b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
 - a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
 - b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
 - a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
 - b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
 - c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address:
Andrew.Green@nahc.ca.gov.

Sincerely,



Andrew Green
Cultural Resources Analyst

cc: State Clearinghouse



February 16, 2022

VIA E-MAIL

Stacy Souza Elms
Community & Economic Development Director
City of Los Banos
520 J Street
Los Banos, CA 93635
E-mail: stacy.souza@losbanos.org

Re: Comments on Notice of Preparation of Environmental Impact Report for the City of Los Banos General Plan 2042

Dear Ms. Souza Elms,

These comments are submitted by Central California Irrigation District (CCID) and Grassland Water District (GWD) regarding the Notice of Preparation of an Environmental Impact Report (EIR) for the City's 2042 General Plan update. CCID and GWD provide water for irrigation and wetland habitat, respectively, to land historically belonging to the Miller & Lux enterprise. Our history is tied to that of the City of Los Banos, and we share the goal of maintaining compatibility between urban growth and the preservation of valuable and important farmland and open space that surrounds the City. CCID and GWD jointly submit the following comments to help inform the City's preparation of an EIR.

1. Water Resources

CCID and GWD have partnered with the City of Los Banos for decades to support the City in the management of water resources. The City relies entirely on pumping groundwater to meet the needs of its citizens. It has partnered with CCID

and the other San Joaquin River Exchange Contractors to develop a Groundwater Sustainability Plan (GSP) in accordance with the Sustainable Groundwater Management Act (SGMA). GWD has also partnered with Merced County on the development of a GSP for lands that surround the City. GWD and CCID coordinate across six planning areas in the Delta-Mendota groundwater subbasin to work towards groundwater sustainability as defined under SGMA. The City also contracts with CCID and GWD to manage and discharge its stormwater drainage into CCID and GWD facilities.

We have significant concerns about the planned growth and conversion of highly productive agricultural land under the City's proposed General Plan without assessing the impact on groundwater resources in the subbasin. The City is currently in a state of groundwater overdraft and proposes to increase its groundwater demand in an already critically overdrafted subbasin. CCID and GWD encourage the City to continue to work with local water suppliers on a plan that is protective of all beneficial users of groundwater in the area. CCID and GWD bring surface water from outside the basin to the areas surrounding the City, providing vital recharge to the aquifer. As the City grows and converts irrigated lands to residential and industrial development, surface water will no longer recharge the aquifer in these areas, and groundwater extraction and overdraft will be exacerbated.

As the City grows, it will also have increased stormwater drainage. Historically, CCID and GWD have facilitated receipt and discharge of these flows through our facilities. We have concerns about impacts to water quality and the costs associated with the required improvements to facilities to accommodate increased stormwater discharges as the City continues to expand.

CCID and GWD look forward to the opportunity to engage with City staff to develop a comprehensive water supply and drainage strategy, as the current General Plan does not address these critical issues.

2. Biological Resources

GWD, in coordination with CCID, provides water to nearby wildlife refuges and approximately 60,000 acres of privately owned wetlands located north, east and south of the City. GWD also helps manage water deliveries for the 230,000-acre Grassland Ecological Area (GEA), an internationally significant wetland complex that exists due to hundreds of millions of dollars in public and private investments for habitat protection and restoration. The GEA is comprised of wetlands, riparian woodlands, native grasslands, vernal pools, and other habitats that support

abundant and diverse wildlife, including numerous threatened and endangered plants and animals. The area also provides critically important wintering and breeding habitat for migratory waterbirds utilizing the Pacific Flyway. The GEA contains a large portion of the remaining 5% of wetlands in the Central Valley, upon which millions of migratory birds depend for their survival.

GWD has a long history of providing feedback to the City on the negative environmental impacts of urban encroachment into the buffer zone between the City and the GEA. Most recently, GWD submitted written comments to the City regarding the General Plan update on July 16, 2021, which are incorporated here by reference. First, the comments discussed how the proposed Areas of Interest in large areas surrounding the City: (1) do not meet LAFCO criteria; (2) may conflict with established land use policies for the Grassland Focus Area under the Merced County General Plan; and (3) would require more protective standards taking into account the sensitive and valuable agricultural land and wetlands that surround the City.

GWD has also repeatedly requested a workshop to discuss the City's Open Space and land protection policies as part of the General Plan update. The City has not lived up to commitments made in its last General Plan, which are more important than ever in light of the City's proposal to expand its Sphere of Influence to the east and north, and to establish zoning for parcels in the "intercanal" area east of the San Luis Canal and north of SR-152.

GWD and CCID remain available to discuss the City's Open Space and land preservation policies, and request that they be specifically reviewed, analyzed, and updated as appropriate in the City's Draft EIR.

3. Agricultural Resources

CCID and GWD strongly support the City's proposed adoption of an agricultural mitigation policy requiring conservation easements to offset the conversion of agricultural land to non-agricultural uses. We support the direction of the City Council to designate areas within the Grassland Focus Area and the intercanal area for priority protection under an agricultural easement policy. However, we do not believe that an easement policy can fully offset the impacts of expanding the City's Urban Growth Boundary and Sphere of Influence beyond what is reasonably necessary to accommodate current growth projections. We also remain concerned about the conversion of farmland within CCID boundaries, which has a very reliable agricultural water supply that is irreplaceable and therefore of high value.

CCID and GWD look forward to continuing their engagement with the City as it analyzes its General Plan update. We believe the City has an opportunity to affirm and strengthen its prior commitments to preserving productive farmland and open space, by establishing growth boundaries and policies that respect the interconnected land and water resources that surround it.

Sincerely,



Jarrett Martin
General Manager
Central California Irrigation District



Ricardo Ortega
General Manager
Grassland Water District



February 16, 2022

City of Los Banos
Attn Stacy Souza Elms
Community & Economic Development Director
520 J Street
Los Banos, CA 93620

RE: City of Los Banos Notice of Preparation of the General Plan 2042

Dear Mrs. Souza Elms,

The City of Los Banos (City) is currently in the process of a 30-day review period for the Notice of Preparation (NOP) regarding the update of the General Plan 2042. We appreciate the opportunity to comment as we know this is a large step in the process. Merced County Farm Bureau (MCFB) is a non-profit, non-governmental, grassroots organization that advocates for farmers, ranchers and dairy families who live and/or work in Merced County. We have several members who would be impacted by the listed study area.

We are concerned on the drastic boundary changes that the City wants to expand. Much of the parcels that the City would like to grow to are currently owned or rented by active farms. The large expansion of boundaries that the City is projected to take is far too extensive as development would take years if it even does come to fruition.

We are concerned with the amount of water that the City has available to accommodate such projected growth. Due to the Sustainable Groundwater Management Act, groundwater subbasins must remain in sustainability or face the direct leadership from the State of California. We are concerned with how and where the available water will come from as the City is on a number of groundwater wells. It has also been well noted that the City has had issue with contaminants such as hexavalent chromium.

We are at an increasing rate of losing prime farm soils and would encourage adoption of policies related to agriculture mitigation such as what can be found in the County of Merced's General Plan. Agricultural mitigation is not a silver bullet in saving farmland as acres are still removed from ag uses, but it is a program that can be placed in the toolbox. We would also encourage for such adoption measures to be centralized to local grounds instead of mitigating with parcels outside of the local community.

Lastly, we would encourage adoption of a Right to Farm policy. These types of policies are helpful when residential homes and schools are built in farming areas and inform of the odors, noises and practices

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Email: info@mercedfarmbureau.org
www.mercedfarmbureau.org

that are related to said area. We've witnessed far too many instances when communities are constructed next to a dairy and complain that they are impacted by the odors that the dairy is emitting.

We appreciate the opportunity to comment on this document and the involvement that the City has provided our organization. We look forward to continued discussions on the matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Breanne Vandenberg". The signature is fluid and cursive, with the first name "Breanne" written in a larger, more prominent script than the last name "Vandenberg".

Breanne Vandenberg
Executive Director



Local Agency Formation Commission
2222 M Street
Merced, CA 95340
Phone (209) 385-7671 / Fax (209) 726-1710
www.lafcomerced.org

February 16, 2022

Stacy Souza Elms, Director
Community & Economic Development
City of Los Banos
520 J Street
Los Banos, CA 95635

SENT VIA EMAIL

RE: Comments on the Notice of Preparation of the Los Banos General Plan 2042 Environmental Impact Report

Dear Ms. Souza Elms:

According to the Notice of Preparation (NOP) released by the City, the current General Plan Update is a "targeted update" of the City's current 2030 General Plan. However, the NOP does not identify what areas of the former General Plan are being "targeted" other than to "respond to new state laws, changing conditions, and emerging issues and opportunities." The identified "General Plan Study Area" is indicated as the boundary for CEQA analysis, but the NOP does not identify the proposed land use designations, or the intensity and density of any development.

As a result, it is difficult for LAFCO to provide specific areas of study or concern beyond the broad environmental impacts that are likely to occur due to the City's growth and delivery of public services which are subject to LAFCO authority for future actions by the Commission. Environmental impacts are usually evaluated with future annexation applications submitted to LAFCO, and these applications have project-level environmental analysis which is based on the programmatic level General Plan Environmental Impact Report (EIR). However, LAFCO will also rely on the General Plan EIR for processing an update to the City Sphere of Influence (SOI) and corresponding Municipal Service Review (MSR) as outlined in this letter.

Typically, following an update to a City's General Plan, the City submits an application to LAFCO for a modification to the Sphere of Influence (SOI) which is defined as "a plan for the probable physical boundaries and service area of a local agency, as determined by the Commission." (Government Code Section 56076). More detailed requirements for what to include in a SOI review or update are contained in Government Code Section 56425(e) which basically includes: identification of existing and planned land uses including agricultural land, the need for public facilities and services in the area and an evaluation of the present capacity and adequacy of these services (such as sewer and water supply), the existence of any social or economic communities of interest (which could include existing service providers or special needs communities), and the presence of any disadvantaged unincorporated communities within the sphere.

Subsection 56425(g) directs LAFCO to, "as necessary," review and update each sphere of influence every five years. Many LAFCOs across the State, including Merced LAFCO, recognize that the term "as necessary" was included in this section of the Code to provide flexibility in the five year timeframe, and with respect to a city SOI, Merced LAFCO would not typically propose any modification or change until the City first prepares a General Plan update.

Municipal Service Review

There is a parallel requirement under Government Code Section 56430(e), which requires each LAFCO to conduct a service review (commonly referred to as a Municipal Service Review or "MSR")

before or in conjunction with a sphere of influence update. The current Municipal Service Review for the City of Los Banos was adopted in 2012, which was based on the City's 2030 General Plan adopted by the City in 2009. Government Code Section 56430(a) identifies a list of seven evaluation factors which somewhat overlap with the sphere of influence analysis, but generally include: growth and population projections, identification of disadvantaged unincorporated communities within the sphere, present and planned capacity of public facilities and any deficiencies, financial ability to provide the facilities, opportunities for shared facilities with other service providers, accountability for service delivery and operational efficiencies, and other matters related to effective or efficient service delivery identified by the Commission.

Therefore, following adoption of the General Plan Update, the City should coordinate with LAFCO to initiate the update to the current MSR, which could involve a concurrent update to the SOI.

City County Consultation

One last procedural step that will impact processing of a SOI update by LAFCO is compliance with Government Code Section 56425(b). As you recall, the city-county consultation process referenced in this Code section had a direct impact on the processing of a SOI update parallel with the 2012 MSR update adopted by LAFCO. It is also a primary reason the current SOI for the City is based on the earlier 1999 City General Plan.

In summary, the Government Code requires that prior to a city submitting an application to LAFCO to update their SOI, representatives from the city shall meet with the county to discuss the new sphere boundaries, and methods to reach agreement on development standards within the sphere that reflect the concerns of the affected city and that promotes logical and orderly development. If an agreement is reached, LAFCO "...shall give great weight to the agreement to the extent that it is consistent with the commission policies in its final determination of the city sphere."

General CEQA Considerations

A map of the existing Los Banos SOI is attached which indicates the current SOI Boundary and a proposed boundary based on the 2009 General Plan. The NOP for the 2042 General Plan which this letter responds to included a Figure 2 identifying the "EIR Study Area" which may or may not be the same as a General Plan growth boundary or proposed SOI. Based on a review of the 2009 General Plan's "Urban Growth Boundary" it would appear the current Study Area is very similar, with a slight shift to the north on the area below Pioneer Road. While a proposed SOI boundary was included in the NOP, the City's 2009 General Plan identified an expansion of the SOI that was 5,300 acres larger than the previous SOI boundary. Most of this area includes productive agricultural land, and therefore, this is will be a significant impact to address in the EIR.

The EIR should identify the need for this approximate 5,000 acre conversion of farmland given realistic population growth projections for housing and employment needs. While new Regional Housing Needs Allocations (RHNA) will be identified by the Merced County Association of Governments later this year, the current RHNA housing allocation for Los Banos (the current cycle between 2014 and 2023) identified a need for 2,472 housing units, approximately half of which should be targeted to low and very low income households. This low income market is typically met through a land use and policy focus on higher density multiple family housing development and ADUs (additional dwelling units). Coupled with State priorities for infill and small lot development, the demand for approximately 5,000 acres of productive farmland and open space land over the General Plan horizon to 2042 should be evaluated to justify the need for conversion of these important resources.

Stacy Souza-Elms
Director of Community & Economic Development
City of Los Banos General Plan Update NOP
February 16, 2022
Page 3

Related to the justification for the need for this large Urban Growth and corresponding SOI boundary, is identification of appropriate mitigation measures to include the use of agricultural conservation easements to at least partially offset the impact. The City has historically adopted of a statement of overriding considerations instead of reducing the impact or requiring mitigation. A mitigation measure or General Plan policy requiring obtaining conservation easements on similar quality farmland to the land converted has successfully been required for the loss of prime and productive agricultural land by many jurisdictions within California, including the County of Merced (through an adopted General Plan policy), and even by the City of Atwater for 156 acres of productive farmland in the recent Ferrari Ranch Annexation.

Other potential impact areas that are important to LAFCO, and which were identified in the NOP, include the necessary public services and infrastructure necessary to serve the planned growth. These topic areas include: Hydrology and Water Quality, Public Services, Parks and Recreation, and Utilities and Service Systems. Typically master plans are prepared for sewer, water and stormwater utilities, and the EIR would evaluate the need for increased police, fire, parks and recreation staff and services resulting from the growth contemplated in the General Plan.

Please let me know if you have any questions or want to discuss this letter. I can be contacted by phone at: (209) 385-7671 or by email at: bill.nicholson@countyofmerced.com

Sincerely,



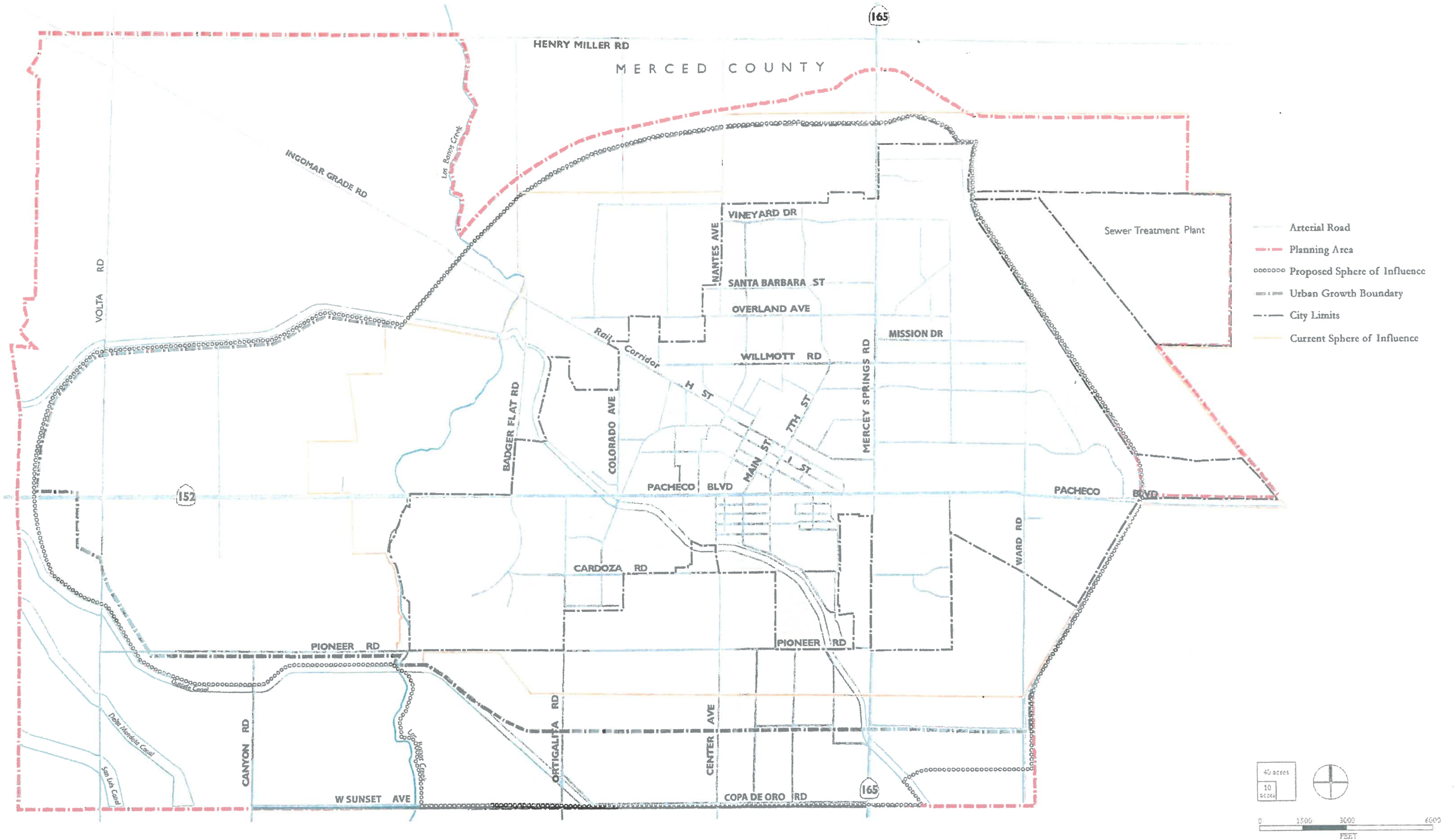
William Nicholson
Executive Officer

Enclosure:

Existing Sphere of Influence Map for the City of Los Banos and Proposed SOI based on the 2009 City General Plan

cc: LAFCO Commissioners

Figure 2 City of Los Banos: Existing and Proposed Sphere of Influence





State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director



February 24, 2022

Stacy Souza Elms, Community & Economic Development Director
City of Los Banos Community & Economic Development Department
520 J Street
Los Banos, California 93635
stacy.souza@losbanos.org

**Subject: Los Banos General Plan 2042 (Project)
Notice of Preparation (NOP)
State Clearinghouse No. 2022010254**

Dear Ms. Elms:

The California Department of Fish and Wildlife (CDFW) received an NOP from the City of Los Banos Community & Economic Development Department for the above-referenced Project pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.¹

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, CDFW appreciates the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under Fish and Game Code.

While the comment period may have ended, CDFW would appreciate if you will still consider our comments.

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management

¹ CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

Stacy Souza Elms, Community & Economic Development Director
City of Los Banos Community & Economic Development Department
February 24, 2022
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of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (*Id.*, § 1802). Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a **Responsible Agency** under CEQA (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381). CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority (Fish & G. Code, § 1600 et seq.). Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), related authorization as provided by the Fish and Game Code will be required.

Nesting Birds: CDFW has jurisdiction over actions with potential to result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections that protect birds, their eggs and nests include sections 3503 (regarding unlawful take, possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird).

PROJECT DESCRIPTION SUMMARY

Proponent: City of Los Banos Community & Economic Development Department

Objective: The Project is a targeted update to the current General Plan 2030 and will bring the general plan up to date with the latest State and federal legislation around urban development, transportation, climate resilience, and safety and address the city's growth, economic development, sustainability, and conservation of open space and land resources. The Project intends to respond to local and regional housing needs, promote economic growth, foster local job creation, enhance quality of life, and protect natural and agricultural resources. In addition to citywide planning issues, the Project will provide goals and policies for enhancing downtown Los Banos as the vibrant center of the city and community.

Location: The Project encompasses all land within the city limits, urban growth boundary, and adjacent land of Los Banos.

Timeframe: Until 2042.

COMMENTS AND RECOMMENDATIONS

CDFW offers the following comments and recommendations to assist the City of Los Banos Community & Economic Development Department in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on

Stacy Souza Elms, Community & Economic Development Director
City of Los Banos Community & Economic Development Department
February 24, 2022
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fish and wildlife (biological) resources. Editorial comments or other suggestions may also be included to improve the subsequent Program EIR.

The Program-level EIR that will be prepared will determine the likely environmental impacts associated with subsequent projects. Given the city-wide implications of the Project, CDFW is concerned that subsequent projects (hereafter, "projects") tiering from the subsequent Program EIR could impact special-status species including, but not limited to, the State threatened and federally endangered San Joaquin kit fox (*Vulpes macrotis mutica*), the State threatened Swainson's hawk (*Buteo swainsoni*), the State threatened tricolored blackbird (*Agelaius tricolor*), and the species of special concern burrowing owl (*Athene cunicularia*).

San Joaquin Kit Fox (SJKF)

Very little habitat considered highly suitable for SJKF remains in Merced County (Cypher et al. 2013). Undeveloped land in western Merced County, spanning the area from around Los Banos Reservoir to north of San Luis Reservoir, has been identified by CDFW and the United States Fish and Wildlife Service (USFWS) as a movement corridor critical to the continued existence and genetic diversity of the northern SJKF population. The Santa Nella area in particular has been identified as a critical SJKF movement "pinch-point". The creation of the San Luis Reservoir and O'Neil Forebay resulted in a large movement barrier to the north-south migration of SJKF, and busy highways in the area such as State Routes 152 and 33 and Interstate 5, as well as existing urban development in the vicinity, further compounded this problem (HT Harvey and Associates 2004). As a result, any upland habitat in this area that could serve as movement or rest areas for SJKF has very high conservation values for this species.

SJKF den in right-of-ways, vacant lots, etc., and populations can fluctuate over time. It is important to note that SJKF populations are known to fluctuate and a negative finding from biological surveys in any one year does not necessarily demonstrate absence of kit fox on a site. In addition, SJKF may be attracted to both construction materials (pipes, etc.) and construction footprints due to the type and level of activity (excavation, etc.) and the loose, friable soils that are created as a result of intensive ground disturbance.

CDFW recommends the Program EIR quantify and describe the potential for subsequent projects to result in direct and indirect impacts to SJKF, including SJKF dispersal and habitat connectivity. The evaluation should include the cumulative impacts to SJKF from other existing, planned, and potential development in the Project vicinity that may contribute to habitat fragmentation. This information, in addition to adequate description of habitat features on individual projects sites, is essential to adequately assess project impacts.

To assess individual Project sites, CDFW recommends that a qualified wildlife biologist assess individual project sites to determine if habitat suitable to support SJKF is present prior to ground- or vegetation-disturbing activities. If suitable habitat is present, CDFW recommends that a qualified biologist assess presence/absence of SJKF by conducting surveys following the USFWS's "Standardized recommendations for protection of the San

Stacy Souza Elms, Community & Economic Development Director
City of Los Banos Community & Economic Development Department
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Page 4

Joaquin kit fox prior to or during ground disturbance” (2011) and implementing no-disturbance buffers around den sites, as described in the USFWS document. SJKF detection warrants consultation with CDFW to discuss how to avoid take, or if avoidance is not feasible, to acquire an ITP prior to ground-disturbing activities, pursuant to Fish and Game Code section 2081 subdivision (b).

Swainson’s Hawk (SWHA)

Projects tiering from the Program EIR have the potential to impact SWHA. Without appropriate avoidance and minimization measures for SWHA, potential significant impacts that may result from subsequent project activities include nest abandonment, reduced nesting success (loss or reduced health or vigor of eggs or young), and loss of foraging habitat.

To avoid impacts to nesting SWHA, CDFW recommends that subsequent project’s ground-disturbing activities be timed to avoid the normal bird breeding season (February 1 through September 15). However, if ground-disturbing activities must take place during that time, CDFW recommends that a qualified wildlife biologist determine if suitable habitat is present on or adjacent to individual project sites. If suitable habitat is present, CDFW recommends a qualified wildlife biologist conduct surveys following the survey methods developed by the Swainson’s Hawk Technical Advisory Committee (SWHA TAC 2000) prior to project implementation. If active nests are detected, CDFW recommends a minimum no-disturbance buffer of 0.5-mile be delineated around them until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. If an active SWHA nest is detected during surveys and a 0.5-mile buffer is not feasible, consultation with CDFW is warranted to discuss how to implement the project and avoid take. If take cannot be avoided, take authorization through the acquisition of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to comply with CESA.

If known SWHA nest trees will be removed as part of Project activities, CDFW recommends that the removal of known SWHA nest trees, even outside of the nesting season, be replaced with an appropriate native tree species planting at a ratio of 3:1 at or near the Project area or in another area that will be protected in perpetuity. This mitigation would offset the impacts of nesting habitat loss.

SWHA will forage in mixed agricultural lands that support irrigated hay crops (e.g., alfalfa), as well as dryland pasture, grassy ruderal lots, and some irrigated crops. To reduce impacts to SWHA foraging habitat to less than significant, CDFW recommends compensation of its loss as described in the Staff Report Regarding Mitigation for Impacts to Swainson’s Hawks (CDFG 1994). Specifically, the Staff Report recommends that mitigation for foraging habitat loss occur within a minimum distance of 10 miles from known nest sites using the following criteria:

- For projects within 1 mile of an active nest tree, a minimum of one acre of habitat management (HM) land for each acre of development is advised.

Stacy Souza Elms, Community & Economic Development Director
City of Los Banos Community & Economic Development Department
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- For projects within 5 miles of an active nest tree but greater than 1 mile, a minimum of 0.75 acres of HM land for each acre of development is advised.
- For projects within 10 miles of an active nest tree but greater than 5 miles from an active nest tree, a minimum of 0.5 acres of HM land for each acre of development is advised.

Tricolored Blackbird (TRBL)

TRBL are known to nest in alfalfa, wheat, and other low agricultural crop fields. TRBL aggregate and nest colonially, forming colonies of up to 100,000 nests (Meese et al. 2014). Approximately 86% of the global population is found in the San Joaquin Valley (Kelsey 2008, Weintraub et al. 2016). Increasingly, TRBL are forming larger colonies that contain progressively larger proportions of the species' total population (Kelsey 2008). In 2008, for example, 55% of the species' global population nested in only two colonies, which were located in silage fields (Kelsey 2008). In 2017, approximately 30,000 TRBL were distributed among only 16 colonies in Merced County (Meese 2017). Nesting can occur synchronously, with all eggs laid within one week (Orians 1961). For these reasons, depending on timing, disturbance to nesting colonies can cause abandonment, significantly impacting TRBL populations (Meese et al. 2014).

Without appropriate avoidance and minimization measures for TRBL, potential significant impacts of projects tiering from the Program EIR include nest and/or colony abandonment, reduced reproductive success, and reduced health and vigor of eggs and/or young. CDFW recommends that project ground-disturbing activities be timed to avoid the normal bird breeding season (February 1 through September 15). However, if ground-disturbing activities must take place during that time, CDFW recommends that a qualified wildlife biologist determine if suitable habitat is present on or adjacent to individual project sites. If suitable habitat is present, CDFW recommends a qualified wildlife biologist conduct surveys for nesting TRBL no more than 10 days prior to the start of ground-disturbing activities. If an active TRBL nesting colony is found during pre-activity surveys, CDFW recommends implementation of a minimum 300-foot no-disturbance buffer around the colony in accordance with CDFW's "*Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015*" (CDFW 2015). CDFW advises that this buffer remain in place until the breeding season has ended or until a qualified biologist has determined that nesting has ceased, the birds have fledged, and are no longer reliant upon the colony or parental care for survival. It is important to note that TRBL colonies can expand over time. For this reason, CDFW recommends conducting additional pre-activity surveys within 10 days prior of project initiation to reassess the colony's areal extent. If a TRBL nesting colony is detected during surveys, consultation with CDFW is warranted to discuss how to implement the project and avoid take, or if avoidance is not feasible, to acquire an ITP, pursuant to Fish and Game Code section 2081 subdivision (b), prior to any ground-disturbing activities.

Stacy Souza Elms, Community & Economic Development Director
 City of Los Banos Community & Economic Development Department
 February 24, 2022
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Burrowing Owl (BUOW)

BUOW use small mammal burrows for nesting and cover. Dispersing juveniles, migrants, transients, or new colonizers may occur in the Project site year-round. Therefore, project activities could impact this species. CDFW recommends that a qualified biologist conduct a habitat assessment in advance of project implementation, to determine if individual project sites or their immediate vicinity contain suitable habitat for BUOW. If suitable habitat is present, CDFW recommends that a qualified biologist determine if species-specific surveys are necessary to determine if BUOW may be impacted by project activities. CDFW recommends the survey methods described in the Staff Report on Burrowing Owl Mitigation (CDFG 2012) be followed before beginning ground disturbing activities. In the event that BUOW are found, CDFW's Staff Report on Burrowing Owl Mitigation (CDFG 2012) recommends that impacts to occupied burrows be avoided in accordance with the following table unless a qualified biologist verifies through non-invasive methods that either: 1) the birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

Editorial Comments and Suggestions

Nesting birds

CDFW encourages project activities occur during the bird non-nesting season; however, if ground-disturbing or vegetation-disturbing activities must occur during the breeding season (February through mid-September), individual project proponents are responsible for ensuring that implementation of a project does not result in violation of the Migratory Bird Treaty Act or relevant Fish and Game Codes as referenced above.

To evaluate project-related impacts on nesting birds, CDFW recommends that a qualified wildlife biologist conduct pre-activity surveys for active nests no more than 10 days prior to the start of ground or vegetation disturbance to maximize the probability that nests that could potentially be impacted are detected. CDFW also recommends that surveys cover a sufficient area around individual project sites to identify nests and determine their status. A sufficient area means any area potentially affected by a project. In addition to direct impacts (i.e. nest destruction), noise, vibration, and movement of workers or equipment could also affect nests. Prior to initiation of project ground-disturbing activities, CDFW recommends that a qualified biologist conduct a survey to establish a behavioral baseline of all identified nests. Once ground-disturbing activities begin, CDFW recommends having a qualified biologist continuously monitor nests to detect behavioral changes resulting from

Stacy Souza Elms, Community & Economic Development Director
City of Los Banos Community & Economic Development Department
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the project. If behavioral changes occur, CDFW recommends halting the work causing that change and consulting with CDFW for additional avoidance and minimization measures.

If continuous monitoring of identified nests by a qualified wildlife biologist is not feasible, CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors. These buffers are advised to remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or on-site parental care for survival. Variance from these no-disturbance buffers is possible when there is compelling biological or ecological reason to do so, such as when the construction area would be concealed from a nest site by topography. CDFW recommends that a qualified wildlife biologist advise and support any variance from these buffers and notify CDFW in advance of implementing a variance.

Lake and Streambed Alteration: Projects tiering from the Program EIR may involve activities that have the potential to impact streams within the Project site and may be subject to CDFW's regulatory authority pursuant Fish and Game Code section 1600 et seq. Fish and Game Code section 1600 et seq. requires an entity to notify CDFW prior to commencing any activity that may (a) substantially divert or obstruct the natural flow of any river, stream, or lake; (b) substantially change or use any material from the bed, bank, or channel of any river, stream, or lake (including the removal of riparian vegetation); or (c) deposit debris, waste or other materials that could pass into any river, stream, or lake. "Any river, stream, or lake" includes those that are ephemeral or intermittent as well as those that are perennial. CDFW is required to comply with CEQA in the issuance of a Lake or Streambed Alteration Agreement. For additional information on notification requirements, please contact our staff in the LSA Program at (559) 243-4593.

Federally Listed Species

CDFW recommends consulting with the USFWS on potential impacts to federally listed species including, but not limited to SJKF. Take under the Federal Endangered Species Act (FESA) is more broadly defined than CESA; take under FESA also includes significant habitat modification or degradation that could result in death or injury to a listed species by interfering with essential behavioral patterns such as breeding, foraging, or nesting. Consultation with the USFWS in order to comply with FESA is advised well in advance of any ground disturbing activities.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during project surveys to CNDDDB. The CNDDDB field survey form can be found at the following link: <https://www.wildlife.ca.gov/Data/CNDDDB/Submitting-Data>. The completed

Stacy Souza Elms, Community & Economic Development Director
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February 24, 2022
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form can be mailed electronically to CNDDDB at the following email address: CNDDDB@wildlife.ca.gov. The types of information reported to CNDDDB can be found at the following link: <https://www.wildlife.ca.gov/Data/CNDDDB/Plants-and-Animals>.

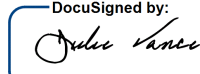
FILING FEES

If it is determined that the Project has the potential to impact biological resources, an assessment of filing fees will be necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089).

CDFW appreciates the opportunity to comment on the Project to assist the City of Los Banos Community & Economic Development Department in identifying and mitigating the Project's impacts on biological resources.

More information on survey and monitoring protocols for sensitive species can be found at CDFW's website (<https://www.wildlife.ca.gov/Conservation/Survey-Protocols>). If you have any questions, please contact Jim Vang, Environmental Scientist, at the address provided on this letterhead, by telephone at (559) 580-3203, or by electronic mail at Jim.Vang@wildlife.ca.gov.

Sincerely,

DocuSigned by:

FA83F09FE08945A...
Julie A. Vance
Regional Manager

Attachment 1

ec: R4 LSA
R4LSA@wildlife.ca.gov

Patricia Cole, USFWS
patricia_cole@fws.gov

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Attachment 1

**CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
RECOMMENDED MITIGATION MONITORING AND REPORTING PROGRAM
(MMRP)**

PROJECT: Los Banos General Plan 2042

SCH No.: 2022010254

RECOMMENDED MITIGATION MEASURE	STATUS/DATE/INITIALS
<i>Before Disturbing Soil or Vegetation</i>	
Mitigation Measure: SJKF	
SJKF Habitat Assessment	
SJKF Surveys	
SJKF Take Authorization	
Mitigation Measure: SWHA	
SWHA Habitat Assessment (Nesting and Foraging)	
SWHA Surveys	
SWHA Foraging Habitat Mitigation	
SWHA Take Authorization	
Mitigation Measure: TRBL	
TRBL Habitat Assessment	
TRBL Surveys	
TRBL Take Authorization	
Mitigation Measure: BUOW	
BUOW Habitat Assessment	
BUOW Surveys	
<i>During Construction</i>	
Mitigation Measure: SJKF	
SJKF Avoidance	
Mitigation Measure: SWHA	
SWHA Avoidance	
Mitigation Measure: TRBL	
TRBL Avoidance	
Mitigation Measure: BUOW	
BUOW Avoidance	

**APPENDIX B:
AIR QUALITY AND GREENHOUSE GAS EMISSIONS DATA**

.....

Land Use Statistics - Los Banos, Merced County

	Existing Conditions	Buildout Estimates	Projected Growth (Proposed Project)	
	2021	2042	2022-2042	%
Housing Units	12,800	21,700	8,900	70%
Population	42,900	72,500	29,600	69%
Employment	7,000	12,000	5,000	71%
Service Population	49,900	84,500	34,600	69%

AQMP Consistency Analysis

Comparison of the Change in Population and VMT in Los Banos (O-D Method)

Category	2021 Existing	2042 Proposed Project	Change from Existing	
			Change	Percent
Population	42,900	72,500	29,600	69%
Employment	7,000	12,000	5,000	71%
SP	49,900	84,500	34,600	69%
VMT per Day	1,446,814	2,304,017	857,203	59%
VMT/person	33.7	31.8	-2	-6%
VMT/SP	29.0	27.3	-2	-6%

Note Origin-Destination (O-D) Methodology is not the same methodology for SB 743, which considers only commute-trip VMT.

Los Banos Community GHG Emissions Inventory and Forecast

Category	Existing		General Plan Update		Change from Existing	
	TOTAL		TOTAL		TOTAL	
Building Electricity	32,950	8%	13,799	3%	-19,150	-58%
Building Natural Gas	30,227	7%	51,345	12%	21,118	70%
On-Road Transportation	291,432	72%	323,430	76%	31,999	11%
Off-Road Vehicles and Equipment	41,045	10%	31,252	7%	-9,793	-24%
Solid Waste/Landfills	4,038	1%	6,824	2%	2,786	69%
Water Use and Wastewater Treatment	3,633	1%	1,571	0%	-2,063	-57%
Total Community Emissions	403,324	100%	428,221	100%	24,897	6%
Service Population (SP)	49,900		84,500		34,600	69%
MTCO ₂ e/SP	8.1		5.1		-3.0	-37%
Trajectory to EO S-03-05			145,197			

Notes: Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC Fifth Assessment Report (AR5).

The emissions inventory and forecast is based on activity data for the City of Ontario. This emissions inventory methodology identifies GHG emissions produced within a jurisdiction and captures direct and indirect emissions generated by land uses in a community. The activity data methodology allows a direct comparison between a community's GHG emissions and that identified by CARB in the AB 32 and SB 32 inventory and forecast prepared for the scoping plan. Unlike a "consumption-based" GHG emissions inventory, an activity-based emissions inventory does not capture lifecycle emissions associated with consumptions of goods. While a consumption-based emissions inventory approach may document GHG emissions associated with the final demand (regardless of where they were generated), a consumption-based emissions inventory excludes emissions associated with products produced within the jurisdiction but consumed elsewhere. For these reasons, an activity-based emissions inventory was determined to be most applicable for determining significant impacts under CEQA.

Note: Excludes GHG emissions natural gas use from Permitted Sources within the City.

Trajectory to EO S-03-05

2030	40%
2050	80%
2042	64%

City of Los Banos Community Criteria Air Pollutant Emissions Inventory and Forecast

Sources

¹ Source: Kittelson 2022; EMFAC2021 Version 1.0.1 Emissions Database (Sub-Area - Merced -SJV)

² Sources: PG&E 2021, and CalEEMod User's Guide for natural gas criteria air pollutant emission rates. Excludes criteria air pollutant emissions natural gas use from Permitted Sources within the City.

³ Source: OFFROAD 2021

⁴ Source: CalEEMod User's Guide

EXISTING (2021)

Phase	Existing (2021) Criteria Air Pollutant Emissions (tons/year)					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Transportation ¹	21	319	692	3	7	12
Energy ²	3	28	21	0	2	2
Offroad Equipment ³	1	1	10	0	0	0
Consumer Products ⁴	94					
Total	118	347	722	3	9	14

EXISTING LAND USES (2022 Emission Rates)

Phase	Existing (2021) Criteria Air Pollutant Emissions (tons/year)					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Transportation ¹	4	119	253	2	3	7
Energy ²	3	28	21	0	2	2
Offroad Equipment ³	1	1	10	0	0	0
Consumer Products ⁴	94					
Total	101	147	284	2	5	9

City of Los Banos Community Criteria Air Pollutant Emissions Inventory and Forecast

Proposed 2042 Update (Proposed Project)

Phase	Project (2042) Criteria Air Pollutant Emissions (tons/year)					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Transportation ¹	6	189	404	3	4	11
Energy ²	5	45	23	0	4	4
Offroad Equipment ³	1	1	15	0	0	0
Consumer Products ⁴	185					
Total	197	235	441	4	8	15

NET CHANGE (from Existing)

Phase	Net Change (2042-2021) Criteria Air Pollutant Emissions (tons/year)					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Transportation ¹	-15	-130	-288	0	-3	-1
Energy ²	2	17	1	0	1	1
Offroad Equipment ³	0	0	5	0	0	0
Consumer Products ⁴	91	0	0	0	0	0
Total	78	-113	-282	0	-1	0
SJVAPCD GAMAQI THRESHOLD	10	10	100	27	15	15
Exceeds Threshold	Yes	No	No	No	No	No

NET CHANGE (from Existing Land Uses - with 2042 Emissions Rates)

Phase	Net Change from Existing Land Uses (2042 Emission Rates) Criteria Air Pollutant Emissions (tons/year)					
	VOC	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Transportation ¹	2	70	150	1	2	4
Energy ²	2	17	1	0	1	1
Offroad Equipment ³	0	0	5	0	0	0
Consumer Products ⁴	91	0	0	0	0	0
Total	96	88	157	1	3	6
SJVAPCD GAMAQI THRESHOLD	10	10	100	27	15	15
Exceeds Threshold	Yes	Yes	Yes	No	No	No

Water and Wastewater

Water Demand (see Chapter 4.16, Utilities and Service Systems).

	Existing	GP Update
Population	42,900	72,500
Employees	7,000	12,000
Service Population	49,900	84,500

Water Use

	Existing	General Plan
Acre-Feet per year	8,309	12,169
Gallons per year	2,707,499,524	3,965,286,040
Million gallons per year	2,707	3,965

Wastewater

Acre-Feet per year	3,540	5,118
Gallons per year	1,153,514,059	1,667,707,614
Million gallons per year	1,154	1,668

Water and Wastewater

Fugitive Emissions - Process Emissions from WWTP with Nitrification/Denitrification

CH₄ - Microorganisms can biodegrade soluble organic material in wastewater under aerobic (presence of oxygen) or anaerobic (absence of oxygen) conditions. Anaerobic conditions result in the production of CH₄.

N₂O - Treatment of domestic wastewater during both nitrification and denitrification of the nitrogen present leads to the formation of N₂O, usually in the form of urea, ammonia, and proteins. These compounds are converted to nitrate through the aerobic process of nitrification. Denitrification occurs under anoxic conditions (without free oxygen), and involves the biological conversion of nitrate into dinitrogen. N₂O can be an intermediate product of both processes, but more often is associated with denitrification.

Notes: Waste discharge facilities in compliance with the United States Environmental Protection Agency's Clean Water Standards do not typically result in CH₄ emissions. However, poorly-operated aerobic wastewater treatment systems can result in the generation of CH₄. Because wastewater treatment systems are assumed to operate in compliance with state and federal laws pertaining to water quality, CH₄ emissions from centralized aerobic treatments are not included in the inventory.

Fugitive Emissions - Process Emissions from WWTP with Nitrification/Denitrification

LGOP Version 1.1. Equation 10.9.

$$N_2O = \text{Wastewater} \times 10^{-6} \times \text{Nload} \times \text{EF effluent} \times 10^3$$

Gallons per year	2,707,499,524	3,965,286,040
TOTAL wastewater (Liters)=	4,366,050,712	6,312,273,318
10 ⁻⁶ = 1.00E-06		conversion factor; kg/mg
N Load 40.00		mg/L of wastewater USEPA 2008
EF effluent 0.01		kg/N ₂ O/kg N
10 ⁻³ = 1.00E-03		conversion factor: MTons/kg

	Existing	General Plan
N₂O TOTAL	0.87	1.26
CO₂e TOTAL=	231	335

Source: California Air Resources Board (CARB). 2010, May. Local Government Operations Protocol (LGOP), Version 1.1. The LGOP protocol provides default values for all the terms except the Nitrogen Load, which is assumed to be 40 mg of N per Liter of wastewater effluent based on USEPA methodology outlined in the CalEEMod program manual. South Coast Air Quality Management District (SCAQMD). 2011. California Emissions Estimator Model (CalEEMod), Version 2011.1.1. User's Manual. USEPA. 2008. Page 8-12. USEPA cites Metcalf & Eddy, Inc., 1991, "Wastewater Engineering: Treatment Disposal, and Reuse," 3rd Ed. McGraw Hill Publishing.

Water and Wastewater

Energy for Water Conveyance, Treatment, Distribution, and Wastewater Treatment (Northern California)

Location	Water Supply and Conveyance			Water Treatment	Water Distribution	Total Water	Wastewater Treatment
	kWhr/million gallons						
Northern California	2,117	111	1,272		3,500	1,911	

Source: California Energy Commission (CEC). 2006, December. Refining Estimates of Water-Related Energy Use in California. CEC-500-2006-118. Prepared by Navigant Consulting, Inc.

PGE

	Intensity factor			CO ₂ e
	CO ₂ MTons/MWH ¹	CH ₄ MTons/MWH ²	N ₂ O MTons/MWH ²	MTons/MWh
PGE	0.231	0.0000154	0.0000018	0.232
PCE in 2042				0.058

For Notes/sources: see the Energy Tab

GHG Emissions from Energy Associated with Water/Wastewater

	Existing	General Plan
Energy Associated with Water Use		
TOTAL ENERGY Water Use	9,476	13,879
TOTAL ENERGY Wastewater Generation	5,174	7,578
Total Energy from Water/Wastewater	14,650	21,456

	Existing	General Plan
GHG Emissions from Energy Associated with Water Use/Wastewater Generation		
TOTAL GHGs Water Use	2,201	800
TOTAL GHGs Wastewater Generation	1,201	437
Total Water/Wastewater	3,402	1,236

Water and Wastewater

Total GHGs

	Existing	General Plan
GHG Emissions from Water/Wastewater Use		
TOTAL Water Use	2,201	800
TOTAL Wastewater Generation	1,433	771
Total Water/Wastewater	3,633	1,571

Energy Data Requests to PG&E

PG&E. July 15, 2021. Community Wide GHG Inventory Report for Los Banos (2016 through 2020).

Excludes electricity use from Industrial (Permitted) Sources within the City.

Category	2016	2017	2018	2019	2020
Agriculture	NA	NA	NA	NA	1,063,843
Commercial	44,945,449	47,264,703	45,439,253	44,702,806	41,491,108
Residential	90,703,781	93,553,527	88,963,652	87,319,781	99,321,787
Total kwh	135,649,230	140,818,230	134,402,905	132,022,587	141,876,738

PG&E. July 15, 2021. Natural Gas Use in Los Banos (2016-2020)

Excludes electricity use from Industrial (Permitted) Sources within the City.

Category	2016	2017	2018	2019	2020
Commercial	888,299	952,110	983,193	1,060,935	1,005,327
Residential	3,992,356	4,193,910	4,252,891	4,467,397	4,690,209
Total Therms	4,880,655	5,146,020	5,236,084	5,528,332	5,695,536

City of Los Banos

PG&E Emission Factors

Natural Gas ¹	CO ₂ e	CO ₂ e
	lbs/Therm	MT/Therm
All Years	11.7	0.00531

Electricity	Carbon Intensity					CO ₂ e
Source	Percent RPS	CO ₂ lbs/MWH	CO ₂ MTons/MWH	CH ₄ MTons/MWH ²	N ₂ O MTons/MWH ²	MTons/MWH
2020 PG&E ^{2,3}	36%	510	0.231	0.000015	0.000002	0.232

SB 100 Carbon Intensity Forecasts⁴

	PG&E	PCE	PCE
	Post-2030	2022	2025
Assumed 2030 Percent Renewable	60.0%	47.0%	64.0%
CO ₂ e MTons/Mwh without Renewable	0.361		0.160
2050 CO ₂ e MTons/Mwh with SB 100 RPS	0.144	0.085	0.058

Sources

1 PG&E 2020 Community Wide GHG Inventory Report for Los Banos (2005-2020).

PG&E 2020 Joint Annual Report to Shareholders, Emission Factors 2020.

2 https://s1.q4cdn.com/880135780/files/doc_financials/2020/ar/PCG012AR_2020_AR_Web.pdf

Environmental Protection Agency (EPA). 2020, March 3. eGRID2018 Summary Tables. [https://www.epa.gov/sites/production/files/2020-](https://www.epa.gov/sites/production/files/2020-01/documents/egrid2018_summary_tables.pdf)

3 [01/documents/egrid2018_summary_tables.pdf](https://www.epa.gov/sites/production/files/2020-01/documents/egrid2018_summary_tables.pdf)

In 2018, SB 100 (de León, 2018) was signed into law, which again increases the RPS to 60% by 2030 and encourages the state's electricity to come from carbon-free resources by 2045.

In 2022 Los Banos is switching to Peninsula Clean Energy (PCE). PCE has a current carbon intensity of 187 MTCO₂e using the time-coincident accounting method. PCE. 2021, December. Our Path to 24/7 Renewable Energy by 2025. [https://www.peninsulacleanenergy.com/wp-](https://www.peninsulacleanenergy.com/wp-content/uploads/2021/11/Whitepaper-OUR-PATH-TO-247-RENEWABLE-ENERGY-BY-2025.pdf)

5 [content/uploads/2021/11/Whitepaper-OUR-PATH-TO-247-RENEWABLE-ENERGY-BY-2025.pdf](https://www.peninsulacleanenergy.com/wp-content/uploads/2021/11/Whitepaper-OUR-PATH-TO-247-RENEWABLE-ENERGY-BY-2025.pdf)

GHG Emissions from Energy Use

	PG&E	PG&E
	MWH/YR	Therms
Actual Energy Use	2020	2020
Agriculture	1,064	NA
Commercial	41,491	1,005,327
Industrial	NA	NA
Residential	99,322	4,690,209
Total	141,877	5,695,536
	MTCO₂e/Yr	
Commercial	247	NA
Commercial	9,636	5,335
Industrial	NA	NA
Residential	23,067	24,891
Total	32,950	30,227

Forecast Methodology	Existing	GP Update
Residential - Dwelling Units	12,800	21,700
Nonresidential - Employees	7,000	12,000

MWH per Unit per year	7.8	Therms per Unit per year	366
MWH per Employee per year	5.93	Therms per Employee per year	143.6

Electricity	Existing	GP Update
	MWH	
Nonresidential	42,555	71,128
Residential	99,322	168,381
Total	141,877	239,509
Electricity	MTCO2e	
Nonresidential	9,883	4,098
Residential	23,067	9,701
Total Electricity	32,950	13,799

Natural Gas	Existing	GP Update
	Therms	
Nonresidential	1,005,327	7,951,370
Residential	4,690,209	1,723,418
Total	5,695,536	9,674,788
Natural Gas	MTCO2e	
Nonresidential	5,335	42,199
Residential	24,891	9,146
Total Natural Gas	30,227	51,345

Criteria Air Pollutants from Natural Gas

Rate	lbs/MBTU					
	ROG	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Natural Gas						
Residential	0.01078431	0.09215686	0.03921569	0.00058824	0.00745098	0.00745098
Non-Residential	0.01078431	0.09803922	0.08235294	0.00058824	0.00745098	0.00745098

Sources

1. CalEEMod Version 2020.4 (May 2021) Appendix D. <http://www.caleemod.com/>

Los Banos	Existing	GP Year Update
	Therms	
Residential	1,005,327	7,951,370
Nonresidential	4,690,209	1,723,418
Total	5,695,536	9,674,788

Natural Gas	Existing tons/year					
	ROG	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Residential	1	5	2	0	0	0
Nonresidential	3	23	19	0	2	2
TOTAL	3	28	21	0	2	2

Natural Gas	GP Update tons/year					
	ROG	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Residential	4	37	16	0	3	3
Nonresidential	1	8	7	0	1	1
TOTAL	5	45	23	0	4	4

Solid Waste Disposal

Source: CalRecycle Recycling and Disposal Reporting System Report (Overall Jurisdiction Tons For Disposal and Disposal Related Uses)

Waste Generated Within Los Banos

Merced County		
Los Banos 2021	2021 (US Census)	% in Los Banos
42,900	286,461	15%

	Estimated Tons Los Banos				Reported Tons Merced			
	TOTAL	Landfill	Transformation	Greenwaste	TOTAL	Landfill	Transformation	Greenwaste
2019	43,467	41,522	1,502	444	290,247	277,256	10,026	2,964
2020	46,975	44,220	921	1,834	313,672	295,275	6,149	12,248
2021	53,075	47,378	545	5,152	354,404	316,361	3,640	34,403

Notes:

Source (Post 2019): CalRecycle. 2022, April (accessed). RDRS Report 1: Overall Jurisdiction Tons for Disposal and Disposal Related Uses.
<https://www2.calrecycle.ca.gov/RecyclingDisposalReporting/Reports/OverallJurisdictionTonsForDisposal>

2042 GP	% Increase Based on Population
72,500	69%

Landfill Emission Tool (version 1.9.2021) CH₄ Model Results.

Based on the Merced Highway 59 Landfill K-Factor

	EXISTING		GENERAL PLAN	
	MTCO ₂ e w/LFG Capture		MTCO ₂ e w/LFG Capture	
	CH ₄ Tons	2021 TOTAL	CH ₄ Tons	2042 TOTAL
Year 1	137	871	232	1,473
Year 2 (PEAK)	952	6,048	1,610	10,221
Year 3	1,069	6,788	1,807	11,472
Year 4	1,048	6,654	1,771	11,245
Year 5	1,027	6,522	1,736	11,022
Year 6	1,007	6,393	1,701	10,804
Year 7	987	6,266	1,668	10,590
Year 8	967	6,142	1,635	10,380
Year 9	948	6,021	1,602	10,175
Year 10	929	5,901	1,571	9,973
Year 11	911	5,785	1,539	9,776
Year 12	893	5,670	1,509	9,582
Year 13	875	5,558	1,479	9,392
Year 14	858	5,448	1,450	9,206
Year 15	841	5,340	1,421	9,024
Year 16	824	5,234	1,393	8,845
Year 17	808	5,130	1,365	8,670
Year 18	792	5,029	1,338	8,499
Year 19	776	4,929	1,312	8,330
Year 20	761	4,832	1,286	8,165
Year 21	746	4,736	1,260	8,004
Year 22	731	4,642	1,235	7,845
Year 23	717	4,550	1,211	7,690
Year 24	702	4,460	1,187	7,538
Year 25	688	4,372	1,163	7,388
Year 26	675	4,285	1,140	7,242
Year 27	661	4,200	1,118	7,099
Year 28	648	4,117	1,096	6,958
Year 29	636	4,036	1,074	6,820
Year 30	623	3,956	1,053	6,685
Year 31	611	3,877	1,032	6,553
Year 32	599	3,801	1,011	6,423
Year 33	587	3,725	991	6,296
Year 34	575	3,652	972	6,171
Year 35	564	3,579	953	6,049
Year 36	552	3,508	934	5,929
Year 37	542	3,439	915	5,812
Year 38	531	3,371	897	5,697
Year 39	520	3,304	879	5,584
Year 40	510	3,239	862	5,473
Year 41	500	3,175	845	5,365
Year 42	490	3,112	828	5,259
Year 43	480	3,050	812	5,155
Year 44	471	2,990	796	5,053

Year 45	461	2,931	780	4,953
Year 46	452	2,873	764	4,854
Year 47	443	2,816	749	4,758
Year 48	435	2,760	734	4,664
Year 49	426	2,705	720	4,572
Year 50	418	2,652	706	4,481
Year 51	409	2,599	692	4,393
Year 52	401	2,548	678	4,306
Year 53	393	2,497	665	4,220
Year 54	385	2,448	651	4,137
Year 55	378	2,399	639	4,055
Year 56	370	2,352	626	3,974
Year 57	363	2,305	613	3,896
Year 58	356	2,260	601	3,819
Year 59	349	2,215	589	3,743
Year 60	342	2,171	578	3,669
60 YR Avg (Average Annual)	335	4,038		6,824

Waste. Landfill Emissions Tool Version 1.9.2021 and CalRecycle. Biogenic CO₂ emissions are not included.

Notes

LFG capture Efficiency 0.75 AR5 CH₄ GWP 28 Tons to metric Tons 0.9071847

Waste generation based on three year average waste commitment for the County of Marin obtained from CalRecycle.

Significant CH₄ production typically begins one or two years after waste disposal in a landfill and continues for 10 to 60 years or longer. Consequently, the highest CH₄ emissions from waste disposal in a given year are reported.

Decomposition based on the anaerobic decomposition factor (k) of 0.02 based on rainfall for the Merced Highway 59 Landfill.

The Landfill Gas Estimator only includes the landfill gas (LFG) capture in the landfill gas heat output and therefore the reduction and emissions from landfill gas capture are calculated separately. Assumes 75 percent of fugitive GHG emissions are captured within the landfill's Landfill Gas Capture System with a landfill gas capture efficiency of 75%. The Landfill gas capture efficiency is based on the California Air Resources Board's (CARB) Local Government Operations Protocol (LGOP), Version 1.3.

Biogenic CO₂ emissions are not included.

Data Input: Landfill Characteristics

Landfill Name: HWY 59	Year Opened: <input type="text"/>	Click for lists of k values
State/Country: CA	If Closed, Year: <input type="text"/>	k Value: <input type="text" value="0.020"/>
City/County: Los Banos		M Value: 6

Data Input: Waste Deposit History

Year	Waste			Daily Cover			
	Waste Deposited			Greenwaste & Compost		Sludge	
	Tons	% ANDOC		Tons	% ANDOC	Tons	% ANDOC
1949							
1950							
1951							
1952							
1953							
1954							
1955							
1956							
1957							
1958							
1959							
1960	47,378	9.52%		5,152	5.51%	545	2.50%
1961							
1962							
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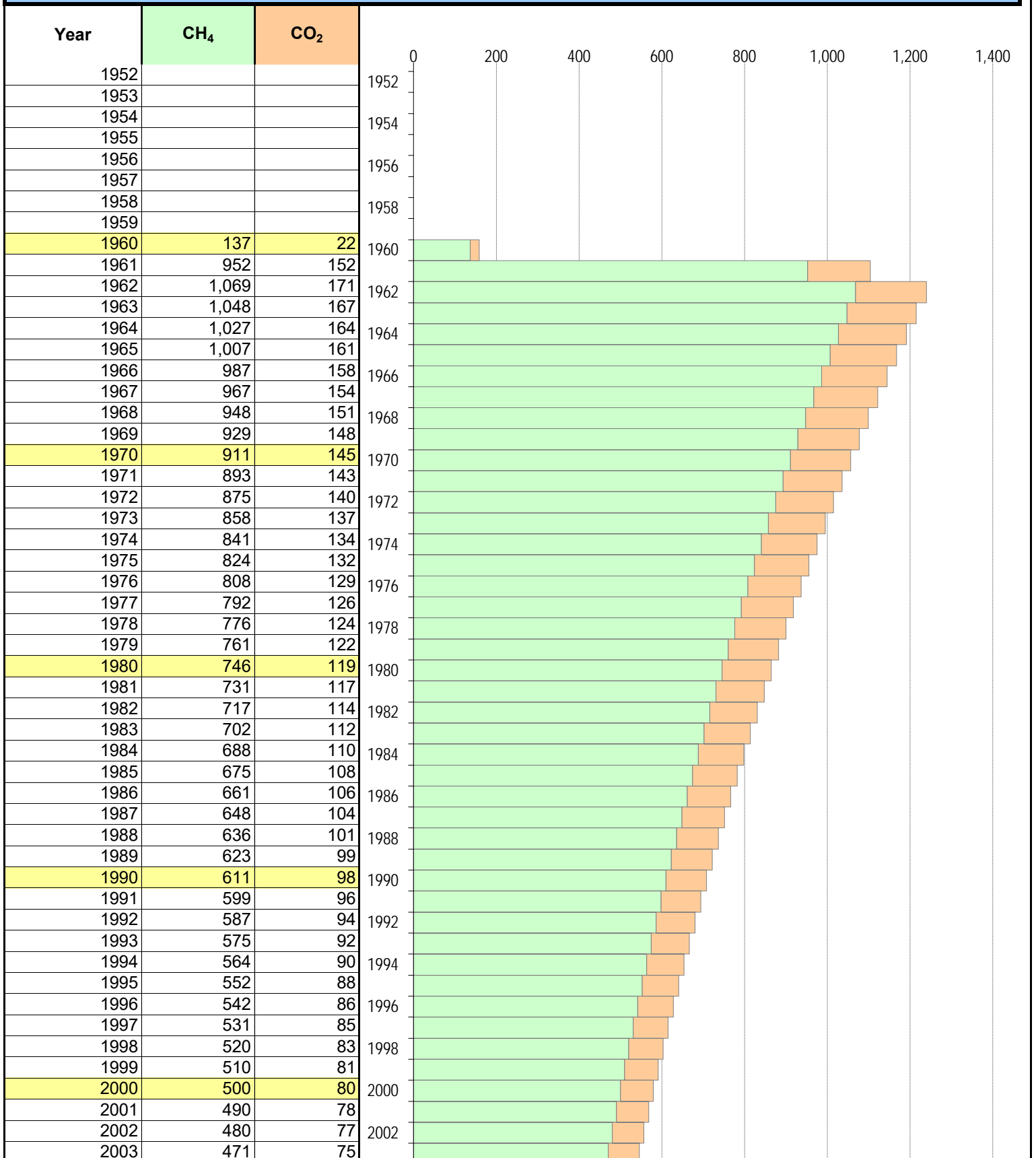
Model Output: Landfill Characteristics

Landfill Name: HWY 59
State: CA
City/County: Los Banos

Year Opened:
If Closed, Year:

k Value: 0.020
M Value: 6

Model Output: Methane and Carbon Dioxide Emissions (metric tonnes of CO₂ equivalent)



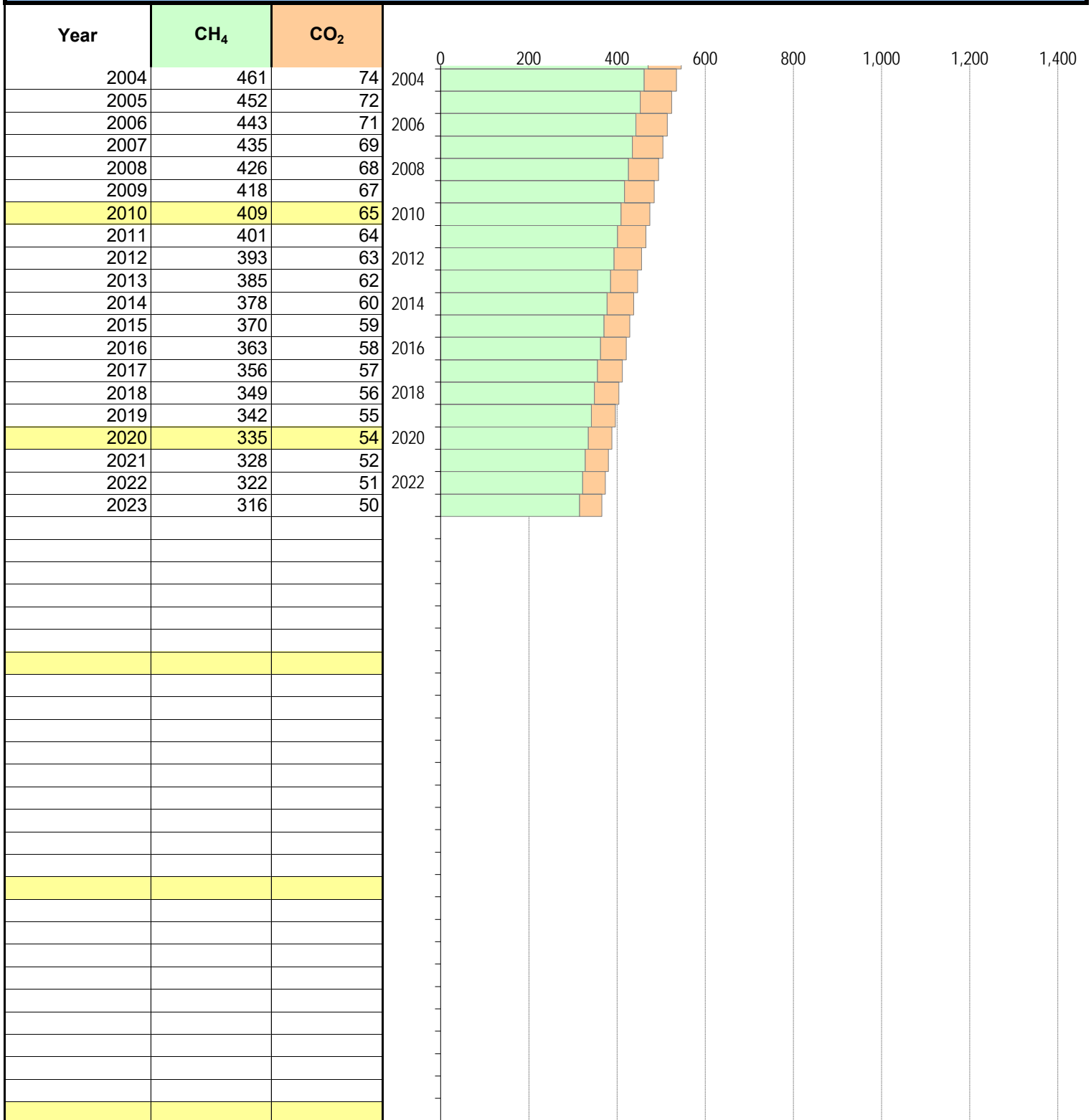
Model Output: Landfill Characteristics

Landfill Name: HWY 59
State: CA
City/County: Los Banos

Year Opened:
If Closed, Year:

k Value: 0.020
M Value: 6

Model Output: Methane and Carbon Dioxide Emissions (metric tonnes of CO₂ equivalent)



Area Sources - Consumer Products

Source: CalEEMod Users Guide. Version 2020.4

Residential Consumer Product Use^a

$$\text{Emissions} = \text{EF} \times \text{Building Area}$$

$$\text{EF} = 2.14\text{E-}05 \text{ lbs/sqft/day}$$

Sources/Notes:

a. California Emissions Estimator Model, Version 2020.4, Users Guide. Appendix A.

AVERAGE HOUSING SQFT ASSUMPTIONS

Year Structure was Built	Percent of Housing Stock ^a	Average Square Feet of New Single Family Homes ^b	Average Square Feet (Weighted)
2014 or Later	1.7%	2,617	44
2010 to 2013	1.7%	2,467	42
2000 to 2009	11.2%	2,404	269
1990 to 1999	10.9%	2,116	231
1980 to 1989	15.0%	1,819	273
1970 to 1979	17.6%	1,699	299
1960 to 1969	13.4%	1,715	230
1950 to 1959	13.4%	1,715	230
1940 to 1949	5.9%	1,715	101
1939 or earlier	9.1%	1,715	156
	100%		1,875

Sources/Notes:

<https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/>

a. United States Census Bureau, Selected Housing Characteristics, City of Los Banos, 2019. Table DP04. American Community Survey 5-Year Estimates, Year structure built.

<https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2019/>

b. United States Census Bureau, Characteristics of New Housing, Characteristics of New Single-Family Houses Completed, Median and Average Square Feet by Location.

<https://www.census.gov/construction/chars/pdf/c25ann2016.pdf>

	2021 Existing	2042 General Plan
Housing Units	12,800	21,700
Residential SQFT	24,001,662	47,289,995
lbs VOC per day	514	1,012
tons VOC/year	94	185

Source

1 New housing units constructed post-2014 assumed to be 2,617 square feet (based on Source 2).

2 Daily emissions converted to annual emissions by multiplying by 365 days/year

Area Sources

Source: OFFROAD2021. <https://arb.ca.gov/emfac/emissions-inventory/> Merced County Year 2019

OFFROAD2021 Estimate based on:

Agricultural Equipment Based on the percentage of agricultural acreage within Los Banos compared to the Merced County (Merced 2021, CDC 2021)

Construction Equipment Based on the percentage of housing permits in Los Banos compared to the Merced County (HUD 2022)

Light Commercial and Industrial Equipment Based on the percentage of employment in Los Banos compared to Merced County (Kittelson 2022)

Lawn & Garden Based on the percentage of housing units in Los Banos compared to Merced County (US Census 2021)

Sources

Farmland Acreage

Source: Merced County, 2021. 2020 Report on Agriculture. <https://www.co.merced.ca.us/ArchiveCenter/ViewFile/Item/885>

Source: California Department of Conservation (CDC), Farmland Mapping and Monitoring Program. 2021, December. 2018 Important Farmland Map. Note: 2018 data assumed to reflect existing conditions in Los Banos.

Existing Farmland	8,103	Table 4.2-1 of the EIR (excluding Grazing Land)
Farmland Acreage at Buildout	1,546	19%
Percent Reduction	-80.92%	

Construction (Housing Permits)

Source: Housing and Urban Development (HUD). 2022, Accessed February 28. SOCDS Building Permits Database. <https://socds.huduser.gov/permits/>

Employment

Source: Kittelson 2022

2021 Existing	ROG Exhaust	NO _x Exhaust	CO Exhaust	SO ₂ Exhaust	PM ₁₀ Exhaust	PM _{2.5} Exhaust*	CO ₂
	Tons/year						MT/yr
Agricultural	0.06	0.38	0.37	0.00	0.02	0.02	18,546
Construction Equipment	0.07	0.30	1.53	0.00	0.03	0.02	15,085
Lawn & Garden	0.38	0.04	3.99	0.00	0.00	0.00	4,286
Light Commercial / Industrial Equipment	0.09	0.05	3.65	0.00	0.00	0.00	3,128
TOTAL	1	1	10	0	0.05	0.05	41,045

GP 2042 Update	Forecast Adjusted for:	ROG Exhaust	NO _x Exhaust	CO Exhaust	SO ₂ Exhaust	PM ₁₀ Exhaust	PM _{2.5} Exhaust*	CO ₂
		Tons/year						MT/yr
Agricultural	Based on a reduction in Ag land in the City and SOI	0.01	0.07	0.07	0.00	0.00	0.00	3,538
Construction Equipment	Similar to historic	0.07	0.30	1.53	0.00	0.03	0.02	15,085
Lawn & Garden	Proportional to housing growth	0.64	0.08	6.76	0.00	0.01	0.01	7,265
Light Commercial / Industrial Equipment	Proportional to employment growth	0.15	0.09	6.26	0.00	0.00	0.00	5,363
TOTAL		1	1	15	0	0.04	0.03	31,252

Daily emissions converted to annual emissions by multiplying by 365 days/year

Merced County OFFROAD2021

Source: OFFROAD 2021 <https://arb.ca.gov/emfac/emissions-inventory/>

Construction includes: Over 25 horsepower, self-propelled, diesel equipment only subjected to In-Use Regulation; AND Under 25 horsepower equipment not subject to the In-Use Regulation

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2.5_tpd	CO2_tpd	CO2e_MTY
Merced	2021	Agricultural - Agricultural Tractors	Aggregate	Aggregate	Gasoline	0.000	0.000	0.001	0.000	0.000	0.000	0	7
Merced	2021	Agricultural - Agricultural Tractors	Aggregate	Aggregate	Diesel	0.401	2.712	2.167	0.004	0.155	0.142	414	137,185
Merced	2021	Agricultural - ATVs	Aggregate	Aggregate	Gasoline	0.072	0.033	0.753	0.000	0.002	0.002	7	2,324
Merced	2021	Agricultural - ATVs	Aggregate	Aggregate	Diesel	0.003	0.016	0.018	0.000	0.001	0.001	2	805
Merced	2021	Agricultural - ATVs	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021	Agricultural - Bale Wagons (Self Propelled)	Aggregate	Aggregate	Diesel	0.002	0.017	0.012	0.000	0.001	0.001	2	699
Merced	2021	Agricultural - Balers (Self Propelled)	Aggregate	Aggregate	Diesel	0.000	0.001	0.001	0.000	0.000	0.000	0	28
Merced	2021	Agricultural - Combine Harvesters	Aggregate	Aggregate	Diesel	0.013	0.118	0.083	0.000	0.005	0.005	19	6,363
Merced	2021	Agricultural - Construction Equipment	Aggregate	Aggregate	Diesel	0.009	0.080	0.056	0.000	0.004	0.004	10	3,312
Merced	2021	Agricultural - Cotton Pickers	Aggregate	Aggregate	Diesel	0.000	0.004	0.003	0.000	0.000	0.000	1	201
Merced	2021	Agricultural - Forage & Silage Harvesters	Aggregate	Aggregate	Diesel	0.006	0.058	0.044	0.000	0.002	0.002	9	2,842
Merced	2021	Agricultural - Forklifts	Aggregate	Aggregate	Diesel	0.011	0.071	0.057	0.000	0.004	0.004	9	2,894
Merced	2021	Agricultural - Hay Squeeze/Stack Retriever	Aggregate	Aggregate	Diesel	0.002	0.015	0.010	0.000	0.001	0.001	2	715
Merced	2021	Agricultural - Nut Harvester	Aggregate	Aggregate	Diesel	0.020	0.138	0.103	0.000	0.008	0.008	17	5,621
Merced	2021	Agricultural - Other Harvesters	Aggregate	Aggregate	Diesel	0.014	0.114	0.081	0.000	0.006	0.005	16	5,280
Merced	2021	Agricultural - Sprayers/Spray Rigs	Aggregate	Aggregate	Diesel	0.025	0.192	0.137	0.000	0.011	0.010	23	7,717
Merced	2021	Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	Aggregate	Diesel	0.006	0.044	0.031	0.000	0.003	0.002	6	2,086
TOTAL AGRICULTURAL OFFROAD						5.584	3.612	3.557	0.005	0.203	0.187	538	178,079
ESTIMATED Los Banos (tons/year)						0.1	0.4	0.4	0.0	0.0	0.0	56.0	18,546
ESTIMATED Los Banos (tons/year)						22.2	137.3	135.2	0.2	7.7	7.1	20,443.1	

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2.5_tpd	CO2_tpd	CO2e_MTY
Merced	2021	Construction and Mining - Bore/Drill Rigs	Aggregate	Aggregate	Diesel	0.000	0.005	0.004	0.000	0.000	0.000	1	465
Merced	2021	Construction and Mining - Cranes	Aggregate	Aggregate	Diesel	0.002	0.026	0.016	0.000	0.001	0.001	3	1,101
Merced	2021	Construction and Mining - Crawler Tractors	Aggregate	Aggregate	Diesel	0.006	0.061	0.035	0.000	0.003	0.003	8	2,720
Merced	2021	Construction and Mining - Excavators	Aggregate	Aggregate	Diesel	0.006	0.052	0.052	0.000	0.002	0.002	15	4,894
Merced	2021	Construction and Mining - Graders	Aggregate	Aggregate	Diesel	0.004	0.047	0.022	0.000	0.002	0.002	6	1,840
Merced	2021	Construction and Mining - Misc - Asphalt Pavers	Aggregate	Aggregate	Gasoline	0.001	0.001	0.042	0.000	0.000	0.000	0	3
Merced	2021	Construction and Mining - Misc - Bore/Drill Rigs	Aggregate	Aggregate	Gasoline	0.000	0.000	0.012	0.000	0.000	0.000	0	2
Merced	2021	Construction and Mining - Misc - Bore/Drill Rigs	Aggregate	Aggregate	Diesel	0.000	0.001	0.000	0.000	0.000	0.000	0	0
Merced	2021	Construction and Mining - Misc - Cement And Mortar Mixers	Aggregate	Aggregate	Gasoline	0.019	0.011	0.545	0.000	0.005	0.004	0	0
Merced	2021	Construction and Mining - Misc - Cement And Mortar Mixers	Aggregate	Aggregate	Diesel	0.000	0.001	0.001	0.000	0.000	0.000	0	0
Merced	2021	Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	Aggregate	Gasoline	0.014	0.010	0.464	0.000	0.005	0.004	0	7
Merced	2021	Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	Aggregate	Diesel	0.000	0.000	0.000	0.000	0.000	0.000	0	1
Merced	2021	Construction and Mining - Misc - Cranes	Aggregate	Aggregate	Gasoline	0.000	0.000	0.000	0.000	0.000	0.000	0	2
Merced	2021	Construction and Mining - Misc - Crushing/Proc. Equipment	Aggregate	Aggregate	Gasoline	0.000	0.000	0.003	0.000	0.000	0.000	0	0
Merced	2021	Construction and Mining - Misc - Dumpers/Tenders	Aggregate	Aggregate	Gasoline	0.002	0.001	0.054	0.000	0.001	0.000	0	2
Merced	2021	Construction and Mining - Misc - Dumpers/Tenders	Aggregate	Aggregate	Diesel	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021	Construction and Mining - Misc - Excavators	Aggregate	Aggregate	Diesel	0.000	0.001	0.000	0.000	0.000	0.000	0	0
Merced	2021	Construction and Mining - Misc - Other	Aggregate	Aggregate	Gasoline	0.000	0.000	0.000	0.000	0.000	0.000	0	4
Merced	2021	Construction and Mining - Misc - Other	Aggregate	Aggregate	Diesel	0.000	0.002	0.001	0.000	0.000	0.000	0	6
Merced	2021	Construction and Mining - Misc - Pavers	Aggregate	Aggregate	Diesel	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021	Construction and Mining - Misc - Paving Equipment	Aggregate	Aggregate	Gasoline	0.031	0.020	0.917	0.000	0.010	0.007	0	3
Merced	2021	Construction and Mining - Misc - Paving Equipment	Aggregate	Aggregate	Diesel	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021	Construction and Mining - Misc - Plate Compactors	Aggregate	Aggregate	Gasoline	0.013	0.008	0.382	0.000	0.003	0.003	0	12
Merced	2021	Construction and Mining - Misc - Plate Compactors	Aggregate	Aggregate	Diesel	0.000	0.001	0.000	0.000	0.000	0.000	0	2
Merced	2021	Construction and Mining - Misc - Rollers	Aggregate	Aggregate	Gasoline	0.006	0.004	0.199	0.000	0.002	0.002	0	8
Merced	2021	Construction and Mining - Misc - Rollers	Aggregate	Aggregate	Diesel	0.001	0.004	0.003	0.000	0.000	0.000	0	0
Merced	2021	Construction and Mining - Misc - Rough Terrain Forklifts	Aggregate	Aggregate	Gasoline	0.000	0.000	0.002	0.000	0.000	0.000	0	16
Merced	2021	Construction and Mining - Misc - Rubber Tired Loaders	Aggregate	Aggregate	Gasoline	0.000	0.000	0.001	0.000	0.000	0.000	0	8
Merced	2021	Construction and Mining - Misc - Rubber Tired Loaders	Aggregate	Aggregate	Diesel	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021	Construction and Mining - Misc - Signal Boards	Aggregate	Aggregate	Gasoline	0.000	0.000	0.011	0.000	0.000	0.000	0	0
Merced	2021	Construction and Mining - Misc - Signal Boards	Aggregate	Aggregate	Diesel	0.001	0.009	0.008	0.000	0.000	0.000	0	26
Merced	2021	Construction and Mining - Misc - Skid Steer Loaders	Aggregate	Aggregate	Gasoline	0.009	0.006	0.281	0.000	0.003	0.002	0	23
Merced	2021	Construction and Mining - Misc - Skid Steer Loaders	Aggregate	Aggregate	Diesel	0.005	0.030	0.016	0.000	0.001	0.001	0	0
Merced	2021	Construction and Mining - Misc - Surfacing Equipment	Aggregate	Aggregate	Gasoline	0.017	0.012	0.439	0.000	0.005	0.004	0	0
Merced	2021	Construction and Mining - Misc - Tampers/Rammers	Aggregate	Aggregate	Gasoline	0.002	0.001	0.063	0.000	0.001	0.001	0	2
Merced	2021	Construction and Mining - Misc - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Gasoline	0.000	0.000	0.001	0.000	0.000	0.000	0	5
Merced	2021	Construction and Mining - Misc - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	0.000	0.003	0.001	0.000	0.000	0.000	0	0
Merced	2021	Construction and Mining - Misc - Trenchers	Aggregate	Aggregate	Gasoline	0.011	0.007	0.352	0.000	0.004	0.003	0	15

Merced	2021	Construction and Mining - Misc - Trenchers	Aggregate	Aggregate	Diesel	0.001	0.003	0.002	0.000	0.000	0.000	0	0
Merced	2021	Construction and Mining - Off-Highway Tractors	Aggregate	Aggregate	Diesel	0.002	0.014	0.014	0.000	0.001	0.001	3	1,036
Merced	2021	Construction and Mining - Off-Highway Trucks	Aggregate	Aggregate	Diesel	0.009	0.092	0.054	0.000	0.003	0.003	19	6,214
Merced	2021	Construction and Mining - Other	Aggregate	Aggregate	Diesel	0.002	0.024	0.017	0.000	0.001	0.001	4	1,387
Merced	2021	Construction and Mining - Pavers	Aggregate	Aggregate	Diesel	0.001	0.006	0.005	0.000	0.000	0.000	1	326
Merced	2021	Construction and Mining - Paving Equipment	Aggregate	Aggregate	Diesel	0.000	0.003	0.003	0.000	0.000	0.000	1	190
Merced	2021	Construction and Mining - Rollers	Aggregate	Aggregate	Diesel	0.002	0.015	0.016	0.000	0.001	0.001	3	847
Merced	2021	Construction and Mining - Rough Terrain Forklifts	Aggregate	Aggregate	Diesel	0.001	0.011	0.017	0.000	0.000	0.000	3	920
Merced	2021	Construction and Mining - Rubber Tired Dozers	Aggregate	Aggregate	Diesel	0.002	0.017	0.012	0.000	0.001	0.001	2	543
Merced	2021	Construction and Mining - Rubber Tired Loaders	Aggregate	Aggregate	Diesel	0.013	0.130	0.086	0.000	0.006	0.005	23	7,476
Merced	2021	Construction and Mining - Scrapers	Aggregate	Aggregate	Diesel	0.009	0.098	0.062	0.000	0.004	0.004	15	4,864
Merced	2021	Construction and Mining - Skid Steer Loaders	Aggregate	Aggregate	Diesel	0.001	0.013	0.017	0.000	0.001	0.000	3	890
Merced	2021	Construction and Mining - Surfacing Equipment	Aggregate	Aggregate	Diesel	0.000	0.001	0.001	0.000	0.000	0.000	0	102
Merced	2021	Construction and Mining - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	0.011	0.108	0.120	0.000	0.006	0.005	21	6,804
Merced	2021	Construction and Mining - Trenchers	Aggregate	Aggregate	Diesel	0.001	0.006	0.005	0.000	0.000	0.000	1	281
TOTAL CONSTRUCTION OFFROAD						0.206	0.865	4.361	0.001	0.075	0.062	130	43,044
ESTIMATED Los Banos (tons/year)						0.1	0.3	1.5	0.0	0.0	0.0	45.6	15,085
ESTIMATED Los Banos (tons/year)						26.3	110.7	557.8	0.2	9.5	7.9	16,628.8	

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2.5_tpd	CO2_tpd	CO2e_MTY
Merced	2021	Industrial - Aerial Lifts	Aggregate	Aggregate	Diesel	0.000	0.002	0.003	0.000	0.000	0.000	0	165
Merced	2021	Industrial - Forklifts	Aggregate	Aggregate	Diesel	0.002	0.014	0.014	0.000	0.001	0.001	2	696
Merced	2021	Industrial - Misc - Aerial Lifts	Aggregate	Aggregate	Gasoline	0.019	0.012	0.515	0.000	0.006	0.005	0	40
Merced	2021	Industrial - Misc - Aerial Lifts	Aggregate	Aggregate	Diesel	0.001	0.008	0.005	0.000	0.000	0.000	0	0
Merced	2021	Industrial - Misc - Aerial Lifts	Aggregate	Aggregate	Electric	0.000	0.002	0.085	0.000	0.000	0.000	0	0
Merced	2021	Industrial - Misc - Aerial Lifts	Aggregate	Aggregate	Nat Gas	0.000	0.000	0.003	0.000	0.000	0.000	0	6
Merced	2021	Industrial - Misc - Forklifts	Aggregate	Aggregate	Gasoline	0.004	0.018	0.427	0.000	0.000	0.000	4	1,318
Merced	2021	Industrial - Misc - Forklifts	Aggregate	Aggregate	Electric	0.000	0.000	0.009	0.000	0.000	0.000	0	0
Merced	2021	Industrial - Misc - Forklifts	Aggregate	Aggregate	Nat Gas	0.000	0.028	0.258	0.000	0.000	0.000	6	2,106
Merced	2021	Industrial - Misc - Other General Industrial Equipment	Aggregate	Aggregate	Gasoline	0.008	0.004	0.549	0.000	0.000	0.000	0	18
Merced	2021	Industrial - Misc - Other General Industrial Equipment	Aggregate	Aggregate	Diesel	0.001	0.007	0.004	0.000	0.000	0.000	0	0
Merced	2021	Industrial - Misc - Other Material Handling Equipment	Aggregate	Aggregate	Gasoline	0.000	0.000	0.001	0.000	0.000	0.000	0	11
Merced	2021	Industrial - Misc - Sweepers/Scrubbers	Aggregate	Aggregate	Gasoline	0.005	0.003	0.450	0.000	0.000	0.000	0	76
Merced	2021	Industrial - Misc - Sweepers/Scrubbers	Aggregate	Aggregate	Diesel	0.000	0.002	0.001	0.000	0.000	0.000	0	0
Merced	2021	Industrial - Other General Industrial Equipment	Aggregate	Aggregate	Diesel	0.001	0.005	0.005	0.000	0.000	0.000	1	336
Merced	2021	Industrial - Other Material Handling Equipment	Aggregate	Aggregate	Diesel	0.000	0.003	0.002	0.000	0.000	0.000	1	197
Merced	2021	Light Commercial - Misc - Air Compressors	Aggregate	Aggregate	Gasoline	0.168	0.095	9.854	0.000	0.000	0.001	20	6,520
Merced	2021	Light Commercial - Misc - Air Compressors	Aggregate	Aggregate	Diesel	0.000	0.002	0.002	0.000	0.000	0.000	0	76
Merced	2021	Light Commercial - Misc - Air Compressors	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021	Light Commercial - Misc - Gas Compressors	Aggregate	Aggregate	Nat Gas	0.000	0.003	0.035	0.000	0.000	0.000	1	315
Merced	2021	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Gasoline	0.519	0.177	14.586	0.001	0.001	0.002	34	11,141
Merced	2021	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Diesel	0.004	0.026	0.018	0.000	0.001	0.001	3	1,121
Merced	2021	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Nat Gas	0.000	0.000	0.001	0.000	0.000	0.000	0	10
Merced	2021	Light Commercial - Misc - Pressure Washers	Aggregate	Aggregate	Gasoline	0.130	0.056	7.471	0.000	0.000	0.000	15	5,126
Merced	2021	Light Commercial - Misc - Pressure Washers	Aggregate	Aggregate	Diesel	0.000	0.000	0.000	0.000	0.000	0.000	0	6
Merced	2021	Light Commercial - Misc - Pressure Washers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021	Light Commercial - Misc - Pumps	Aggregate	Aggregate	Gasoline	0.034	0.014	1.384	0.000	0.000	0.000	3	1,148
Merced	2021	Light Commercial - Misc - Pumps	Aggregate	Aggregate	Diesel	0.002	0.014	0.010	0.000	0.000	0.001	2	583
Merced	2021	Light Commercial - Misc - Pumps	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021	Light Commercial - Misc - Welders	Aggregate	Aggregate	Gasoline	0.081	0.034	4.145	0.000	0.000	0.000	8	2,502
Merced	2021	Light Commercial - Misc - Welders	Aggregate	Aggregate	Diesel	0.002	0.015	0.011	0.000	0.001	0.001	2	632
Merced	2021	Light Commercial - Misc - Welders	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
TOTAL LIGHT COMMERCIAL + INDUSTRIAL OFFROAD						0.983	0.544	39.849	0.002	0.013	0.012	103	34,149
ESTIMATED Los Banos (tons/year)						0.090	0.050	3.650	0.000	0.001	0.001	9.447	3,128
ESTIMATED Los Banos (tons/year)						32.85	18.20	1,332.35	0.05	0.43	0.40	3,448.21	

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2.5_tpd	CO2_tpd	CO2e_MTY
Merced	2021	Lawn and Garden - Misc - Chainsaws	Aggregate	Aggregate	Gasoline	0.458	0.014	1.247	0.000	0.005	0.004	7	2,182
Merced	2021	Lawn and Garden - Misc - Chainsaws	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021	Lawn and Garden - Misc - Chainsaws Preempt	Aggregate	Aggregate	Gasoline	0.408	0.013	0.672	0.000	0.003	0.002	4	1,175
Merced	2021	Lawn and Garden - Misc - Chainsaws Preempt	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021	Lawn and Garden - Misc - Chippers/Stump Grinders	Aggregate	Aggregate	Gasoline	0.001	0.000	0.028	0.000	0.000	0.000	0	20
Merced	2021	Lawn and Garden - Misc - Chippers/Stump Grinders	Aggregate	Aggregate	Diesel	0.000	0.000	0.000	0.000	0.000	0.000	0	2
Merced	2021	Lawn and Garden - Misc - Chippers/Stump Grinders	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021	Lawn and Garden - Misc - Lawn Mowers	Aggregate	Aggregate	Gasoline	0.137	0.071	5.546	0.000	0.003	0.002	15	5,009

Merced	2021 Lawn and Garden - Misc - Lawn Mowers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021 Lawn and Garden - Misc - Leaf Blowers/Vacuums	Aggregate	Aggregate	Gasoline	0.773	0.025	3.562	0.000	0.010	0.008	18	5,981
Merced	2021 Lawn and Garden - Misc - Leaf Blowers/Vacuums	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021 Lawn and Garden - Misc - Other	Aggregate	Aggregate	Gasoline	0.003	0.001	0.129	0.000	0.000	0.000	0	101
Merced	2021 Lawn and Garden - Misc - Other	Aggregate	Aggregate	Diesel	0.000	0.000	0.000	0.000	0.000	0.000	0	1
Merced	2021 Lawn and Garden - Misc - Rear Engine Riding Mowers	Aggregate	Aggregate	Gasoline	0.256	0.115	11.772	0.000	0.001	0.001	24	8,010
Merced	2021 Lawn and Garden - Misc - Rear Engine Riding Mowers	Aggregate	Aggregate	Diesel	0.004	0.021	0.013	0.000	0.001	0.001	3	945
Merced	2021 Lawn and Garden - Misc - Rear Engine Riding Mowers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021 Lawn and Garden - Misc - Snowblowers	Aggregate	Aggregate	Gasoline	0.001	0.000	0.038	0.000	0.000	0.000	0	24
Merced	2021 Lawn and Garden - Misc - Snowblowers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021 Lawn and Garden - Misc - Tillers	Aggregate	Aggregate	Gasoline	0.006	0.001	0.104	0.000	0.000	0.000	0	97
Merced	2021 Lawn and Garden - Misc - Tillers	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021 Lawn and Garden - Misc - Trimmers/Edgers/Brush Cutters	Aggregate	Aggregate	Gasoline	0.493	0.027	2.741	0.000	0.004	0.003	14	4,525
Merced	2021 Lawn and Garden - Misc - Trimmers/Edgers/Brush Cutters	Aggregate	Aggregate	Electric	0.000	0.000	0.000	0.000	0.000	0.000	0	0
Merced	2021 Lawn and Garden - Misc - Wood Splitters	Aggregate	Aggregate	Gasoline	0.028	0.011	1.070	0.000	0.000	0.000	3	850
TOTAL LAWN & GARDEN					2.566	0.300	26.923	0.001	0.027	0.021	87	28,923
ESTIMATED Los Banos (tons/year)					0.380	0.044	3.989	0.000	0.004	0.003	12.942	4,286
ESTIMATED Los Banos (lbs/day)					139	16	1,456	0	1	1	4,724	

TOTAL UNITS: https://socds.huduser.gov/permits/		2016	2017	2018	2019	2020	Average
Housing Permits in Merced County		720	550	630	948	1,019	773
Housing Permits in Los Banos		438	270	284	95	104	238
Percent in the City		61%	49%	45%	10%	10%	0.350
EMPLOYMENT 2021							
Employment in Merced County		76,417					
Employment in Los Banos		7,000					
Percent in the City		9%					
AGRICULTURAL ACREAGE 2021							
Farmland Acreage in Merced County		77,806					
Farmland Acreage in Los Banos (excludes Grazing Land)		8,103					
Percent in the City		10.4%					
HOUSING UNITS 2021							
Housing Units in Merced County (2021)		86,388					
Housing Units in Los Banos		12,800					
Percent in the City		14.8%					

City of Los Banos VMT

Source: Kittelson 2022

	Total	Model Service Population	Service Population (check)	VMT/SP
	Daily VMT	TOTAL		
Model Year 2021 (Uncorrected)	1,475,808	50,900		29.0
Estimated Existing (Year 2021)	1,446,814	49,900	49,900	29.0
GP Update (2042)	2,304,017	84,440	84,500	27.3

Notes: Total may not add to 100% due to rounding.

LOS BANOS — TRANSPORTATION SECTOR

Source: EMFAC2021, Web Database. Merced County (SJV) Sub Area. Based on the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) Global Warming Potentials (GWPs)

Note: MTons = metric tons; CO₂e = carbon dioxide-equivalent.

Criteria Air Pollutant Emissions						
	Tons/year					
	ROG	NO _x	CO	SO _x	PM10	PM2.5
Existing (2021)	21	319	692	3	7	12
Existing in year 2042	4	119	253	2	3	7
Horizon Year 2042	6	189	404	3	4	11
Change from Existing Conditions	-15	-130	-288	0	-3	-1
Change from Existing Land Uses (2042 Emission Rates)	2	70	150	1	2	4

lbs to Tons

2000

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the 2008 Climate Change Scoping Plan Measure Documentation Supplement.

GHG EMISSIONS

	MTons/year			
	CO ₂	CH ₄	N ₂ O	CO ₂ e
Existing (2021)	284,579	4	25	291,432
Proposed GP 2042	316,204	2	27	323,430
Change from Existing	31,625	-2	2	31,999

Note: MTons = metric tons; CO₂e = carbon dioxide-equivalent.

Year 2021 Existing: Criteria Air Pollutants

Source: EMFAC2021 (v1.0.1) Emission Rates, Merced (SJV) Subarea, Average Speed, Average Fleet

Daily VMT		1,446,814		lbs/day					
Vehicle Type	Fuel Type	Percent of VMT	Percent of VMT for Los Banos (EMFAC default)	ROG	NOx	CO	SOx	PM10	PM2.5
All Other Buses	Diesel	0.02%	0.02%	0.16	1.96	0.41	0.01	0.01	0.02
All Other Buses	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDA	Gasoline	42.57%	42.57%	19.55	90.31	1,427.89	3.99	10.86	10.00
LDA	Diesel	0.12%	0.12%	0.12	1.33	1.40	0.01	0.03	0.03
LDA	Electricity	0.55%	0.55%	0.00	0.00	0.00	0.00	0.14	0.08
LDA	Plug-in Hybrid	0.85%	0.85%	0.04	0.09	6.65	0.04	0.22	0.10
LDT1	Gasoline	3.42%	3.42%	8.06	36.05	366.89	0.39	0.87	1.01
LDT1	Diesel	0.00%	0.00%	0.01	0.06	0.05	0.00	0.00	0.00
LDT1	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT1	Plug-in Hybrid	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT2	Gasoline	14.83%	14.83%	11.20	75.61	708.25	1.79	3.78	4.15
LDT2	Diesel	0.03%	0.03%	0.03	0.13	0.20	0.00	0.01	0.01
LDT2	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
LDT2	Plug-in Hybrid	0.04%	0.04%	0.00	0.00	0.34	0.00	0.01	0.01
LHD1	Gasoline	1.52%	1.52%	3.73	16.19	79.35	0.46	0.39	3.78
LHD1	Diesel	1.87%	1.87%	15.02	169.04	45.05	0.36	0.72	4.65
LHD2	Gasoline	0.20%	0.20%	0.39	1.91	8.81	0.07	0.05	0.58
LHD2	Diesel	0.63%	0.63%	4.37	43.54	12.23	0.15	0.24	1.83
MCY	Gasoline	0.26%	0.26%	12.14	6.15	141.14	0.02	0.03	0.10
MDV	Gasoline	16.32%	16.32%	19.50	116.64	961.70	2.37	4.16	4.70
MDV	Diesel	0.28%	0.28%	0.15	1.14	2.16	0.04	0.07	0.08
MDV	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
MDV	Plug-in Hybrid	0.06%	0.06%	0.00	0.01	0.48	0.00	0.02	0.01
MH	Gasoline	0.05%	0.05%	0.22	1.13	6.06	0.03	0.02	0.08
MH	Diesel	0.02%	0.02%	0.11	3.85	0.39	0.01	0.01	0.03
Motor Coach	Diesel	0.04%	0.04%	0.06	3.32	0.25	0.02	0.02	0.10
OBUS	Gasoline	0.06%	0.06%	0.21	1.52	4.80	0.04	0.02	0.09
PTO	Diesel	0.07%	0.07%	0.19	9.44	1.06	0.05	0.00	0.00
SBUS	Gasoline	0.04%	0.04%	0.19	1.52	4.74	0.01	0.01	0.06
SBUS	Diesel	0.09%	0.09%	0.26	18.68	0.74	0.03	0.03	0.13
SBUS	Natural Gas	0.02%	0.02%	0.02	0.19	4.86	0.00	0.01	0.03
T6 CAIRP Class 4	Diesel	0.00%	0.00%	0.00	0.10	0.01	0.00	0.00	0.01
T6 CAIRP Class 5	Diesel	0.01%	0.01%	0.00	0.11	0.01	0.00	0.00	0.01
T6 CAIRP Class 6	Diesel	0.01%	0.01%	0.01	0.31	0.02	0.00	0.01	0.02
T6 CAIRP Class 7	Diesel	0.09%	0.09%	0.06	2.69	0.27	0.03	0.03	0.12
T6 Instate Delivery Class 4	Diesel	0.02%	0.02%	0.10	1.75	0.29	0.01	0.01	0.02
T6 Instate Delivery Class 5	Diesel	0.01%	0.01%	0.02	0.51	0.07	0.00	0.00	0.02
T6 Instate Delivery Class 6	Diesel	0.03%	0.03%	0.12	2.47	0.37	0.01	0.01	0.05
T6 Instate Delivery Class 7	Diesel	0.01%	0.01%	0.05	1.40	0.16	0.01	0.01	0.02
T6 Instate Delivery Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Other Class 4	Diesel	0.11%	0.11%	0.34	8.13	1.02	0.04	0.04	0.16
T6 Instate Other Class 5	Diesel	0.18%	0.18%	0.19	7.15	0.67	0.06	0.07	0.26
T6 Instate Other Class 6	Diesel	0.14%	0.14%	0.53	11.04	1.55	0.05	0.05	0.21
T6 Instate Other Class 7	Diesel	0.11%	0.11%	0.14	5.70	0.54	0.04	0.04	0.15
T6 Instate Other Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.11	0.00	0.00	0.00
T6 Instate Tractor Class 6	Diesel	0.01%	0.01%	0.04	0.64	0.11	0.00	0.00	0.01
T6 Instate Tractor Class 7	Diesel	0.13%	0.13%	0.38	10.39	1.28	0.04	0.05	0.19
T6 Instate Tractor Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 OOS Class 4	Diesel	0.00%	0.00%	0.00	0.06	0.00	0.00	0.00	0.00
T6 OOS Class 5	Diesel	0.00%	0.00%	0.00	0.07	0.00	0.00	0.00	0.00
T6 OOS Class 6	Diesel	0.01%	0.01%	0.00	0.19	0.01	0.00	0.00	0.01
T6 OOS Class 7	Diesel	0.06%	0.06%	0.04	1.87	0.20	0.02	0.02	0.08
T6 Public Class 4	Diesel	0.01%	0.01%	0.03	2.40	0.07	0.00	0.00	0.01
T6 Public Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.03	0.00	0.00	0.00
T6 Public Class 5	Diesel	0.02%	0.02%	0.05	2.29	0.12	0.01	0.01	0.02
T6 Public Class 5	Natural Gas	0.00%	0.00%	0.00	0.01	0.16	0.00	0.00	0.00
T6 Public Class 6	Diesel	0.03%	0.03%	0.09	5.76	0.21	0.01	0.01	0.04
T6 Public Class 6	Natural Gas	0.00%	0.00%	0.00	0.01	0.17	0.00	0.00	0.00
T6 Public Class 7	Diesel	0.05%	0.05%	0.15	10.15	0.35	0.02	0.02	0.08
T6 Public Class 7	Natural Gas	0.00%	0.00%	0.00	0.02	0.47	0.00	0.00	0.01

T6 Utility Class 5	Diesel	0.02%	0.02%	0.01	0.54	0.05	0.01	0.01	0.03
T6 Utility Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Diesel	0.00%	0.00%	0.00	0.12	0.01	0.00	0.00	0.01
T6 Utility Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Diesel	0.00%	0.00%	0.00	0.12	0.01	0.00	0.00	0.01
T6 Utility Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6TS	Gasoline	0.20%	0.20%	1.71	7.98	37.26	0.12	0.08	0.29
T7 CAIRP Class 8	Diesel	4.10%	4.10%	4.09	299.17	16.87	1.97	4.71	9.82
T7 NNOOS Class 8	Diesel	4.85%	4.85%	6.78	336.24	30.27	2.35	5.56	11.66
T7 NOOS Class 8	Diesel	1.76%	1.76%	1.91	132.53	7.80	0.85	2.02	4.22
T7 Other Port Class 8	Diesel	0.07%	0.07%	0.18	8.06	0.65	0.04	0.08	0.20
T7 POAK Class 8	Diesel	0.18%	0.18%	0.55	22.23	1.89	0.09	0.20	0.52
T7 POLA Class 8	Diesel	0.24%	0.24%	0.89	34.63	2.90	0.13	0.28	0.72
T7 POLA Class 8	Natural Gas	0.00%	0.00%	0.00	0.05	0.79	0.00	0.00	0.01
T7 Public Class 8	Diesel	0.12%	0.12%	0.53	41.16	1.65	0.07	0.14	0.44
T7 Public Class 8	Natural Gas	0.01%	0.01%	0.01	0.16	2.51	0.00	0.01	0.03
T7 Single Concrete/Transit Mix Class 8	Diesel	0.05%	0.05%	0.04	2.09	0.20	0.02	0.06	0.12
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.00%	0.00%	0.00	0.02	0.36	0.00	0.00	0.00
T7 Single Dump Class 8	Diesel	0.07%	0.07%	0.09	4.69	0.40	0.04	0.08	0.19
T7 Single Dump Class 8	Natural Gas	0.00%	0.00%	0.00	0.04	0.68	0.00	0.00	0.01
T7 Single Other Class 8	Diesel	0.23%	0.23%	0.33	18.40	1.52	0.12	0.27	0.61
T7 Single Other Class 8	Natural Gas	0.01%	0.01%	0.00	0.18	3.03	0.00	0.01	0.02
T7 SWCV Class 8	Diesel	0.05%	0.05%	0.03	13.16	0.07	0.06	0.05	0.31
T7 SWCV Class 8	Natural Gas	0.02%	0.02%	0.11	1.87	12.37	0.00	0.02	0.12
T7 Tractor Class 8	Diesel	2.79%	2.79%	4.27	236.05	16.93	1.34	3.20	7.22
T7 Tractor Class 8	Natural Gas	0.05%	0.05%	0.02	0.70	12.48	0.00	0.06	0.12
T7 Utility Class 8	Diesel	0.01%	0.01%	0.02	0.90	0.09	0.01	0.02	0.05
T7IS	Gasoline	0.00%	0.00%	0.61	1.72	34.59	0.00	0.00	0.01
UBUS	Gasoline	0.04%	0.04%	0.02	0.29	0.49	0.02	0.01	0.14
UBUS	Diesel	0.05%	0.05%	0.07	0.36	0.07	0.02	0.03	0.18
UBUS	Natural Gas	0.01%	0.01%	0.01	0.10	5.79	0.00	0.01	0.02
		100.00%	100.00%	120	1,839	3,986	17	39	70

Year 2021 Existing: Criteria Air Pollutants

Source: EMFAC2021 (v1.0.1) Emission Rates, Merced (SJV) Subarea, Average Speed, Average Fleet

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the 2008 Climate Change Scoping Plan Measure Documentation Supplement.

				CO ₂ (Pavley)	CH ₄	N ₂ O		
Daily VMT	1,446,814			ARS GWP	ARS GWP	ARS GWP		
Annual VMT	502,044,367			1	28	265		
Vehicle Type	Fuel Type	Percent of VMT	Percent of VMT for Los Banos (EMFAC default)	CO ₂	CH ₄	N ₂ O	CO ₂ e	
All Other Buses	Diesel	0.02%	0.02%	87	0.00	0.01	91	
All Other Buses	Natural Gas	0.00%	0.00%	0	0.00	0.00	0	
LDA	Gasoline	42.57%	42.57%	63,546	0.76	1.34	63,924	
LDA	Diesel	0.12%	0.12%	139	0.00	0.02	145	
LDA	Electricity	0.55%	0.55%	0	0.00	0.00	0	
LDA	Plug-in Hybrid	0.85%	0.85%	641	0.00	0.00	641	
LDT1	Gasoline	3.42%	3.42%	6,214	0.27	0.36	6,318	
LDT1	Diesel	0.00%	0.00%	2	0.00	0.00	2	
LDT1	Electricity	0.00%	0.00%	0	0.00	0.00	0	
LDT1	Plug-in Hybrid	0.00%	0.00%	0	0.00	0.00	0	
LDT2	Gasoline	14.83%	14.83%	28,439	0.41	0.81	28,665	
LDT2	Diesel	0.03%	0.03%	52	0.00	0.01	54	
LDT2	Electricity	0.01%	0.01%	0	0.00	0.00	0	
LDT2	Plug-in Hybrid	0.04%	0.04%	32	0.00	0.00	32	
LHD1	Gasoline	1.52%	1.52%	7,353	0.12	0.14	7,393	
LHD1	Diesel	1.87%	1.87%	6,010	0.11	0.95	6,264	
LHD2	Gasoline	0.20%	0.20%	1,064	0.01	0.02	1,069	
LHD2	Diesel	0.63%	0.63%	2,484	0.03	0.39	2,589	
MCY	Gasoline	0.26%	0.26%	254	0.27	0.06	278	
MDV	Gasoline	16.32%	16.32%	37,660	0.65	1.16	37,985	
MDV	Diesel	0.28%	0.28%	592	0.00	0.09	616	
MDV	Electricity	0.01%	0.01%	0	0.00	0.00	0	
MDV	Plug-in Hybrid	0.06%	0.06%	46	0.00	0.00	46	
MH	Gasoline	0.05%	0.05%	517	0.01	0.01	520	
MH	Diesel	0.02%	0.02%	110	0.00	0.02	115	
Motor Coach	Diesel	0.04%	0.04%	379	0.00	0.06	395	
OBUS	Gasoline	0.06%	0.06%	574	0.01	0.01	577	
PTO	Diesel	0.07%	0.07%	796	0.00	0.13	829	
SBUS	Gasoline	0.04%	0.04%	177	0.01	0.01	180	
SBUS	Diesel	0.09%	0.09%	534	0.00	0.08	556	
SBUS	Natural Gas	0.02%	0.02%	107	0.25	0.02	120	
T6 CAIRP Class 4	Diesel	0.00%	0.00%	23	0.00	0.00	24	
T6 CAIRP Class 5	Diesel	0.01%	0.01%	31	0.00	0.00	32	
T6 CAIRP Class 6	Diesel	0.01%	0.01%	81	0.00	0.01	84	
T6 CAIRP Class 7	Diesel	0.09%	0.09%	473	0.00	0.07	493	
T6 Instate Delivery Class 4	Diesel	0.02%	0.02%	96	0.00	0.02	100	
T6 Instate Delivery Class 5	Diesel	0.01%	0.01%	66	0.00	0.01	68	
T6 Instate Delivery Class 6	Diesel	0.03%	0.03%	194	0.00	0.03	202	
T6 Instate Delivery Class 7	Diesel	0.01%	0.01%	85	0.00	0.01	89	
T6 Instate Delivery Class 7	Natural Gas	0.00%	0.00%	0	0.00	0.00	0	
T6 Instate Other Class 4	Diesel	0.11%	0.11%	650	0.00	0.10	677	
T6 Instate Other Class 5	Diesel	0.18%	0.18%	1,050	0.00	0.17	1,094	
T6 Instate Other Class 6	Diesel	0.14%	0.14%	818	0.00	0.13	852	
T6 Instate Other Class 7	Diesel	0.11%	0.11%	594	0.00	0.09	618	
T6 Instate Other Class 7	Natural Gas	0.00%	0.00%	6	0.00	0.00	6	
T6 Instate Tractor Class 6	Diesel	0.01%	0.01%	32	0.00	0.01	33	
T6 Instate Tractor Class 7	Diesel	0.13%	0.13%	722	0.00	0.11	752	
T6 Instate Tractor Class 7	Natural Gas	0.00%	0.00%	2	0.00	0.00	2	
T6 OOS Class 4	Diesel	0.00%	0.00%	13	0.00	0.00	14	
T6 OOS Class 5	Diesel	0.00%	0.00%	18	0.00	0.00	19	
T6 OOS Class 6	Diesel	0.01%	0.01%	47	0.00	0.01	49	
T6 OOS Class 7	Diesel	0.06%	0.06%	317	0.00	0.05	330	
T6 Public Class 4	Diesel	0.01%	0.01%	62	0.00	0.01	65	
T6 Public Class 4	Natural Gas	0.00%	0.00%	1	0.00	0.00	2	

T6 Public Class 5	Diesel	0.02%	0.02%	103	0.00	0.02	107
T6 Public Class 5	Natural Gas	0.00%	0.00%	9	0.01	0.00	9
T6 Public Class 6	Diesel	0.03%	0.03%	170	0.00	0.03	177
T6 Public Class 6	Natural Gas	0.00%	0.00%	9	0.01	0.00	10
T6 Public Class 7	Diesel	0.05%	0.05%	335	0.00	0.05	349
T6 Public Class 7	Natural Gas	0.00%	0.00%	25	0.02	0.01	27
T6 Utility Class 5	Diesel	0.02%	0.02%	107	0.00	0.02	111
T6 Utility Class 5	Natural Gas	0.00%	0.00%	0	0.00	0.00	0
T6 Utility Class 6	Diesel	0.00%	0.00%	20	0.00	0.00	21
T6 Utility Class 6	Natural Gas	0.00%	0.00%	0	0.00	0.00	0
T6 Utility Class 7	Diesel	0.00%	0.00%	28	0.00	0.00	29
T6 Utility Class 7	Natural Gas	0.00%	0.00%	0	0.00	0.00	0
T6TS	Gasoline	0.20%	0.20%	1,874	0.05	0.05	1,890
T7 CAIRP Class 8	Diesel	4.10%	4.10%	32,690	0.03	5.15	34,056
T7 NNOOS Class 8	Diesel	4.85%	4.85%	39,080	0.05	6.16	40,713
T7 NOOS Class 8	Diesel	1.76%	1.76%	14,048	0.01	2.21	14,635
T7 Other Port Class 8	Diesel	0.07%	0.07%	595	0.00	0.09	620
T7 POAK Class 8	Diesel	0.18%	0.18%	1,503	0.00	0.24	1,565
T7 POLA Class 8	Diesel	0.24%	0.24%	2,083	0.01	0.33	2,170
T7 POLA Class 8	Natural Gas	0.00%	0.00%	17	0.01	0.00	18
T7 Public Class 8	Diesel	0.12%	0.12%	1,150	0.00	0.18	1,198
T7 Public Class 8	Natural Gas	0.01%	0.01%	64	0.07	0.01	69
T7 Single Concrete/Transit Mix Class 8	Diesel	0.05%	0.05%	408	0.00	0.06	425
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.00%	0.00%	9	0.01	0.00	10
T7 Single Dump Class 8	Diesel	0.07%	0.07%	610	0.00	0.10	636
T7 Single Dump Class 8	Natural Gas	0.00%	0.00%	16	0.01	0.00	17
T7 Single Other Class 8	Diesel	0.23%	0.23%	1,917	0.00	0.30	1,997
T7 Single Other Class 8	Natural Gas	0.01%	0.01%	66	0.05	0.01	71
T7 SWCV Class 8	Diesel	0.05%	0.05%	931	0.00	0.15	970
T7 SWCV Class 8	Natural Gas	0.02%	0.02%	162	0.43	0.03	183
T7 Tractor Class 8	Diesel	2.79%	2.79%	22,205	0.03	3.50	23,133
T7 Tractor Class 8	Natural Gas	0.05%	0.05%	311	0.24	0.06	335
T7 Utility Class 8	Diesel	0.01%	0.01%	131	0.00	0.02	137
T7IS	Gasoline	0.00%	0.00%	44	0.01	0.01	46
UBUS	Gasoline	0.04%	0.04%	345	0.00	0.00	346
UBUS	Diesel	0.05%	0.05%	269	0.00	0.04	280
UBUS	Natural Gas	0.01%	0.01%	53	0.06	0.01	58
		100.00%	100.00%	284,579	4	25	291,432

Merced (SJV)	2021 T7 NOOS Class 8	Diesel	627.5767501	3.40E-02	2.36E+00	1.39E-01	1.50E-02	4.12E-02	3.60E-02	7.52E-02	1.52E-01	3.94E-02	9.00E-03	2.63E-02	7.47E-02	1.59E+03	1.58E-03	2.50E-01	149,612	1.76%
Merced (SJV)	2021 T7 Other Port Class 8	Diesel	35.16194408	8.27E-02	3.62E+00	2.92E-01	1.61E-02	2.61E-02	3.60E-02	9.04E-02	1.53E-01	2.50E-02	9.00E-03	3.17E-02	6.56E-02	1.70E+03	3.84E-03	2.67E-01	5,938	0.07%
Merced (SJV)	2021 T7 POAK Class 8	Diesel	154.612462	9.69E-02	3.95E+00	3.35E-01	1.61E-02	2.95E-02	3.60E-02	9.18E-02	1.57E-01	2.82E-02	9.00E-03	3.21E-02	6.93E-02	1.70E+03	4.50E-03	2.67E-01	14,995	0.18%
Merced (SJV)	2021 T7 POLA Class 8	Diesel	157.3008357	1.15E-01	4.48E+00	3.76E-01	1.62E-02	2.93E-02	3.60E-02	9.32E-02	1.59E-01	2.81E-02	9.00E-03	3.26E-02	6.97E-02	1.71E+03	5.34E-03	2.70E-01	20,604	0.24%
Merced (SJV)	2021 T7 POLA Class 8	Natural Gas	1,474,195,629	1.70E-02	7.02E-01	1.09E+01	0.00E+00	1.37E-03	3.60E-02	1.14E-01	1.51E-01	1.26E-03	9.00E-03	3.99E-02	5.02E-02	1.49E+03	1.19E+00	3.04E-01	193	0.00%
Merced (SJV)	2021 T7 Public Class 8	Diesel	240.1023625	1.40E-01	1.09E+01	4.35E-01	1.83E-02	6.05E-02	3.60E-02	1.17E-01	2.14E-01	5.79E-02	9.00E-03	4.10E-02	1.08E-01	1.93E+03	6.49E-03	3.04E-01	10,093	0.12%
Merced (SJV)	2021 T7 Public Class 8	Natural Gas	12,841,311,93	2.58E-02	6.65E-01	1.02E+01	0.00E+00	2.62E-03	3.60E-02	1.03E-01	1.41E-01	2.41E-03	9.00E-03	3.59E-02	4.73E-02	1.64E+03	1.81E+00	3.34E-01	657	0.01%
Merced (SJV)	2021 T7 Single Concrete/Transit Mix Class 8	Diesel	60.17924732	2.49E-02	1.36E+00	1.30E-01	1.60E-02	2.67E-02	3.60E-02	8.11E-02	1.44E-01	2.56E-02	9.00E-03	2.84E-02	6.30E-02	1.69E+03	1.16E-03	2.66E-01	4,089	0.05%
Merced (SJV)	2021 T7 Single Concrete/Transit Mix Class 8	Natural Gas	1,741,866,893	1.51E-02	4.67E-01	8.13E+00	0.00E+00	1.59E-03	3.60E-02	8.04E-02	1.18E-01	1.46E-03	9.00E-03	2.81E-02	3.86E-02	1.30E+03	1.06E+00	2.65E-01	119	0.00%
Merced (SJV)	2021 T7 Single Dump Class 8	Diesel	99.10258177	3.91E-02	2.05E+00	1.75E-01	1.60E-02	3.17E-02	3.60E-02	8.20E-02	1.50E-01	3.03E-02	9.00E-03	2.87E-02	6.80E-02	1.69E+03	1.82E-03	2.66E-01	6,115	0.07%
Merced (SJV)	2021 T7 Single Dump Class 8	Natural Gas	3,122,066,616	1.51E-02	5.37E-01	8.99E+00	0.00E+00	1.45E-03	3.60E-02	8.08E-02	1.18E-01	1.33E-03	9.00E-03	2.83E-02	3.86E-02	1.34E+03	1.06E+00	2.73E-01	200	0.00%
Merced (SJV)	2021 T7 Single Other Class 8	Diesel	378.343914	4.44E-02	2.48E+00	2.05E-01	1.55E-02	3.10E-02	3.60E-02	8.19E-02	1.49E-01	2.97E-02	9.00E-03	2.87E-02	6.73E-02	1.64E+03	2.06E-03	2.58E-01	19,787	0.23%
Merced (SJV)	2021 T7 Single Other Class 8	Natural Gas	14,114,776,25	1.51E-02	5.97E-01	1.00E+01	0.00E+00	1.29E-03	3.60E-02	8.12E-02	1.18E-01	1.18E-03	9.00E-03	2.84E-02	3.86E-02	1.38E+03	1.05E+00	2.82E-01	806	0.01%
Merced (SJV)	2021 T7 SWCV Class 8	Diesel	59.91386305	1.86E-02	9.03E+00	4.91E-02	3.84E-02	1.64E-02	3.60E-02	2.10E-01	2.62E-01	1.57E-02	9.00E-03	7.35E-02	9.82E-02	4.06E+03	8.63E-04	6.39E-01	3,883	0.05%
Merced (SJV)	2021 T7 SWCV Class 8	Natural Gas	24,506,264,6	1.81E-01	3.14E+00	2.08E+01	0.00E+00	5.52E-03	3.60E-02	2.10E-01	2.52E-01	5.08E-03	9.00E-03	7.35E-02	8.76E-02	1.73E+03	4.62E+00	3.52E-01	1,585	0.02%
Merced (SJV)	2021 T7 Tractor Class 8	Diesel	2792.016589	4.80E-02	2.65E+00	1.90E-01	1.50E-02	3.31E-02	3.60E-02	8.11E-02	1.50E-01	3.17E-02	9.00E-03	2.84E-02	6.91E-02	1.59E+03	2.23E-03	2.50E-01	237,106	2.79%
Merced (SJV)	2021 T7 Tractor Class 8	Natural Gas	47,224,743,28	1.43E-02	4.56E-01	8.09E+00	0.00E+00	1.49E-03	3.60E-02	7.88E-02	1.16E-01	1.37E-03	9.00E-03	2.76E-02	3.79E-02	1.28E+03	1.00E+00	2.61E-01	4,112	0.05%
Merced (SJV)	2021 T7 Utility Class 8	Diesel	26.03168034	3.38E-02	1.91E+00	1.81E-01	1.67E-02	9.18E-03	3.60E-02	9.68E-02	1.42E-01	8.78E-03	9.00E-03	3.39E-02	5.17E-02	1.76E+03	1.57E-03	2.77E-01	1,261	0.01%
Merced (SJV)	2021 T715	Gasoline	9.09198606	6.76E+00	1.91E+01	3.86E+02	3.10E-02	1.52E-02	2.00E-02	1.17E-01	1.52E-01	1.40E-02	5.00E-03	4.10E-02	5.99E-02	3.14E+03	1.00E+00	4.27E-01	239	0.00%
Merced (SJV)	2021 UBUS	Gasoline	33,213,034,22	1.17E-02	2.23E-01	3.68E-01	1.65E-02	9.03E-04	1.13E-02	1.07E-01	1.19E-01	8.31E-04	2.82E-03	3.73E-02	4.09E-02	1.66E+03	3.70E-03	2.01E-02	3,509	0.04%
Merced (SJV)	2021 UBUS	Diesel	28.91680558	4.64E-02	2.23E-01	4.61E-02	1.01E-02	4.22E-03	2.08E-02	1.10E-01	1.35E-01	4.03E-03	5.19E-03	3.85E-02	4.77E-02	1.07E+03	2.16E-03	1.68E-01	4,264	0.05%
Merced (SJV)	2021 UBUS	Natural Gas	5,239,797,6438	2.34E-02	4.36E-01	2.55E+01	0.00E+00	1.79E-04	3.36E-02	1.10E-01	1.44E-01	1.71E-04	8.40E-03	3.85E-02	4.71E-02	1.49E+03	1.64E+00	3.03E-01	605	0.01%
																			8,497,815	100.00%

7.49E-05	5.20E-03	3.06E-04	3.32E-05	7.94E-05	1.66E-04	9.07E-05	3.36E-04	1.98E-05	5.80E-05	8.68E-05	1.65E-04	3.50E+00	3.48E-06	5.52E-04
1.82E-04	7.98E-03	6.45E-04	3.54E-05	7.94E-05	1.99E-04	5.76E-05	3.36E-04	1.98E-05	6.98E-05	5.51E-05	1.45E-04	3.74E+00	8.47E-06	5.89E-04
2.14E-04	8.71E-03	7.39E-04	3.54E-05	7.94E-05	2.02E-04	6.50E-05	3.47E-04	1.98E-05	7.08E-05	6.22E-05	1.53E-04	3.74E+00	9.92E-06	5.89E-04
2.54E-04	9.87E-03	8.28E-04	3.57E-05	7.94E-05	2.05E-04	6.47E-05	3.50E-04	1.98E-05	7.19E-05	6.19E-05	1.54E-04	3.77E+00	1.18E-05	5.94E-04
3.74E-05	1.55E-03	2.41E-02	0.00E+00	7.94E-05	2.51E-04	3.02E-06	3.34E-04	1.98E-05	8.80E-05	2.78E-06	1.11E-04	3.28E+00	2.62E-03	6.69E-04
3.08E-04	2.39E-02	9.59E-04	4.03E-05	7.94E-05	2.58E-04	1.33E-04	4.71E-04	1.98E-05	9.04E-05	1.28E-04	2.38E-04	4.25E+00	1.43E-05	6.70E-04
5.69E-05	1.47E-03	2.25E-02	0.00E+00	7.94E-05	2.26E-04	5.77E-06	3.11E-04	1.98E-05	7.92E-05	5.30E-06	1.04E-04	3.61E+00	3.98E-03	7.36E-04
5.49E-05	3.00E-03	2.87E-04	3.53E-05	7.94E-05	1.79E-04	5.90E-05	3.17E-04	1.98E-05	6.26E-05	5.64E-05	1.39E-04	3.73E+00	2.55E-06	5.87E-04
3.33E-05	1.03E-03	1.79E-02	0.00E+00	7.94E-05	1.77E-04	3.50E-06	2.60E-04	1.98E-05	6.20E-05	3.22E-06	8.51E-05	2.87E+00	2.33E-03	5.84E-04
8.63E-05	4.51E-03	3.85E-04	3.53E-05	7.94E-05	1.81E-04	6.98E-05	3.30E-04	1.98E-05	6.32E-05	6.68E-05	1.50E-04	3.72E+00	4.01E-06	5.87E-04
3.33E-05	1.18E-03	1.98E-02	0.00E+00	7.94E-05	1.78E-04	3.19E-06	2.61E-04	1.98E-05	6.23E-05	2.93E-06	8.51E-05	2.95E+00	2.33E-03	6.01E-04
9.78E-05	5.46E-03	4.52E-04	3.42E-05	7.94E-05	1.81E-04	6.83E-05	3.28E-04	1.98E-05	6.32E-05	6.54E-05	1.48E-04	3.61E+00	4.54E-06	5.70E-04
3.32E-05	1.32E-03	2.21E-02	0.00E+00	7.94E-05	1.79E-04	2.84E-06	2.61E-04	1.98E-05	6.26E-05	2.61E-06	8.51E-05	3.04E+00	2.32E-03	6.21E-04
4.10E-05	1.99E-02	1.08E-04	8.47E-05	7.94E-05	4.63E-04	3.61E-05	5.78E-04	1.98E-05	1.62E-04	3.46E-05	2.16E-04	8.94E+00	1.90E-06	1.41E-03
3.99E-04	6.92E-03	4.58E-02	0.00E+00	7.94E-05	4.63E-04	1.22E-05	5.55E-04	1.98E-05	1.62E-04	1.12E-05	1.93E-04	3.81E+00	1.02E-02	7.76E-04
1.06E-04	5.85E-03	4.19E-04	3.31E-05	7.94E-05	1.79E-04	7.30E-05	3.31E-04	1.98E-05	6.26E-05	6.98E-05	1.52E-04	3.49E+00	4.92E-06	5.51E-04
3.16E-05	1.01E-03	1.78E-02	0.00E+00	7.94E-05	1.74E-04	3.29E-06	2.56E-04	1.98E-05	6.08E-05	3.03E-06	8.37E-05	2.83E+00	2.21E-03	5.76E-04
7.45E-05	4.21E-03	4.00E-04	3.68E-05	7.94E-05	2.13E-04	2.02E-05	3.13E-04	1.98E-05	7.47E-05	1.94E-05	1.14E-04	3.88E+00	3.46E-06	6.12E-04
1.49E-02	4.22E-02	8.50E-01	6.84E-05	4.41E-05	2.58E-04	3.35E-05	3.36E-04	1.10E-05	9.03E-05	3.08E-05	1.32E-04	6.92E+00	2.21E-03	9.41E-04
2.59E-05	4.91E-04	8.12E-04	3.63E-05	2.48E-05	2.35E-04	1.99E-06	2.62E-04	6.21E-06	8.22E-05	1.83E-06	9.02E-05	3.67E+00	8.15E-06	4.44E-05
1.02E-04	4.91E-04	1.02E-04	2.23E-05	4.58E-05	2.43E-04	9.30E-06	2.98E-04	1.14E-05	8.49E-05	8.89E-06	1.05E-04	2.35E+00	4.75E-06	3.70E-04
5.16E-05	9.61E-04	5.62E-02	0.00E+00	7.40E-05	2.43E-04	3.94E-07	3.17E-04	1.85E-05	8.49E-05	3.77E-07	1.04E-04	3.28E+00	3.61E-03	6.69E-04

3.40E-08	2.36E-06	1.39E-07	1.50E-08	3.60E-08	7.52E-08	4.12E-08	1.52E-07	9.00E-09	2.63E-08	3.94E-08	7.47E-08	1.59E-03	1.58E-09	2.50E-07
8.27E-08	3.62E-06	2.92E-07	1.61E-08	3.60E-08	9.04E-08	2.61E-08	1.53E-07	9.00E-09	3.17E-08	2.50E-08	6.56E-08	1.70E-03	3.84E-09	2.67E-07
9.69E-08	3.95E-06	3.35E-07	1.61E-08	3.60E-08	9.18E-08	2.95E-08	1.57E-07	9.00E-09	3.21E-08	2.82E-08	6.93E-08	1.70E-03	4.50E-09	2.67E-07
1.15E-07	4.48E-06	3.76E-07	1.62E-08	3.60E-08	9.32E-08	2.93E-08	1.59E-07	9.00E-09	3.26E-08	2.81E-08	6.97E-08	1.71E-03	5.34E-09	2.70E-07
1.70E-08	7.02E-07	1.09E-05	0.00E+00	3.60E-08	1.14E-07	1.37E-09	1.51E-07	9.00E-09	3.99E-08	1.26E-09	5.02E-08	1.49E-03	1.19E-06	3.04E-07
1.40E-07	1.09E-05	4.35E-07	1.83E-08	3.60E-08	1.17E-07	6.05E-08	2.14E-07	9.00E-09	4.10E-08	5.79E-08	1.08E-07	1.93E-03	6.49E-09	3.04E-07
2.58E-08	6.65E-07	1.02E-05	0.00E+00	3.60E-08	1.03E-07	2.62E-09	1.41E-07	9.00E-09	3.59E-08	2.41E-09	4.73E-08	1.64E-03	1.81E-06	3.34E-07
2.49E-08	1.36E-06	1.30E-07	1.60E-08	3.60E-08	8.11E-08	2.67E-08	1.44E-07	9.00E-09	2.84E-08	2.56E-08	6.30E-08	1.69E-03	1.16E-09	2.66E-07
1.51E-08	4.67E-07	8.13E-06	0.00E+00	3.60E-08	8.04E-08	1.59E-09	1.18E-07	9.00E-09	2.81E-08	1.46E-09	3.86E-08	1.30E-03	1.06E-06	2.65E-07
3.91E-08	2.05E-06	1.75E-07	1.60E-08	3.60E-08	8.20E-08	3.17E-08	1.50E-07	9.00E-09	2.87E-08	3.03E-08	6.80E-08	1.69E-03	1.82E-09	2.66E-07
1.51E-08	5.37E-07	8.99E-06	0.00E+00	3.60E-08	8.08E-08	1.45E-09	1.18E-07	9.00E-09	2.83E-08	1.33E-09	3.86E-08	1.34E-03	1.06E-06	2.73E-07
4.44E-08	2.48E-06	2.05E-07	1.55E-08	3.60E-08	8.19E-08	3.10E-08	1.49E-07	9.00E-09	2.87E-08	2.97E-08	6.73E-08	1.64E-03	2.06E-09	2.58E-07
1.51E-08	5.97E-07	1.00E-05	0.00E+00	3.60E-08	8.12E-08	1.29E-09	1.18E-07	9.00E-09	2.84E-08	1.18E-09	3.86E-08	1.38E-03	1.05E-06	2.82E-07
1.86E-08	9.03E-06	4.91E-08	3.84E-08	3.60E-08	2.10E-07	1.64E-08	2.62E-07	9.00E-09	7.35E-08	1.57E-08	9.82E-08	4.06E-03	8.63E-10	6.39E-07
1.81E-07	3.14E-06	2.08E-05	0.00E+00	3.60E-08	2.10E-07	5.52E-09	2.52E-07	9.00E-09	7.35E-08	5.08E-09	8.76E-08	1.73E-03	4.62E-06	3.52E-07
4.80E-08	2.65E-06	1.90E-07	1.50E-08	3.60E-08	8.11E-08	3.31E-08	1.50E-07	9.00E-09	2.84E-08	3.17E-08	6.91E-08	1.59E-03	2.23E-09	2.50E-07
1.43E-08	4.56E-07	8.09E-06	0.00E+00	3.60E-08	7.88E-08	1.49E-09	1.16E-07	9.00E-09	2.76E-08	1.37E-09	3.79E-08	1.28E-03	1.00E-06	2.61E-07
3.38E-08	1.91E-06	1.81E-07	1.67E-08	3.60E-08	9.68E-08	9.18E-09	1.42E-07	9.00E-09	3.39E-08	8.78E-09	5.17E-08	1.76E-03	1.57E-09	2.77E-07
6.76E-06	1.91E-05	3.86E-04	3.10E-08	2.00E-08	1.17E-07	1.52E-08	1.52E-07	5.00E-09	4.10E-08	1.40E-08	5.99E-08	3.14E-03	1.00E-06	4.27E-07
1.17E-08	2.23E-07	3.68E-07	1.65E-08	1.13E-08	1.07E-07	9.03E-10	1.19E-07	2.82E-09	3.73E-08	8.31E-10	4.09E-08	1.66E-03	3.70E-09	2.01E-08
4.64E-08	2.23E-07	4.61E-08	1.01E-08	2.08E-08	1.10E-07	4.22E-09	1.35E-07	5.19E-09	3.85E-08	4.03E-09	4.77E-08	1.07E-03	2.16E-09	1.68E-07
2.34E-08	4.36E-07	2.55E-05	0.00E+00	3.36E-08	1.10E-07	1.79E-10	1.44E-07	8.40E-09	3.85E-08	1.71E-10	4.71E-08	1.49E-03	1.64E-06	3.03E-07

Year 2042 Existing: Criteria Air Pollutants

Source: EMFAC2021 (v1.0.1) Emission Rates, Merced (SJV) Subarea, Average Speed, Average Fleet

Daily VMT		1,446,814		lbs/day					
Vehicle Type	Fuel Type	Percent of VMT	Percent of VMT for Los Banos (EMFAC default)	ROG	NOx	CO	SOx	PM10	PM2.5
All Other Buses	Diesel	0.01%	0.01%	0.02	0.45	0.08	0.00	0.01	0.01
All Other Buses	Natural Gas	0.00%	0.00%	0.00	0.00	0.11	0.00	0.00	0.00
LDA	Gasoline	40.87%	40.87%	3.73	26.35	695.19	2.99	0.65	10.43
LDA	Diesel	0.03%	0.03%	0.00	0.02	0.11	0.00	0.00	0.01
LDA	Electricity	5.03%	5.03%	0.00	0.00	0.00	0.00	0.00	1.28
LDA	Plug-in Hybrid	1.92%	1.92%	0.07	0.16	11.73	0.07	0.01	0.49
LDT1	Gasoline	2.01%	2.01%	0.24	1.65	38.61	0.17	0.04	0.51
LDT1	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT1	Electricity	0.06%	0.06%	0.00	0.00	0.00	0.00	0.00	0.01
LDT1	Plug-in Hybrid	0.04%	0.04%	0.00	0.00	0.26	0.00	0.00	0.01
LDT2	Gasoline	17.25%	17.25%	2.22	13.68	345.48	1.55	0.29	4.40
LDT2	Diesel	0.06%	0.06%	0.02	0.06	0.26	0.00	0.01	0.02
LDT2	Electricity	0.46%	0.46%	0.00	0.00	0.00	0.00	0.00	0.12
LDT2	Plug-in Hybrid	0.45%	0.45%	0.02	0.04	2.76	0.02	0.00	0.12
LHD1	Gasoline	0.69%	0.69%	0.11	0.69	13.06	0.17	0.03	0.18
LHD1	Diesel	0.50%	0.50%	1.88	10.53	5.19	0.09	0.43	0.19
LHD1	Electricity	0.70%	0.70%	0.00	0.00	0.00	0.00	0.00	0.18
LHD2	Gasoline	0.07%	0.07%	0.01	0.08	1.43	0.02	0.00	0.02
LHD2	Diesel	0.23%	0.23%	1.02	6.45	2.86	0.05	0.23	0.09
LHD2	Electricity	0.16%	0.16%	0.00	0.00	0.00	0.00	0.00	0.04
MCY	Gasoline	0.20%	0.20%	4.91	3.05	66.29	0.01	0.01	0.03
MDV	Gasoline	10.46%	10.46%	1.81	11.85	230.07	1.15	0.19	2.67
MDV	Diesel	0.12%	0.12%	0.02	0.07	0.59	0.01	0.01	0.03
MDV	Electricity	0.43%	0.43%	0.00	0.00	0.00	0.00	0.00	0.11
MDV	Plug-in Hybrid	0.29%	0.29%	0.01	0.02	1.77	0.01	0.00	0.07
MH	Gasoline	0.02%	0.02%	0.01	0.09	0.12	0.01	0.00	0.01
MH	Diesel	0.01%	0.01%	0.04	1.25	0.13	0.00	0.02	0.01
Motor Coach	Diesel	0.03%	0.03%	0.01	1.06	0.04	0.02	0.03	0.01
OBUS	Gasoline	0.02%	0.02%	0.02	0.13	0.39	0.01	0.00	0.01
OBUS	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.01
PTO	Diesel	0.04%	0.04%	0.03	3.98	0.30	0.02	0.01	0.00
PTO	Electricity	0.03%	0.03%	0.00	0.00	0.00	0.00	0.00	0.00
SBUS	Gasoline	0.02%	0.02%	0.01	0.11	0.13	0.01	0.00	0.01
SBUS	Diesel	0.04%	0.04%	0.02	0.74	0.08	0.01	0.01	0.01
SBUS	Electricity	0.03%	0.03%	0.00	0.00	0.00	0.00	0.00	0.01
SBUS	Natural Gas	0.01%	0.01%	0.01	0.08	2.81	0.00	0.00	0.01
T6 CAIRP Class 4	Diesel	0.00%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 CAIRP Class 4	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Diesel	0.00%	0.00%	0.00	0.02	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 6	Diesel	0.01%	0.01%	0.00	0.04	0.01	0.00	0.00	0.00
T6 CAIRP Class 6	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 7	Diesel	0.08%	0.08%	0.01	0.48	0.07	0.02	0.01	0.03
T6 CAIRP Class 7	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.01
T6 Instate Delivery Class 4	Diesel	0.01%	0.01%	0.00	0.12	0.02	0.00	0.00	0.00
T6 Instate Delivery Class 4	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 5	Diesel	0.01%	0.01%	0.00	0.08	0.01	0.00	0.00	0.00
T6 Instate Delivery Class 5	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 6	Diesel	0.02%	0.02%	0.00	0.25	0.04	0.01	0.00	0.01
T6 Instate Delivery Class 6	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.01
T6 Instate Delivery Class 7	Diesel	0.01%	0.01%	0.00	0.31	0.03	0.00	0.00	0.00
T6 Instate Delivery Class 7	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.02	0.00	0.00	0.00
T6 Instate Other Class 4	Diesel	0.07%	0.07%	0.01	0.62	0.09	0.02	0.01	0.03
T6 Instate Other Class 4	Electricity	0.06%	0.06%	0.00	0.00	0.00	0.00	0.00	0.02
T6 Instate Other Class 5	Diesel	0.11%	0.11%	0.02	0.99	0.15	0.03	0.01	0.04
T6 Instate Other Class 5	Electricity	0.10%	0.10%	0.00	0.00	0.00	0.00	0.00	0.04
T6 Instate Other Class 6	Diesel	0.08%	0.08%	0.02	0.80	0.12	0.03	0.01	0.03
T6 Instate Other Class 6	Electricity	0.08%	0.08%	0.00	0.00	0.00	0.00	0.00	0.03
T6 Instate Other Class 7	Diesel	0.07%	0.07%	0.02	1.38	0.14	0.02	0.01	0.03
T6 Instate Other Class 7	Electricity	0.05%	0.05%	0.00	0.00	0.00	0.00	0.00	0.02

T6 Instate Other Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.13	0.00	0.00	0.00
T6 Instate Tractor Class 6	Diesel	0.00%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 7	Diesel	0.12%	0.12%	0.03	2.23	0.22	0.04	0.02	0.05
T6 Instate Tractor Class 7	Electricity	0.03%	0.03%	0.00	0.00	0.00	0.00	0.00	0.01
T6 Instate Tractor Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.22	0.00	0.00	0.00
T6 OOS Class 4	Diesel	0.00%	0.00%	0.00	0.02	0.00	0.00	0.00	0.00
T6 OOS Class 5	Diesel	0.00%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 OOS Class 6	Diesel	0.01%	0.01%	0.00	0.07	0.01	0.00	0.00	0.00
T6 OOS Class 7	Diesel	0.07%	0.07%	0.01	0.50	0.06	0.02	0.01	0.03
T6 Public Class 4	Diesel	0.00%	0.00%	0.00	0.10	0.01	0.00	0.00	0.00
T6 Public Class 4	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.06	0.00	0.00	0.00
T6 Public Class 5	Diesel	0.01%	0.01%	0.01	0.20	0.02	0.00	0.00	0.00
T6 Public Class 5	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.12	0.00	0.00	0.00
T6 Public Class 6	Diesel	0.01%	0.01%	0.01	0.25	0.03	0.00	0.00	0.01
T6 Public Class 6	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.19	0.00	0.00	0.00
T6 Public Class 7	Diesel	0.03%	0.03%	0.01	0.52	0.05	0.01	0.00	0.01
T6 Public Class 7	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.01
T6 Public Class 7	Natural Gas	0.00%	0.00%	0.00	0.01	0.42	0.00	0.00	0.00
T6 Utility Class 5	Diesel	0.01%	0.01%	0.00	0.05	0.01	0.00	0.00	0.00
T6 Utility Class 5	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Diesel	0.00%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 Utility Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Diesel	0.00%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 Utility Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6TS	Gasoline	0.09%	0.09%	0.04	0.24	0.63	0.04	0.00	0.03
T6TS	Electricity	0.08%	0.08%	0.00	0.00	0.00	0.00	0.00	0.03
T7 CAIRP Class 8	Diesel	3.56%	3.56%	1.30	137.91	4.41	1.38	3.40	4.09
T7 CAIRP Class 8	Electricity	0.99%	0.99%	0.00	0.00	0.00	0.00	0.00	1.14
T7 NNOOS Class 8	Diesel	5.39%	5.39%	1.91	229.49	6.49	2.00	5.05	6.18
T7 NOOS Class 8	Diesel	1.96%	1.96%	0.72	85.74	2.43	0.72	1.94	2.25
T7 Other Port Class 8	Diesel	0.07%	0.07%	0.02	2.73	0.14	0.03	0.04	0.08
T7 Other Port Class 8	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.02
T7 POAK Class 8	Diesel	0.16%	0.16%	0.05	6.62	0.33	0.07	0.09	0.18
T7 POAK Class 8	Electricity	0.03%	0.03%	0.00	0.00	0.00	0.00	0.00	0.04
T7 POLA Class 8	Diesel	0.26%	0.26%	0.09	11.96	0.60	0.11	0.16	0.30
T7 POLA Class 8	Electricity	0.04%	0.04%	0.00	0.00	0.00	0.00	0.00	0.05
T7 POLA Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.19	0.00	0.00	0.00
T7 Public Class 8	Diesel	0.07%	0.07%	0.07	5.32	0.34	0.03	0.03	0.08
T7 Public Class 8	Electricity	0.04%	0.04%	0.00	0.00	0.00	0.00	0.00	0.05
T7 Public Class 8	Natural Gas	0.01%	0.01%	0.01	0.08	2.16	0.00	0.00	0.01
T7 Single Concrete/Transit Mix Class 8	Diesel	0.02%	0.02%	0.00	0.46	0.02	0.01	0.01	0.02
T7 Single Concrete/Transit Mix Class 8	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.02
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.00%	0.00%	0.00	0.00	0.08	0.00	0.00	0.00
T7 Single Dump Class 8	Diesel	0.03%	0.03%	0.01	1.25	0.06	0.02	0.02	0.04
T7 Single Dump Class 8	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.03
T7 Single Dump Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.19	0.00	0.00	0.00
T7 Single Other Class 8	Diesel	0.16%	0.16%	0.07	6.68	0.36	0.07	0.09	0.18
T7 Single Other Class 8	Electricity	0.11%	0.11%	0.00	0.00	0.00	0.00	0.00	0.12
T7 Single Other Class 8	Natural Gas	0.01%	0.01%	0.00	0.05	1.00	0.00	0.00	0.01
T7 SWCV Class 8	Diesel	0.01%	0.01%	0.01	1.10	0.02	0.01	0.01	0.02
T7 SWCV Class 8	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.02
T7 SWCV Class 8	Natural Gas	0.03%	0.03%	0.02	0.33	8.53	0.00	0.00	0.03
T7 Tractor Class 8	Diesel	2.65%	2.65%	0.88	102.27	4.16	1.04	1.87	3.04
T7 Tractor Class 8	Electricity	0.47%	0.47%	0.00	0.00	0.00	0.00	0.00	0.54
T7 Tractor Class 8	Natural Gas	0.04%	0.04%	0.02	0.23	5.17	0.00	0.00	0.05
T7 Utility Class 8	Diesel	0.01%	0.01%	0.00	0.28	0.03	0.00	0.00	0.01
T7 Utility Class 8	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.01
T7IS	Gasoline	0.00%	0.00%	0.00	0.02	0.28	0.00	0.00	0.00
T7IS	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	Gasoline	0.01%	0.01%	0.00	0.00	0.13	0.00	0.00	0.00
UBUS	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	Electricity	0.09%	0.09%	0.00	0.00	0.00	0.00	0.00	0.05
UBUS	Natural Gas	0.00%	0.00%	0.00	0.00	0.81	0.00	0.00	0.00
		100%	100%	22	685	1,461	12	15	40

Year 2042 General Plan: Criteria Air Pollutants

Source: EMFAC2021 (v1.0.1) Emission Rates, Merced (SJV) Subarea, Average Speed, Average Fleet

Daily VMT		2,304,017		lbs/day					
Vehicle Type	Fuel Type	Percent of VMT	Percent of VMT for Los Banos (EMFAC default)	ROG	NOx	CO	SOx	PM10	PM2.5
All Other Buses	Diesel	0.01%	0.01%	0.04	0.71	0.13	0.01	0.01	0.01
All Other Buses	Natural Gas	0.00%	0.00%	0.00	0.00	0.18	0.00	0.00	0.00
LDA	Gasoline	40.87%	40.87%	5.94	41.96	1,107.07	4.77	1.04	16.61
LDA	Diesel	0.03%	0.03%	0.01	0.04	0.18	0.00	0.00	0.01
LDA	Electricity	5.03%	5.03%	0.00	0.00	0.00	0.00	0.00	2.04
LDA	Plug-in Hybrid	1.92%	1.92%	0.11	0.26	18.68	0.11	0.02	0.78
LDT1	Gasoline	2.01%	2.01%	0.39	2.63	61.48	0.27	0.06	0.82
LDT1	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT1	Electricity	0.06%	0.06%	0.00	0.00	0.00	0.00	0.00	0.02
LDT1	Plug-in Hybrid	0.04%	0.04%	0.00	0.01	0.42	0.00	0.00	0.02
LDT2	Gasoline	17.25%	17.25%	3.54	21.78	550.17	2.47	0.46	7.01
LDT2	Diesel	0.06%	0.06%	0.04	0.09	0.41	0.01	0.01	0.03
LDT2	Electricity	0.46%	0.46%	0.00	0.00	0.00	0.00	0.00	0.19
LDT2	Plug-in Hybrid	0.45%	0.45%	0.03	0.06	4.39	0.03	0.00	0.18
LHD1	Gasoline	0.69%	0.69%	0.17	1.10	20.80	0.26	0.05	0.28
LHD1	Diesel	0.50%	0.50%	2.99	16.78	8.26	0.15	0.69	0.31
LHD1	Electricity	0.70%	0.70%	0.00	0.00	0.00	0.00	0.00	0.28
LHD2	Gasoline	0.07%	0.07%	0.02	0.12	2.27	0.03	0.00	0.03
LHD2	Diesel	0.23%	0.23%	1.63	10.28	4.56	0.08	0.37	0.14
LHD2	Electricity	0.16%	0.16%	0.00	0.00	0.00	0.00	0.00	0.07
MCY	Gasoline	0.20%	0.20%	7.82	4.86	105.57	0.02	0.02	0.04
MDV	Gasoline	10.46%	10.46%	2.88	18.87	366.38	1.83	0.30	4.25
MDV	Diesel	0.12%	0.12%	0.03	0.11	0.94	0.02	0.01	0.05
MDV	Electricity	0.43%	0.43%	0.00	0.00	0.00	0.00	0.00	0.17
MDV	Plug-in Hybrid	0.29%	0.29%	0.02	0.04	2.83	0.02	0.00	0.12
MH	Gasoline	0.02%	0.02%	0.01	0.15	0.19	0.02	0.00	0.01
MH	Diesel	0.01%	0.01%	0.07	1.99	0.20	0.01	0.03	0.01
Motor Coach	Diesel	0.03%	0.03%	0.02	1.68	0.06	0.03	0.04	0.02
OBUS	Gasoline	0.02%	0.02%	0.03	0.21	0.62	0.01	0.00	0.01
OBUS	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.01
PTO	Diesel	0.04%	0.04%	0.04	6.35	0.48	0.04	0.01	0.00
PTO	Electricity	0.03%	0.03%	0.00	0.00	0.00	0.00	0.00	0.00
SBUS	Gasoline	0.02%	0.02%	0.01	0.17	0.21	0.01	0.00	0.01
SBUS	Diesel	0.04%	0.04%	0.02	1.18	0.13	0.02	0.01	0.02
SBUS	Electricity	0.03%	0.03%	0.00	0.00	0.00	0.00	0.00	0.02
SBUS	Natural Gas	0.01%	0.01%	0.02	0.12	4.47	0.00	0.00	0.01
T6 CAIRP Class 4	Diesel	0.00%	0.00%	0.00	0.02	0.00	0.00	0.00	0.00
T6 CAIRP Class 4	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Diesel	0.00%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 CAIRP Class 5	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP Class 6	Diesel	0.01%	0.01%	0.00	0.07	0.01	0.00	0.00	0.00
T6 CAIRP Class 6	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.01
T6 CAIRP Class 7	Diesel	0.08%	0.08%	0.02	0.77	0.11	0.03	0.02	0.05
T6 CAIRP Class 7	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.01
T6 Instate Delivery Class 4	Diesel	0.01%	0.01%	0.00	0.19	0.03	0.00	0.00	0.01
T6 Instate Delivery Class 4	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.01
T6 Instate Delivery Class 5	Diesel	0.01%	0.01%	0.00	0.13	0.02	0.00	0.00	0.00
T6 Instate Delivery Class 5	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 6	Diesel	0.02%	0.02%	0.01	0.40	0.06	0.01	0.00	0.01
T6 Instate Delivery Class 6	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.01
T6 Instate Delivery Class 7	Diesel	0.01%	0.01%	0.01	0.49	0.05	0.01	0.00	0.01
T6 Instate Delivery Class 7	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Delivery Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.04	0.00	0.00	0.00
T6 Instate Other Class 4	Diesel	0.07%	0.07%	0.02	0.98	0.15	0.03	0.01	0.04
T6 Instate Other Class 4	Electricity	0.06%	0.06%	0.00	0.00	0.00	0.00	0.00	0.04
T6 Instate Other Class 5	Diesel	0.11%	0.11%	0.03	1.57	0.23	0.05	0.02	0.06
T6 Instate Other Class 5	Electricity	0.10%	0.10%	0.00	0.00	0.00	0.00	0.00	0.06
T6 Instate Other Class 6	Diesel	0.08%	0.08%	0.03	1.27	0.19	0.04	0.01	0.05
T6 Instate Other Class 6	Electricity	0.08%	0.08%	0.00	0.00	0.00	0.00	0.00	0.05
T6 Instate Other Class 7	Diesel	0.07%	0.07%	0.03	2.20	0.22	0.04	0.02	0.04
T6 Instate Other Class 7	Electricity	0.05%	0.05%	0.00	0.00	0.00	0.00	0.00	0.03
T6 Instate Other Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.21	0.00	0.00	0.00

T6 Instate Tractor Class 6	Diesel	0.00%	0.00%	0.00	0.05	0.01	0.00	0.00	0.00
T6 Instate Tractor Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Instate Tractor Class 7	Diesel	0.12%	0.12%	0.05	3.55	0.36	0.06	0.03	0.07
T6 Instate Tractor Class 7	Electricity	0.03%	0.03%	0.00	0.00	0.00	0.00	0.00	0.02
T6 Instate Tractor Class 7	Natural Gas	0.00%	0.00%	0.00	0.01	0.34	0.00	0.00	0.00
T6 OOS Class 4	Diesel	0.00%	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
T6 OOS Class 5	Diesel	0.00%	0.00%	0.00	0.04	0.00	0.00	0.00	0.00
T6 OOS Class 6	Diesel	0.01%	0.01%	0.00	0.10	0.01	0.00	0.00	0.01
T6 OOS Class 7	Diesel	0.07%	0.07%	0.02	0.79	0.10	0.03	0.02	0.04
T6 Public Class 4	Diesel	0.00%	0.00%	0.00	0.17	0.02	0.00	0.00	0.00
T6 Public Class 4	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 4	Natural Gas	0.00%	0.00%	0.00	0.00	0.10	0.00	0.00	0.00
T6 Public Class 5	Diesel	0.01%	0.01%	0.01	0.31	0.03	0.00	0.00	0.01
T6 Public Class 5	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Public Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.20	0.00	0.00	0.00
T6 Public Class 6	Diesel	0.01%	0.01%	0.01	0.40	0.04	0.01	0.00	0.01
T6 Public Class 6	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.01
T6 Public Class 6	Natural Gas	0.00%	0.00%	0.00	0.01	0.30	0.00	0.00	0.00
T6 Public Class 7	Diesel	0.03%	0.03%	0.02	0.82	0.08	0.02	0.01	0.02
T6 Public Class 7	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.01
T6 Public Class 7	Natural Gas	0.00%	0.00%	0.00	0.02	0.66	0.00	0.00	0.00
T6 Utility Class 5	Diesel	0.01%	0.01%	0.00	0.08	0.01	0.00	0.00	0.00
T6 Utility Class 5	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.01
T6 Utility Class 5	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Diesel	0.00%	0.00%	0.00	0.01	0.00	0.00	0.00	0.00
T6 Utility Class 6	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 6	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Diesel	0.00%	0.00%	0.00	0.02	0.00	0.00	0.00	0.00
T6 Utility Class 7	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 Utility Class 7	Natural Gas	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6TS	Gasoline	0.09%	0.09%	0.06	0.38	1.00	0.07	0.01	0.05
T6TS	Electricity	0.08%	0.08%	0.00	0.00	0.00	0.00	0.00	0.05
T7 CAIRP Class 8	Diesel	3.56%	3.56%	2.07	219.62	7.02	2.19	5.41	6.51
T7 CAIRP Class 8	Electricity	0.99%	0.99%	0.00	0.00	0.00	0.00	0.00	1.82
T7 NNOOS Class 8	Diesel	5.39%	5.39%	3.05	365.46	10.33	3.18	8.04	9.85
T7 NOOS Class 8	Diesel	1.96%	1.96%	1.14	136.53	3.86	1.15	3.09	3.58
T7 Other Port Class 8	Diesel	0.07%	0.07%	0.04	4.34	0.22	0.05	0.06	0.13
T7 Other Port Class 8	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.03
T7 POAK Class 8	Diesel	0.16%	0.16%	0.08	10.55	0.53	0.11	0.14	0.29
T7 POAK Class 8	Electricity	0.03%	0.03%	0.00	0.00	0.00	0.00	0.00	0.06
T7 POLA Class 8	Diesel	0.26%	0.26%	0.15	19.04	0.96	0.18	0.26	0.48
T7 POLA Class 8	Electricity	0.04%	0.04%	0.00	0.00	0.00	0.00	0.00	0.07
T7 POLA Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.30	0.00	0.00	0.00
T7 Public Class 8	Diesel	0.07%	0.07%	0.12	8.48	0.54	0.05	0.04	0.12
T7 Public Class 8	Electricity	0.04%	0.04%	0.00	0.00	0.00	0.00	0.00	0.08
T7 Public Class 8	Natural Gas	0.01%	0.01%	0.01	0.12	3.44	0.00	0.00	0.02
T7 Single Concrete/Transit Mix Class 8	Diesel	0.02%	0.02%	0.01	0.74	0.04	0.01	0.01	0.03
T7 Single Concrete/Transit Mix Class 8	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.04
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.13	0.00	0.00	0.00
T7 Single Dump Class 8	Diesel	0.03%	0.03%	0.02	2.00	0.10	0.02	0.03	0.06
T7 Single Dump Class 8	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.04
T7 Single Dump Class 8	Natural Gas	0.00%	0.00%	0.00	0.01	0.30	0.00	0.00	0.00
T7 Single Other Class 8	Diesel	0.16%	0.16%	0.11	10.64	0.57	0.11	0.15	0.28
T7 Single Other Class 8	Electricity	0.11%	0.11%	0.00	0.00	0.00	0.00	0.00	0.20
T7 Single Other Class 8	Natural Gas	0.01%	0.01%	0.00	0.08	1.59	0.00	0.00	0.01
T7 SWCV Class 8	Diesel	0.01%	0.01%	0.02	1.75	0.04	0.02	0.01	0.03
T7 SWCV Class 8	Electricity	0.02%	0.02%	0.00	0.00	0.00	0.00	0.00	0.04
T7 SWCV Class 8	Natural Gas	0.03%	0.03%	0.02	0.52	13.59	0.00	0.00	0.05
T7 Tractor Class 8	Diesel	2.65%	2.65%	1.40	162.86	6.62	1.65	2.98	4.84
T7 Tractor Class 8	Electricity	0.47%	0.47%	0.00	0.00	0.00	0.00	0.00	0.85
T7 Tractor Class 8	Natural Gas	0.04%	0.04%	0.03	0.37	8.23	0.00	0.00	0.08
T7 Utility Class 8	Diesel	0.01%	0.01%	0.00	0.45	0.04	0.01	0.00	0.02
T7 Utility Class 8	Electricity	0.01%	0.01%	0.00	0.00	0.00	0.00	0.00	0.01
T7IS	Gasoline	0.00%	0.00%	0.01	0.03	0.45	0.00	0.00	0.00
T7IS	Electricity	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	Gasoline	0.01%	0.01%	0.00	0.01	0.21	0.00	0.00	0.00
UBUS	Diesel	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	Electricity	0.09%	0.09%	0.00	0.00	0.00	0.00	0.00	0.08
UBUS	Natural Gas	0.00%	0.00%	0.00	0.00	1.29	0.00	0.00	0.00
		100%	100%	34	1,090	2,326	19	24	64

Year 2042 Existing: Criteria Air Pollutants

Source: EMFAC2021 (v1.0.1) Emission Rates, Merced (SJV) Subarea, Average Speed, Average Fleet

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the 2008 Climate Change Scoping Plan Measure Documentation Supplement.

				CO ₂ (Pavley)	CH ₄	N ₂ O		
Daily VMT	2,304,017			ARS GWP	ARS GWP	ARS GWP		
Annual VMT	799,493,899			1	28	265		
Vehicle Type	Fuel Type	Percent of VMT	Percent of VMT for Los Banos (EMFAC default)	CO ₂	CH ₄	N ₂ O	CO ₂ e	
All Other Buses	Diesel	0.01%	0.01%	107	0.00	0.02	112	
All Other Buses	Natural Gas	0.00%	0.00%	7	0.01	0.00	8	
LDA	Gasoline	40.87%	40.87%	75,875	0.33	1.10	76,174	
LDA	Diesel	0.03%	0.03%	36	0.00	0.01	38	
LDA	Electricity	5.03%	5.03%	0	0.00	0.00	0	
LDA	Plug-in Hybrid	1.92%	1.92%	1,792	0.01	0.01	1,794	
LDT1	Gasoline	2.01%	2.01%	4,357	0.02	0.06	4,374	
LDT1	Diesel	0.00%	0.00%	0	0.00	0.00	0	
LDT1	Electricity	0.06%	0.06%	0	0.00	0.00	0	
LDT1	Plug-in Hybrid	0.04%	0.04%	40	0.00	0.00	40	
LDT2	Gasoline	17.25%	17.25%	39,388	0.18	0.50	39,527	
LDT2	Diesel	0.06%	0.06%	131	0.00	0.02	137	
LDT2	Electricity	0.46%	0.46%	0	0.00	0.00	0	
LDT2	Plug-in Hybrid	0.45%	0.45%	421	0.00	0.00	422	
LHD1	Gasoline	0.69%	0.69%	4,217	0.01	0.01	4,221	
LHD1	Diesel	0.50%	0.50%	2,471	0.02	0.39	2,574	
LHD1	Electricity	0.70%	0.70%	0	0.00	0.00	0	
LHD2	Gasoline	0.07%	0.07%	514	0.00	0.00	514	
LHD2	Diesel	0.23%	0.23%	1,334	0.01	0.21	1,390	
LHD2	Electricity	0.16%	0.16%	0	0.00	0.00	0	
MCY	Gasoline	0.20%	0.20%	290	0.21	0.06	311	
MDV	Gasoline	10.46%	10.46%	29,195	0.14	0.36	29,293	
MDV	Diesel	0.12%	0.12%	326	0.00	0.05	340	
MDV	Electricity	0.43%	0.43%	0	0.00	0.00	0	
MDV	Plug-in Hybrid	0.29%	0.29%	271	0.00	0.00	271	
MH	Gasoline	0.02%	0.02%	361	0.00	0.00	361	
MH	Diesel	0.01%	0.01%	116	0.00	0.02	121	
Motor Coach	Diesel	0.03%	0.03%	424	0.00	0.07	442	
OBUS	Gasoline	0.02%	0.02%	202	0.00	0.00	203	
OBUS	Electricity	0.01%	0.01%	0	0.00	0.00	0	
PTO	Diesel	0.04%	0.04%	618	0.00	0.10	644	
PTO	Electricity	0.03%	0.03%	0	0.00	0.00	0	
SBUS	Gasoline	0.02%	0.02%	128	0.00	0.00	128	
SBUS	Diesel	0.04%	0.04%	322	0.00	0.05	335	
SBUS	Electricity	0.03%	0.03%	0	0.00	0.00	0	
SBUS	Natural Gas	0.01%	0.01%	117	0.25	0.02	130	
T6 CAIRP Class 4	Diesel	0.00%	0.00%	16	0.00	0.00	17	
T6 CAIRP Class 4	Electricity	0.00%	0.00%	0	0.00	0.00	0	
T6 CAIRP Class 5	Diesel	0.00%	0.00%	22	0.00	0.00	23	
T6 CAIRP Class 5	Electricity	0.00%	0.00%	0	0.00	0.00	0	
T6 CAIRP Class 6	Diesel	0.01%	0.01%	57	0.00	0.01	60	
T6 CAIRP Class 6	Electricity	0.01%	0.01%	0	0.00	0.00	0	
T6 CAIRP Class 7	Diesel	0.08%	0.08%	548	0.00	0.09	570	
T6 CAIRP Class 7	Electricity	0.02%	0.02%	0	0.00	0.00	0	
T6 Instate Delivery Class 4	Diesel	0.01%	0.01%	80	0.00	0.01	83	
T6 Instate Delivery Class 4	Electricity	0.01%	0.01%	0	0.00	0.00	0	
T6 Instate Delivery Class 5	Diesel	0.01%	0.01%	55	0.00	0.01	57	
T6 Instate Delivery Class 5	Electricity	0.01%	0.01%	0	0.00	0.00	0	
T6 Instate Delivery Class 6	Diesel	0.02%	0.02%	164	0.00	0.03	171	
T6 Instate Delivery Class 6	Electricity	0.02%	0.02%	0	0.00	0.00	0	
T6 Instate Delivery Class 7	Diesel	0.01%	0.01%	91	0.00	0.01	95	
T6 Instate Delivery Class 7	Electricity	0.01%	0.01%	0	0.00	0.00	0	
T6 Instate Delivery Class 7	Natural Gas	0.00%	0.00%	2	0.00	0.00	2	
T6 Instate Other Class 4	Diesel	0.07%	0.07%	536	0.00	0.08	558	

T6 Instate Other Class 4	Electricity	0.06%	0.06%	0	0.00	0.00	0
T6 Instate Other Class 5	Diesel	0.11%	0.11%	868	0.00	0.14	904
T6 Instate Other Class 5	Electricity	0.10%	0.10%	0	0.00	0.00	0
T6 Instate Other Class 6	Diesel	0.08%	0.08%	678	0.00	0.11	707
T6 Instate Other Class 6	Electricity	0.08%	0.08%	0	0.00	0.00	0
T6 Instate Other Class 7	Diesel	0.07%	0.07%	597	0.00	0.09	622
T6 Instate Other Class 7	Electricity	0.05%	0.05%	0	0.00	0.00	0
T6 Instate Other Class 7	Natural Gas	0.00%	0.00%	11	0.01	0.00	12
T6 Instate Tractor Class 6	Diesel	0.00%	0.00%	26	0.00	0.00	27
T6 Instate Tractor Class 6	Electricity	0.00%	0.00%	0	0.00	0.00	0
T6 Instate Tractor Class 7	Diesel	0.12%	0.12%	932	0.00	0.15	971
T6 Instate Tractor Class 7	Electricity	0.03%	0.03%	0	0.00	0.00	0
T6 Instate Tractor Class 7	Natural Gas	0.00%	0.00%	18	0.01	0.00	19
T6 OOS Class 4	Diesel	0.00%	0.00%	19	0.00	0.00	20
T6 OOS Class 5	Diesel	0.00%	0.00%	27	0.00	0.00	28
T6 OOS Class 6	Diesel	0.01%	0.01%	70	0.00	0.01	73
T6 OOS Class 7	Diesel	0.07%	0.07%	458	0.00	0.07	477
T6 Public Class 4	Diesel	0.00%	0.00%	43	0.00	0.01	45
T6 Public Class 4	Electricity	0.00%	0.00%	0	0.00	0.00	0
T6 Public Class 4	Natural Gas	0.00%	0.00%	5	0.00	0.00	5
T6 Public Class 5	Diesel	0.01%	0.01%	77	0.00	0.01	80
T6 Public Class 5	Electricity	0.01%	0.01%	0	0.00	0.00	0
T6 Public Class 5	Natural Gas	0.00%	0.00%	10	0.01	0.00	11
T6 Public Class 6	Diesel	0.01%	0.01%	122	0.00	0.02	127
T6 Public Class 6	Electricity	0.01%	0.01%	0	0.00	0.00	0
T6 Public Class 6	Natural Gas	0.00%	0.00%	15	0.01	0.00	16
T6 Public Class 7	Diesel	0.03%	0.03%	260	0.00	0.04	271
T6 Public Class 7	Electricity	0.02%	0.02%	0	0.00	0.00	0
T6 Public Class 7	Natural Gas	0.00%	0.00%	34	0.03	0.01	36
T6 Utility Class 5	Diesel	0.01%	0.01%	64	0.00	0.01	67
T6 Utility Class 5	Electricity	0.01%	0.01%	0	0.00	0.00	0
T6 Utility Class 5	Natural Gas	0.00%	0.00%	0	0.00	0.00	0
T6 Utility Class 6	Diesel	0.00%	0.00%	12	0.00	0.00	13
T6 Utility Class 6	Electricity	0.00%	0.00%	0	0.00	0.00	0
T6 Utility Class 6	Natural Gas	0.00%	0.00%	0	0.00	0.00	0
T6 Utility Class 7	Diesel	0.00%	0.00%	16	0.00	0.00	17
T6 Utility Class 7	Electricity	0.00%	0.00%	0	0.00	0.00	0
T6 Utility Class 7	Natural Gas	0.00%	0.00%	0	0.00	0.00	0
T6TS	Gasoline	0.09%	0.09%	1,072	0.00	0.01	1,073
T6TS	Electricity	0.08%	0.08%	0	0.00	0.00	0
T7 CAIRP Class 8	Diesel	3.56%	3.56%	36,470	0.02	5.75	37,993
T7 CAIRP Class 8	Electricity	0.99%	0.99%	0	0.00	0.00	0
T7 NNOOS Class 8	Diesel	5.39%	5.39%	52,832	0.02	8.32	55,039
T7 NOOS Class 8	Diesel	1.96%	1.96%	19,176	0.01	3.02	19,977
T7 Other Port Class 8	Diesel	0.07%	0.07%	758	0.00	0.12	790
T7 Other Port Class 8	Electricity	0.02%	0.02%	0	0.00	0.00	0
T7 POAK Class 8	Diesel	0.16%	0.16%	1,753	0.00	0.28	1,826
T7 POAK Class 8	Electricity	0.03%	0.03%	0	0.00	0.00	0
T7 POLA Class 8	Diesel	0.26%	0.26%	2,970	0.00	0.47	3,094
T7 POLA Class 8	Electricity	0.04%	0.04%	0	0.00	0.00	0
T7 POLA Class 8	Natural Gas	0.00%	0.00%	11	0.01	0.00	12
T7 Public Class 8	Diesel	0.07%	0.07%	888	0.00	0.14	926
T7 Public Class 8	Electricity	0.04%	0.04%	0	0.00	0.00	0
T7 Public Class 8	Natural Gas	0.01%	0.01%	97	0.11	0.02	105
T7 Single Concrete/Transit Mix Class 8	Diesel	0.02%	0.02%	205	0.00	0.03	213
T7 Single Concrete/Transit Mix Class 8	Electricity	0.02%	0.02%	0	0.00	0.00	0
T7 Single Concrete/Transit Mix Class 8	Natural Gas	0.00%	0.00%	6	0.01	0.00	6
T7 Single Dump Class 8	Diesel	0.03%	0.03%	412	0.00	0.06	429
T7 Single Dump Class 8	Electricity	0.02%	0.02%	0	0.00	0.00	0
T7 Single Dump Class 8	Natural Gas	0.00%	0.00%	11	0.01	0.00	12
T7 Single Other Class 8	Diesel	0.16%	0.16%	1,876	0.00	0.30	1,955
T7 Single Other Class 8	Electricity	0.11%	0.11%	0	0.00	0.00	0
T7 Single Other Class 8	Natural Gas	0.01%	0.01%	54	0.05	0.01	59
T7 SWCV Class 8	Diesel	0.01%	0.01%	379	0.00	0.06	395
T7 SWCV Class 8	Electricity	0.02%	0.02%	0	0.00	0.00	0
T7 SWCV Class 8	Natural Gas	0.03%	0.03%	274	0.12	0.06	292

T7 Tractor Class 8	Diesel	2.65%	2.65%	27,437	0.01	4.32	28,583
T7 Tractor Class 8	Electricity	0.47%	0.47%	0	0.00	0.00	0
T7 Tractor Class 8	Natural Gas	0.04%	0.04%	363	0.34	0.07	392
T7 Utility Class 8	Diesel	0.01%	0.01%	105	0.00	0.02	109
T7 Utility Class 8	Electricity	0.01%	0.01%	0	0.00	0.00	0
T7IS	Gasoline	0.00%	0.00%	4	0.00	0.00	4
T7IS	Electricity	0.00%	0.00%	0	0.00	0.00	0
UBUS	Gasoline	0.01%	0.01%	48	0.00	0.00	48
UBUS	Diesel	0.00%	0.00%	1	0.00	0.00	1
UBUS	Electricity	0.09%	0.09%	0	0.00	0.00	0
UBUS	Natural Gas	0.00%	0.00%	6	0.02	0.00	7
		100.00%	100.00%	316,204	2	27	323,430

We Can Model Regional Emissions, But Are the Results Meaningful for CEQA?

Authors: AEP Climate Change Committee (Michael Hendrix, Dave Mitchell, Haseeb Qureshi, Jennifer Reed, Brian Schuster, Nicole Vermillion, and Rich Walters)

On December 24, 2018, the California Supreme Court, *Sierra Club v. County of Fresno (Friant Ranch, L.P.)* (2018) 6 Cal.5th 502, Case No. S219783 (*Friant Ranch*), held that simply identifying that a project exceeds an emissions threshold is not sufficient to identify a project's significant effect on the environment relative to the health effects of project emissions. The Court found that an EIR should make a reasonable effort to substantively connect a project's criteria pollutant emissions to likely health consequences, or explain why it is not currently feasible to provide such an analysis. In 2019, there were several CEQA documents that included health effects modeling to provide additional analysis for projects with criteria air pollutant emissions that exceed a significance threshold. While it is technically possible to conduct this modeling, we argue that this additional layer of quantitative analysis may not always provide decision-makers and the public with additional meaningful information. It is the air districts that are best suited to provide frameworks for how to identify health effects of regional criteria pollutant emissions under CEQA.

Introduction

Significance thresholds for regional criteria pollutants used by California air districts and lead agencies represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable national or state ambient air quality standard (AAQS). By analyzing the project's emissions against these thresholds, the CEQA document assesses whether these emissions directly contribute to any regional or local exceedances of the applicable AAQS and exposure levels. The basis of the ruling in *Friant Ranch* was that the EIR did not provide a meaningful analysis of the adverse health effects that would be associated with the project's criteria pollutant emissions, which were identified as being far above the relevant thresholds. The discussion of the adverse health effects in the EIR was general in nature and did not connect the levels of the pollutants that would be emitted by the project to adverse health effects.

The process of correlating project-related criteria pollutant emissions to health-based consequences is called a health impact assessment (HIA). An HIA involves two steps: 1) running a regional photochemical grid model (PGM) to estimate the small increases in concentrations of ozone and particulate matter (PM) in the region as a result of a project's emissions of criteria and precursor pollutants; and 2) running the U.S. EPA Benefits Mapping and Analysis Program (BenMAP) to estimate the resulting health impacts from these increases in concentrations of ozone and PM.

Limitations of Regional-Scale Dispersion Models

It is technically feasible to conduct regional-scale criteria pollutant modeling for a development project. Particulate matter (PM) can be divided into two categories: directly emitted PM and secondary PM. Secondary PM, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur oxides (SO_x) and NO_x. Ozone (O₃) is a secondary pollutant formed from the oxidation of reactive organic gases (ROGs) and nitrogen oxides (NO_x) in the presence of sunlight. Rates of ozone formation are a function of a variety of complex physical factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns. Secondary formation of PM and ozone can occur far from the original emissions source from regional transport due to wind and topography (e.g. low-level jet stream). As such, modeling concentrations of secondary PM and ozone require photochemical grid models (PGMs), such as CMAQ and CAMx. These models have a much larger "grid" system and much lower resolution than localized dispersion modeling (e.g., AERMOD). For example, common grid cells in PGMs are 4x4 kilometers, while AERMOD can identify concentrations at the meter-level.

Photochemical modeling also depends on all emission sources in the entire domain. Low resolution and spatial averaging produces “noise” and model uncertainty that can exceed a project’s specific emissions. Additionally, regional-scale models are highly contingent upon background concentrations. Factors such as meteorology and topography greatly affect the certainty levels of predicted concentrations at receptor points. As a result, there are statistical ranges of uncertainty through all the modeling steps. Due to these factors, it is difficult to predict ground-level secondary PM and ozone concentrations associated with relatively small emission sources with a high degree of certainty. While it is possible to use a regional-scale model to predict these regional concentrations, when a project’s emissions are less than the regional model’s resolution, the resultant ambient air quality concentrations will be within the margin of uncertainty. In CEQA terms, this would fit the definition of “speculative”. Only when the scale of emissions would result in changes in ambient air quality beyond the model margin of uncertainty would the results not be “speculative” as defined by CEQA.

Identifying Health Effects due to Ambient Air Quality Changes

BenMap is a model developed by the USEPA to understand the health effects from changes in ozone and PM concentrations. If there is an acceptable level of confidence that the results provided by the regional dispersion modeling are valid, then these concentrations can be translated into health outcomes using BenMap. The health outcomes in BenMap are based on changes in ambient air concentrations and the population exposed to these changes. Data provided by this analysis may indicate increased number of workdays lost to illness, hospital admissions (respiratory), emergency room visits (asthma), or mortality, among other health effects. These are called “health incidences.”

Translating the incremental increase in PM and ozone concentrations to specific health effects is also subject to uncertainty. For example, regional models assign the same toxicity to PM regardless of the source of PM (such as road dust as exhaust), and thus potentially overpredict adverse health effects of PM. BenMap also assumes that health effects can occur at any concentration, including small incremental concentrations, and assumes that impacts seen at large concentration differences can be linearly scaled down to small increases in concentration, with no consideration of potential thresholds below which health impacts may not occur. Additionally, BenMap is used for assessing impacts over large areas and populations and was not intended to be used for individual projects. For health incidences, the number of hospitalizations or increase in morbidity predicted by BenMap is greatly affected by the population characteristics.¹ Small increases in emissions in an area with a high population have a much greater affect than large increases in emissions over an area with a small population. As a result, the same amount of emissions generated in an urban area could result in greater health consequences than if the same emissions occurred on the urban periphery, where fewer people may be affected. This will also depend on other factors including meteorology and photochemistry, as discussed above. Emissions in areas with conditions that favor high air dispersion or unfavorable ozone formation will likely have relatively lower effects on ambient air quality and health outcomes.

While BenMap provides additional statistical information about health consequences requested by the Court in the Friant Ranch decision, this information is only meaningful when presented with the full health context of the region or locality at hand. For example, if the BenMap analysis says that the project would result in two additional hospital admissions, this result alone is not useful unless one identifies how many hospital admissions are caused by poor air quality now (without the project) and how many hospital admissions occur

¹ BenMap assigns prevalence rate for asthma and other health effects based on indicators such as gender, race, age, ethnicity, etc. The BenMap user manual specifically states that there are a wide range of variables that can be included in the health effect function. The health effect function was developed based on epidemiological studies, and specifically states that “there are a number of issues that arise when deriving and choosing between health effect functions that go well beyond this user manual. Hence, it is important to have a trained health researcher assist in developing the impact function data file.”

overall (due to air quality and other causes). Because health is not solely influenced by ambient air quality, and has many factors that are highly variable across geographies and populations, there is an added level of uncertainty in using a generalized identification of health effects due to air quality conditions overlaid onto a specific diverse set of health conditions and other factors. Regardless of the uncertainty levels, if regional health effects are identified for a project, then the CEQA analysis needs to provide a full health baseline for decision-makers and the public to be able to understand the marginal change due to project criteria pollutant emissions. Given the margin of uncertainty at each step in the process (regional scale modeling, existing ambient air quality effects on health, population health conditions vulnerability, and marginal health effects of air pollution), the identification of marginal health effects due to individual projects using regional air quality modelling and tools such as BenMap are likely to be within the level of uncertainty and thus defined as “speculative” per CEQA.

The Role of Air Districts

Regional, community, multiscale air quality modeling conducted by the air districts for each individual air basin or locality within the air basin would be the most appropriate indicator of health effects for projects. The AQMPs provide a forecast of regional emissions based on regional dispersion modeling for all sources within the air basin. Regional-scale models attempt to account for all emissions sources within an air basin.

The regional scale model requires inputs such as existing and future regional sources of pollutants and global meteorological data, which are generally not accessible by CEQA practitioners. Modeling of future years should consider future concentrations of air pollutants based on regional growth projections and existing programs, rules, and regulations adopted by Federal, State, and local air districts. In general, air pollution in California is decreasing as a result of Federal and State laws. Based on the air quality management plans (AQMPs) required for air districts in a nonattainment area, air quality in the air basins are anticipated to improve despite an increase in population and employment growth. Air districts are charged with assessing programs, rules, and regulations so that the increase in population and employment does not conflict with the mandate to achieve the AAQS. Because emissions forecasting and health outcomes based on the regional growth projections to achieve the AAQS is under the purview of the air districts, it should also fall on the air districts to identify the potential health outcomes associated with individual project’s criteria pollutant emissions.

The South Coast Air Quality Management District (South Coast AQMD) and the Sacramento Metropolitan Air Quality Management District (Sacramento Metropolitan AQMD) are exploring concepts for project-level analysis in light of Friant Ranch to assist local lead agencies.

- » South Coast AQMD is looking at the largest land use development project they have had in the air basin and doing a sensitivity analysis (using CAMx for photochemical grid modeling and BenMap for health outcomes) to see how locating a very large project in different parts of the air basin (Los Angeles, Inland Empire, v. Orange County) would affect the health incidence.
- » Sacramento Metropolitan AQMD is also looking at a screening process. Rather than looking at the upper end (i.e., largest project in the air basin), Sacramento Metropolitan AQMD is starting at the smallest project that exceeds the regional significance threshold and running CAMx and BenMap at different locations in the air basin to see how it affects regional health incidences.

Guidance from Air Districts would be the most effective way to incorporate meaningful information concerning regional health effects of project criteria pollutants in CEQA analyses, including guidance as to when modelling is and is not useful and meaningful, how modelling should be conducted, and how to best present additional information to inform decision-makers and the public about a project’s impacts.

So...until air districts do their part, what should we do?

PROJECTS WITH CRITERIA POLLUTANT EMISSIONS BELOW AIR DISTRICT THRESHOLDS

The Friant Ranch ruling was about providing disclosure of health effects of project emissions that were well over the significance thresholds. Since the air district thresholds are tied to a level the air districts find to not have a significant effect on ambient air quality, there should be no need to discuss the health effects of criteria pollutant emissions that are less than the significance thresholds.

PROJECTS WITH CRITERIA POLLUTANT EMISSIONS ABOVE AIR DISTRICT THRESHOLDS

Pursuant to Section 15125 of the CEQA Guidelines, the environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. For CEQA, the health effects associated with buildout of a project would occur at the project's horizon year. Because CEQA requires an analysis of the change from existing conditions, the change in effects would be associated with changes in ambient air quality and associated health outcomes between existing conditions and the project's horizon year. Therefore, in order to show how a project affects health outcomes in an air basin, the CEQA documents will need to qualitatively or quantitatively address: (1) existing ambient criteria pollutant concentrations, health incidences due to existing air quality, and health incidences overall; 2) future (without project) ambient criteria pollutant concentrations and health incidences, and 3) future (with project) ambient criteria pollutant concentrations and health incidences.

Projects with significant criteria pollutant emissions could use regional modelling and BenMap to identify health effects of project emissions, but it is likely that many (or most) projects that are not regionally substantial in scale will be shown to have minimal regional changes in PM and ozone concentrations and therefore minimal changes in associated health effects. In addition, many projects may have emissions that are less than the uncertainty level of regional air quality models and BenMap health effects modeling; in these cases, quantitative results will not be meaningful. Thus, absent better direction from air districts, CEQA lead agencies will have to determine on a case by case basis whether a qualitative discussion of health effects will suffice, or whether regional modeling, despite its limitations, should be conducted for the project.

Where a project has substantial criteria pollutant emissions when considered on a regional scale, and there is reason to believe that the modeling of ambient air quality and regional health effects would produce non-speculative results when considering modeling uncertainties, then CEQA lead agencies should use regional modelling.

Conclusion

The purpose of CEQA is to inform the public as to the potential for a project to result in one or more significant adverse effects on the environment (including health effects). A CEQA document must provide an understandable and clear environmental analysis and provide an adequate basis for decision making and public disclosure. Regional dispersion modeling of criteria pollutants and secondary pollutants like PM and ozone can provide additional information, but that information may be within the margin of modelling uncertainty and/or may not be meaningful for the public and decision-makers unless a full health context is presented in the CEQA document. Simply providing health outcomes based on use of a regional-scale model and BenMap may not satisfy the goal to provide decision-makers and the public with information that would assist in weighting the environmental consequences of a project. A CEQA document must provide an analysis that is understandable for decision making and public disclosure. Regional scale modeling may provide a technical method for this type of analysis, but it does not necessarily provide a meaningful way to connect the magnitude of a project's criteria pollutant emissions to health effects without speculation.

In order to accurately connect the dots, we urge California air districts to provide more guidance on how to identify and describe the health effects of exceeding regional criteria pollutant thresholds. The air districts are the primary agency responsible for ensuring that the air basins attain the AAQS and ensure the health and welfare of its residents relative to air quality. Because emissions forecasting and health outcomes are based on the regional growth projections to achieve the AAQS is under the purview of the air districts, it should fall on the air districts to identify the potential health outcomes associated with exceeding the CEQA thresholds for projects. The air districts should provide lead agencies with a consistent, reliable, and meaningful analytical approach to correlate specific health effects that may result from a project's criteria pollutant emissions.

Glossary

AAQS – Ambient Air Quality Standards

BenMap – Benefits Mapping and Analysis Program

CAMx – Comprehensive Air Quality Model with extensions

CMAQ – Community Multiscale Air Quality

NOx – Nitrogen Oxides

PM – Particulate Matter

SOx – Sulfur Oxides

State – California

USEPA – United States Environmental Protection Agency

S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,

Plaintiffs and Appellants,

v.

COUNTY OF FRESNO,

Defendant and Respondent,

and,

FRIANT RANCH, L.P.,

Real Party in Interest and Respondent.

SUPREME COURT
FILED

APR 13 2015

Frank A. McGuire Clerk
Deputy

After a Published Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726
Honorable Rosendo A. Pena, Jr.

**APPLICATION OF THE SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT FOR LEAVE TO FILE
BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY
AND [*PROPOSED*] BRIEF OF *AMICUS CURIAE***

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CLERK SUPREME COURT

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**TO THE HONORABLE CHIEF JUSTICE AND JUSTICES OF THE
SUPREME COURT:**

APPLICATION FOR LEAVE TO FILE *AMICUS CURIAE* BRIEF

Pursuant to Rule 8.520(f) of the California Rules of Court, the South Coast Air Quality Management District (SCAQMD) respectfully requests leave to file the attached *amicus curiae* brief. Because SCAQMD's position differs from that of either party, we request leave to submit this *amicus* brief in support of neither party.

HOW THIS BRIEF WILL ASSIST THE COURT

SCAQMD's proposed *amicus* brief takes a position on two of the issues in this case. In both instances, its position differs from that of either party. The issues are:

- 1) Does the California Environmental Quality Act (CEQA) require an environmental impact report (EIR) to correlate a project's air pollution emissions with specific levels of health impacts?
- 2) What is the proper standard of review for determining whether an EIR provides sufficient information on the health impacts caused by a project's emission of air pollutants?

This brief will assist the Court by discussing the practical realities of correlating identified air quality impacts with specific health outcomes. In short, CEQA requires agencies to provide detailed information about a project's air quality impacts that is sufficient for the public and decisionmakers to adequately evaluate the project and meaningfully understand its impacts. However, the level of analysis is governed by a rule of reason; CEQA only requires agencies to conduct analysis if it is reasonably feasible to do so.

With regard to health-related air quality impacts, an analysis that correlates a project's air pollution emissions with specific levels of health impacts will be feasible in some cases but not others. Whether it is feasible depends on a variety of factors, including the nature of the project and the nature of the analysis under consideration. The feasibility of analysis may also change over time as air districts and others develop new tools for measuring projects' air quality related health impacts. Because SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the State, it is uniquely situated to express an opinion on the extent to which the Court should hold that CEQA requires lead agencies to correlate air quality impacts with specific health outcomes.

SCAQMD can also offer a unique perspective on the question of the appropriate standard of review. SCAQMD submits that the proper standard of review for determining whether an EIR is sufficient as an informational document is more nuanced than argued by either party. In our view, this is a mixed question of fact and law. It includes determining whether additional analysis is feasible, which is primarily a factual question that should be reviewed under the substantial evidence standard. However, it also involves determining whether the omission of a particular analysis renders an EIR insufficient to serve CEQA's purpose as a meaningful, informational document. If a lead agency has not determined that a requested analysis is infeasible, it is the court's role to determine whether the EIR nevertheless meets CEQA's purposes, and courts should not defer to the lead agency's conclusions regarding the legal sufficiency of an EIR's analysis. The ultimate question of whether an EIR's analysis is "sufficient" to serve CEQA's informational purposes is predominately a question of law that courts should review *de novo*.

This brief will explain the rationale for these arguments and may assist the Court in reaching a conclusion that accords proper respect to a lead agency's factual conclusions while maintaining judicial authority over the ultimate question of what level of analysis CEQA requires.

STATEMENT OF INTEREST OF *AMICUS CURIAE*

The SCAQMD is the regional agency primarily responsible for air pollution control in the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of the Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410; Cal. Code Regs., tit. 17, § 60104.) The SCAQMD participates in the CEQA process in several ways. Sometimes it acts as a lead agency that prepares CEQA documents for projects. Other times it acts as a responsible agency when it has permit authority over some part of a project that is undergoing CEQA review by a different lead agency. Finally, SCAQMD also acts as a commenting agency for CEQA documents that it receives because it is a public agency with jurisdiction by law over natural resources affected by the project.

In all of these capacities, SCAQMD will be affected by the decision in this case. SCAQMD sometimes submits comments requesting that a lead agency perform an additional type of air quality or health impacts analysis. On the other hand, SCAQMD sometimes determines that a particular type of health impact analysis is not feasible or would not produce reliable and informative results. Thus, SCAQMD will be affected by the Court's resolution of the extent to which CEQA requires EIRs to correlate emissions and health impacts, and its resolution of the proper standard of review.

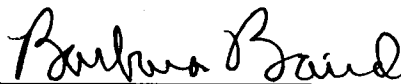
CERTIFICATION REGARDING AUTHORSHIP AND FUNDING

No party or counsel in the pending case authored the proposed amicus curiae brief in whole or in part, or made any monetary contribution intended to fund the preparation or submission of the brief. No person or entity other than the proposed *Amicus Curiae* made any monetary contribution intended to fund the preparation or submission of the brief.

Respectfully submitted,

DATED: April 3, 2015

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BRIEF OF AMICUS CURIAE

SUMMARY OF ARGUMENT

The South Coast Air Quality Management District (SCAQMD) submits that this Court should not try to establish a hard-and-fast rule concerning whether lead agencies are required to correlate emissions of air pollutants with specific health consequences in their environmental impact reports (EIR). The level of detail required in EIRs is governed by a few, core CEQA (California Environmental Quality Act) principles. As this Court has stated, “[a]n EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.” (*Laurel Heights Improvement Assn. v. Regents of the Univ of Cal.* (1988) 47 Cal.3d 376, 405 [*“Laurel Heights I”*]) Accordingly, “an agency must use its best efforts to find out and disclose all that it reasonably can.” (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428 (quoting CEQA Guidelines § 15144)¹). However, “[a]nalysis of environmental effects need not be exhaustive, but will be judged in light of what is reasonably feasible.” (*Association of Irrigated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1390; CEQA Guidelines §§ 15151, 15204(a).)

With regard to analysis of air quality related health impacts, EIRs must generally quantify a project’s pollutant emissions, but in some cases it is not feasible to correlate these emissions to specific, quantifiable health impacts (e.g., premature mortality; hospital admissions). In such cases, a general description of the adverse health impacts resulting from the pollutants at issue may be sufficient. In other cases, due to the magnitude

¹ The CEQA Guidelines are found at Cal. Code Regs., tit. 14 §§ 15000, *et seq.*

or nature of the pollution emissions, as well as the specificity of the project involved, it may be feasible to quantify health impacts. Or there may be a less exacting, but still meaningful analysis of health impacts that can feasibly be performed. In these instances, agencies should disclose those impacts.

SCAQMD also submits that whether or not an EIR complies with CEQA's informational mandates by providing sufficient, feasible analysis is a mixed question of fact and law. Pertinent here, the question of whether an EIR's discussion of health impacts from air pollution is sufficient to allow the public to understand and consider meaningfully the issues involves two inquiries: (1) Is it feasible to provide the information or analysis that a commenter is requesting or a petitioner is arguing should be required?; and (2) Even if it is feasible, is the agency relying on other policy or legal considerations to justify not preparing the requested analysis? The first question of whether an analysis is feasible is primarily a question of fact that should be judged by the substantial evidence standard. The second inquiry involves evaluating CEQA's information disclosure purposes against the asserted reasons to not perform the requested analysis. For example, an agency might believe that its EIR meets CEQA's informational disclosure standards even without a particular analysis, and therefore choose not to conduct that analysis. SCAQMD submits that this is more of a legal question, which should be reviewed de novo as a question of law.

ARGUMENT

I. RELEVANT FACTUAL AND LEGAL FRAMEWORK.

A. Air Quality Regulatory Background

The South Coast Air Quality Management District (SCAQMD) is one of the local and regional air pollution control districts and air quality

management districts in California. The SCAQMD is the regional air pollution agency for the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410, 17 Cal. Code Reg. § 60104.) The SCAQMD also includes the Coachella Valley in Riverside County (Palm Springs area to the Salton Sea). (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, <http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan>; then follow “chapter 7” hyperlink; pp 7-1, 7-3 (last visited Apr. 1, 2015).) The SCAQMD's jurisdiction includes over 16 million residents and has the worst or nearly the worst air pollution levels in the country for ozone and fine particulate matter. (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, <http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan>; then follow “Executive Summary” hyperlink p. ES-1 (last visited Apr. 1, 2015).)

Under California law, the local and regional districts are primarily responsible for controlling air pollution from all sources except motor vehicles. (Health & Saf. Code § 40000.) The California Air Resources Board (CARB), part of the California Environmental Protection Agency, is primarily responsible for controlling pollution from motor vehicles. (*Id.*) The air districts must adopt rules to achieve and maintain the state and federal ambient air quality standards within their jurisdictions. (Health & Saf. Code § 40001.)

The federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (EPA) to identify pollutants that are widely distributed and pose a threat to human health, developing a so-called “criteria” document. (42 U.S.C. § 7408; CAA § 108.) These pollutants are frequently called “criteria pollutants.” EPA must then establish “national ambient air quality standards” at levels “requisite to protect public health”,

allowing “an adequate margin of safety.” (42 U.S.C. § 7409; CAA § 109.) EPA has set standards for six identified pollutants: ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter (PM), and lead. (U.S. EPA, National Ambient Air Quality Standards (NAAQS), <http://www.epa.gov/air/criteria.html> (last updated Oct. 21, 2014).)²

Under the Clean Air Act, EPA sets emission standards for motor vehicles and “nonroad engines” (mobile farm and construction equipment, marine vessels, locomotives, aircraft, etc.). (42 U.S.C. §§ 7521, 7547; CAA §§ 202, 213.) California is the only state allowed to establish emission standards for motor vehicles and most nonroad sources; however, it may only do so with EPA's approval. (42 U.S.C. §§ 7543(b), 7543(e); CAA §§ 209(b), 209(c).) Sources such as manufacturing facilities, power plants and refineries that are not mobile are often referred to as “stationary sources.” The Clean Air Act charges state and local agencies with the primary responsibility to attain the national ambient air quality standards. (42 U.S.C. § 7401(a)(3); CAA § 101(a)(3).) Each state must adopt and implement a plan including enforceable measures to achieve and maintain the national ambient air quality standards. (42 U.S.C. § 7410; CAA § 110.) The SCAQMD and CARB jointly prepare portion of the plan for the South Coast Air Basin and submit it for approval by EPA. (Health & Saf. Code §§ 40460, et seq.)

The Clean Air Act also requires state and local agencies to adopt a permit program requiring, among other things, that new or modified “major” stationary sources use technology to achieve the “lowest achievable emission rate,” and to control minor stationary sources as

² Particulate matter (PM) is further divided into two categories: fine particulate or PM_{2.5} (particles with a diameter of less than or equal to 2.5 microns) and coarse particulate (PM₁₀) (particles with a diameter of 10 microns or less). (U.S. EPA, Particulate Matter (PM), <http://www.epa.gov/airquality/particulatepollution/> (last visited Apr. 1, 2015).)

needed to help attain the standards. (42 U.S.C. §§ 7502(c)(5), 7503(a)(2), 7410(a)(2)(C); CAA §§ 172(c)(5), 173(a)(2), 110(a)(2)(C).) The air districts implement these permit programs in California. (Health & Saf. Code §§ 42300, et seq.)

The Clean Air Act also sets out a regulatory structure for over 100 so-called “hazardous air pollutants” calling for EPA to establish “maximum achievable control technology” (MACT) for sources of these pollutants. (42 U.S.C. § 7412(d)(2); CAA § 112(d)(2).) California refers to these pollutants as “toxic air contaminants” (TACs) which are subject to two state-required programs. The first program requires “air toxics control measures” for specific categories of sources. (Health & Saf. Code § 39666.) The other program requires larger stationary sources and sources identified by air districts to prepare “health risk assessments” for impacts of toxic air contaminants. (Health & Saf. Code §§ 44320(b), 44322, 44360.) If the health risk exceeds levels identified by the district as “significant,” the facility must implement a “risk reduction plan” to bring its risk levels below “significant” levels. Air districts may adopt additional more stringent requirements than those required by state law, including requirements for toxic air contaminants. (Health & Saf. Code § 41508; *Western Oil & Gas Assn. v. Monterey Bay Unified APCD* (1989) 49 Cal.3d 408, 414.) For example, SCAQMD has adopted a rule requiring new or modified sources to keep their risks below specified levels and use best available control technology (BACT) for toxics. (SCAQMD, *Rule 1401-New Source Review of Toxic Air Contaminants*, <http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiv>; then follow “Rule 1401” hyperlink (last visited Apr. 1, 2015).)

B. The SCAQMD's Role Under CEQA

The California Environmental Quality Act (CEQA) requires public agencies to perform an environmental review and appropriate analysis for projects that they implement or approve. (Pub. Resources Code § 21080(a).) The agency with primary approval authority for a particular project is generally the “lead agency” that prepares the appropriate CEQA document. (CEQA Guidelines §§ 15050, 15051.) Other agencies having a subsequent approval authority over all or part of a project are called “responsible” agencies that must determine whether the CEQA document is adequate for their use. (CEQA Guidelines §§ 15096(c), 15381.) Lead agencies must also consult with and circulate their environmental impact reports to “trustee agencies” and agencies “with jurisdiction by law” including “authority over resources which may be affected by the project.” (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines §§ 15086(a)(3), 15073(c).) The SCAQMD has a role in all these aspects of CEQA.

Fulfilling its responsibilities to implement its air quality plan and adopt rules to attain the national ambient air quality standards, SCAQMD adopts a dozen or more rules each year to require pollution reductions from a wide variety of sources. The SCAQMD staff evaluates each rule for any adverse environmental impact and prepares the appropriate CEQA document. Although most rules reduce air emissions, they may have secondary environmental impacts such as use of water or energy or disposal of waste—e.g., spent catalyst from control equipment.³

³ The SCAQMD's CEQA program for its rules is a “Certified Regulatory Program” under which it prepares a “functionally equivalent” document in lieu of a negative declaration or EIR. (Pub. Resources Code § 21080.5, CEQA Guidelines § 15251(l).)

The SCAQMD also approves a large number of permits every year to construct new, modified, or replacement facilities that emit regulated air pollutants. The majority of these air pollutant sources have already been included in an earlier CEQA evaluation for a larger project, are currently being evaluated by a local government as lead agency, or qualify for an exemption. However, the SCAQMD sometimes acts as lead agency for major projects where the local government does not have a discretionary approval. In such cases, SCAQMD prepares and certifies a negative declaration or environmental impact report (EIR) as appropriate.⁴ SCAQMD evaluates perhaps a dozen such permit projects under CEQA each year. SCAQMD is often also a “responsible agency” for many projects since it must issue a permit for part of the projects (e.g., a boiler used to provide heat in a commercial building). For permit projects evaluated by another lead agency under CEQA, SCAQMD has the right to determine that the CEQA document is inadequate for its purposes as a responsible agency, but it may not do so because its permit program already requires all permitted sources to use the best available air pollution control technology. (SCAQMD, *Rule 1303(a)(1) – Requirements*, <http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiii>; then follow “Rule 1303” hyperlink (last visited Apr. 1, 2015).)

Finally, SCAQMD receives as many as 60 or more CEQA documents each month (around 500 per year) in its role as commenting agency or an agency with “jurisdiction by law” over air quality—a natural resource affected by the project. (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines § 15366(a)(3).) The SCAQMD staff provides comments on as many as 25 or 30 such documents each month.

⁴ The SCAQMD's permit projects are not included in its Certified Regulatory Program, and are evaluated under the traditional local government CEQA analysis. (Pub. Resources Code §§ 21150-21154.)

(SCAQMD Governing Board Agenda, Apr. 3, 2015, Agenda Item 16, Attachment A, <http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-april-3-2015>; then follow “16. Lead Agency Projects and Environmental Documents Received by SCAQMD” hyperlink (last visited Apr. 1, 2015).) Of course, SCAQMD focuses its commenting efforts on the more significant projects.

Typically, SCAQMD comments on the adequacy of air quality analysis, appropriateness of assumptions and methodology, and completeness of the recommended air quality mitigation measures. Staff may comment on the need to prepare a health risk assessment detailing the projected cancer and noncancer risks from toxic air contaminants resulting from the project, particularly the impacts of diesel particulate matter, which CARB has identified as a toxic air contaminant based on its carcinogenic effects. (California Air Resources Board, Resolution 98-35, Aug. 27, 1998, <http://www.arb.ca.gov/regact/diesltac/diesltac.htm>; then follow Resolution 98-35 hyperlink (last visited Apr. 1, 2015).) Because SCAQMD already requires new or modified stationary sources of toxic air contaminants to use the best available control technology for toxics and to keep their risks below specified levels, (SCAQMD Rule 1401, *supra*, note 15), the greatest opportunity to further mitigate toxic impacts through the CEQA process is by reducing emissions—particularly diesel emissions—from vehicles.

II. THIS COURT SHOULD NOT SET A HARD-AND-FAST RULE CONCERNING THE EXTENT TO WHICH AN EIR MUST CORRELATE A PROJECT’S EMISSION OF POLLUTANTS WITH RESULTING HEALTH IMPACTS.

Numerous cases hold that courts do not review the correctness of an EIR’s conclusions but rather its sufficiency as an informative document. (*Laurel Heights 1*, *supra*, 47 Cal.3d at p. 392; *Citizens of Goleta Valley v.*

Bd. of Supervisors (1990) 52 Cal.3d 553, 569; *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1197.)

As stated by the Court of Appeal in this case, where an EIR has addressed a topic, but the petitioner claims that the information provided about that topic is insufficient, courts must “draw[] a line that divides *sufficient* discussions from those that are *insufficient*.” (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) The Court of Appeal readily admitted that “[t]he terms themselves – sufficient and insufficient – provide little, if any, guidance as to where the line should be drawn. They are simply labels applied once the court has completed its analysis.” (*Id.*)

The CEQA Guidelines, however, provide guidance regarding what constitutes a sufficient discussion of impacts. Section 15151 states that “the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible.” Case law reflects this: “Analysis of environmental effects need not be exhaustive, but will be judged in light of what was reasonably feasible.” (*Association of Irrigated Residents v. County of Madera, supra*, 107 Cal.App.4th at p. 1390; see also CEQA Guidelines § 15204(a).)

Applying this test, this Court cannot realistically establish a hard-and-fast rule that an analysis correlating air pollution impacts of a project to quantified resulting health impacts is always required, or indeed that it is never required. Simply put, in some cases such an analysis will be “feasible”; in some cases it will not.

For example, air pollution control districts often require a proposed new source of toxic air contaminants to prepare a “health risk assessment” before issuing a permit to construct. District rules often limit the allowable cancer risk the new source may cause to the “maximally exposed individual” (worker and residence exposures). (*See, e.g.*, SCAQMD Rule 1401(c)(8); 1401(d)(1), *supra* note 15.) In order to perform this analysis, it

is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors (worker and residence). (SCAQMD, *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588)*, pp. 11-16; (last visited Apr. 1, 2015) <http://www.aqmd.gov/home/library/documents-support-material>; "Guidelines" hyperlink; AB2588; then follow AB2588 Risk Assessment Guidelines hyperlink.)

Thus, it is feasible to determine the health risk posed by a new gas station locating at an intersection in a mixed use area, where receptor locations are known. On the other hand, it may not be feasible to perform a health risk assessment for airborne toxics that will be emitted by a generic industrial building that was built on "speculation" (i.e., without knowing the future tenant(s)). Even where a health risk assessment can be prepared, however, the resulting maximum health risk value is only a calculation of risk—it does not necessarily mean anyone will contract cancer as a result of the project.

In order to find the "cancer burden" or expected additional cases of cancer resulting from the project, it is also necessary to know the numbers and location of individuals living within the "zone of impact" of the project: i.e., those living in areas where the projected cancer risk from the project exceeds one in a million. (SCAQMD, Health Risk Assessment Summary form, <http://www.aqmd.gov/home/forms>; filter by "AB2588" category; then "Health Risk Assessment" hyperlink (last visited Apr. 1, 2015).) The affected population is divided into bands of those exposed to at least 1 in a million risk, those exposed to at least 10 in a million risk, etc. up to those exposed at the highest levels. (*Id.*) This data allows agencies to calculate an approximate number of additional cancer cases expected from

the project. However, it is not possible to predict which particular individuals will be affected.

For the so-called criteria pollutants⁵, such as ozone, it may be more difficult to quantify health impacts. Ozone is formed in the atmosphere from the chemical reaction of the nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. (U.S. EPA, Ground Level Ozone, <http://www.epa.gov/airquality/ozonepollution/> (last updated Mar. 25, 2015).) It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources. (U.S. EPA, *Guideline on Ozone Monitoring Site Selection* (Aug. 1998) EPA-454/R-98-002 § 5.1.2, <http://www.epa.gov/ttnamti1/archive/cpreldoc.html> (last visited Apr. 1, 2015).) NO_x and VOC are known as “precursors” of ozone.

Scientifically, health effects from ozone are correlated with increases in the ambient level of ozone in the air a person breathes. (U.S. EPA, *Health Effects of Ozone in the General Population*, Figure 9, <http://www.epa.gov/apti/ozonehealth/population.html#levels> (last visited Apr. 1, 2015).) However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire region. For example, the SCAQMD's 2012 AQMP showed that reducing NO_x by 432 tons per day (157,680 tons/year) and reducing VOC by 187 tons per day (68,255 tons/year) would reduce ozone levels at the SCAQMD's monitor site with the highest levels by only 9 parts per billion. (South Coast Air Quality Management District, *Final 2012 AQMP (February 2013)*, <http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan>; then follow “Appendix V: Modeling & Attainment Demonstrations” hyperlink,

⁵ See discussion of types of pollutants, *supra*, Part I.A.

pp. v-4-2, v-7-4, v-7-24.) SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by NO_x or VOC emissions from relatively small projects.

On the other hand, this type of analysis may be feasible for projects on a regional scale with very high emissions of NO_x and VOCs, where impacts are regional. For example, in 2011 the SCAQMD performed a health impact analysis in its CEQA document for proposed Rule 1315, which authorized various newly-permitted sources to use offsets from the districts “internal bank” of emission reductions. This CEQA analysis accounted for essentially *all* the increases in emissions due to new or modified sources in the District between 2010 and 2030.⁶ The SCAQMD was able to correlate this very large emissions increase (e.g., 6,620 pounds per day NO_x (1,208 tons per year), 89,180 pounds per day VOC (16,275 tons per year)) to expected health outcomes from ozone and particulate matter (e.g., 20 premature deaths per year and 89,947 school absences in the year 2030 due to ozone).⁷ (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System* (see hyperlink in fn 6) at p. 4.1-35, Table 4.1-29.)

⁶ (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, Attachment G, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System, Vol. 1, p.4.0-6*, <http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-february-4-2011>; the follow “26. Adopt Proposed Rule 1315 – Federal New Source Review Tracking System” (last visited April 1, 2015).)

⁷ The SCAQMD was able to establish the location of future NO_x and VOC emissions by assuming that new projects would be built in the same locations and proportions as existing stationary sources. This CEQA document was upheld by the Los Angeles County Superior Court in *Natural Res. Def. Council v SCAQMD*, Los Angeles Superior Court No. BS110792).

However, a project emitting only 10 tons per year of NO_x or VOC is small enough that its regional impact on ambient ozone levels may not be detected in the regional air quality models that are currently used to determine ozone levels. Thus, in this case it would not be feasible to directly correlate project emissions of VOC or NO_x with specific health impacts from ozone. This is in part because ozone formation is not linearly related to emissions. Ozone impacts vary depending on the location of the emissions, the location of other precursor emissions, meteorology and seasonal impacts, and because ozone is formed some time later and downwind from the actual emission. (EPA Guideline on Ozone Monitoring Site Selection (Aug. 1998) EPA-454/R-98-002, § 5.1.2; <https://www.epa.gov/ttnamti1/archive/cpreldoc.html>; then search “Guideline on Ozone Monitoring Site Selection” click on pdf) (last viewed Apr. 1, 2015).)

SCAQMD has set its CEQA “significance” threshold for NO_x and VOC at 10 tons per year (expressed as 55 lb/day). (SCAQMD, *Air Quality Analysis Handbook*, <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook>; then follow “SCAQMD Air Quality Significance Thresholds” hyperlink (last visited Apr. 1, 2015).) This is because the federal Clean Air Act defines a “major” stationary source for “extreme” ozone nonattainment areas such as SCAQMD as one emitting 10 tons/year. (42 U.S.C. §§ 7511a(e), 7511a(f); CAA §§ 182(e), 182(f).) Under the Clean Air Act, such sources are subject to enhanced control requirements (42 U.S.C. §§ 7502(c)(5), 7503; CAA §§ 172(c)(5), 173), so SCAQMD decided this was an appropriate threshold for making a CEQA “significance” finding and requiring feasible mitigation. Essentially, SCAQMD takes the position that a source that emits 10 tons/year of NO_x or VOC would contribute cumulatively to ozone formation. Therefore, lead agencies that use SCAQMD’s thresholds of significance may determine

that many projects have “significant” air quality impacts and must apply all feasible mitigation measures, yet will not be able to precisely correlate the project to quantifiable health impacts, unless the emissions are sufficiently high to use a regional modeling program.

In the case of particulate matter (PM_{2.5})⁸, another “criteria” pollutant, SCAQMD staff is aware of two possible methods of analysis. SCAQMD used regional modeling to predict expected health impacts from its proposed Rule 1315, as mentioned above. Also, the California Air Resources Board (CARB) has developed a methodology that can predict expected mortality (premature deaths) from large amounts of PM_{2.5}. (California Air Resources Board, *Health Impacts Analysis: PM Premature Death Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort_arch.htm (last reviewed Jan. 19, 2012).) SCAQMD used the CARB methodology to predict impacts from three very large power plants (e.g., 731-1837 lbs/day). (Final Environmental Assessment for Rule 1315, *supra*, pp 4.0-12, 4.1-13, 4.1-37 (e.g., 125 premature deaths in the entire SCAQMD in 2030), 4.1-39 (0.05 to 1.77 annual premature deaths from power plants.) Again, this project involved large amounts of additional PM_{2.5} in the District, up to 2.82 tons/day (5,650 lbs/day of PM_{2.5}, or, or 1029 tons/year. (*Id.* at table 4.1-4, p. 4.1-10.)

However, the primary author of the CARB methodology has reported that this PM_{2.5} health impact methodology is not suited for small projects and may yield unreliable results due to various uncertainties.⁹ (SCAQMD, *Final Subsequent Mitigated Negative Declaration for: Warren*

⁸ SCAQMD has not attained the latest annual or 24-hour national ambient air quality standards for “PM_{2.5}” or particulate matter less than 2.5 microns in diameter.

⁹ Among these uncertainties are the representativeness of the population used in the methodology, and the specific source of PM and the corresponding health impacts. (*Id.* at p. 2-24.)

E&P, Inc. WTU Central Facility, New Equipment Project (certified July 19, 2011), <http://www.aqmd.gov/home/library/documents-support-material/lead-agency-permit-projects/permit-project-documents---year-2011>; then follow “Final Subsequent Mitigated Negative Declaration for Warren E&P Inc. WTU Central Facility, New Equipment Project” hyperlink, pp. 2-22, 2-23 (last visited Apr. 1, 2015).) Therefore, when SCAQMD prepared a CEQA document for the expansion of an existing oil production facility, with very small PM_{2.5} increases (3.8 lb/day) and a very small affected population, staff elected not to use the CARB methodology for using estimated PM_{2.5} emissions to derive a projected premature mortality number and explained why it would be inappropriate to do so. (*Id.* at pp 2-22 to 2-24.) SCAQMD staff concluded that use of this methodology for such a small source could result in unreliable findings and would not provide meaningful information. (*Id.* at pp. 2-23, 2-25.) This CEQA document was not challenged in court.

In the above case, while it may have been technically possible to plug the data into the methodology, the results would not have been reliable or meaningful. SCAQMD believes that an agency should not be required to perform analyses that do not produce reliable or meaningful results. This Court has already held that an agency may decline to use even the “normal” “existing conditions” CEQA baseline where to do so would be misleading or without informational value. (*Neighbors for Smart Rail v. Exposition Metro Line* (2013) 57 Cal.4th 439, 448, 457.) The same should be true for a decision that a particular study or analysis would not provide reliable or meaningful results.¹⁰

¹⁰ Whether a particular study would result in “informational value” is a part of deciding whether it is “feasible.” CEQA defines “feasible” as “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and

Therefore, it is not possible to set a hard-and-fast rule on whether a correlation of air quality impacts with specific quantifiable health impacts is required in all cases. Instead, the result turns on whether such an analysis is reasonably feasible in the particular case.¹¹ Moreover, what is reasonably feasible may change over time as scientists and regulatory agencies continually seek to improve their ability to predict health impacts. For example, CARB staff has been directed by its Governing Board to reassess and improve the methodology for estimating premature deaths. (California Air Resources Board, *Health Impacts Analysis: PM Mortality Relationship*, <http://www.arb.ca.gov/research/health/pm-mort/pm-mort.htm> (last reviewed Dec. 29, 2010).) This factor also counsels against setting any hard-and-fast rule in this case.

III. THE QUESTION OF WHETHER AN EIR CONTAINS SUFFICIENT ANALYSIS TO MEET CEQA'S REQUIREMENTS IS A MIXED QUESTION OF FACT AND LAW GOVERNED BY TWO DIFFERENT STANDARDS OF REVIEW.

A. Standard of Review for Feasibility Determination and Sufficiency as an Informative Document

A second issue in this case is whether courts should review an EIR's informational sufficiency under the "substantial evidence" test as argued by Friant Ranch or the "independent judgment" test as argued by Sierra Club.

technological factors." (Pub. Resources Code § 21061.1.) A study cannot be "accomplished in a *successful* manner" if it produces unreliable or misleading results.

¹¹ In this case, the lead agency did not have an opportunity to determine whether the requested analysis was feasible because the comment was non-specific. Therefore, SCAQMD suggests that this Court, after resolving the legal issues in the case, direct the Court of Appeal to remand the case to the lead agency for a determination of whether the requested analysis is feasible. Because Fresno County, the lead agency, did not seek review in this Court, it seems likely that the County has concluded that at least some level of correlation of air pollution with health impacts is feasible.

As this Court has explained, “a reviewing court must adjust its scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts.” (*Vineyard Area Citizens v. City of Rancho Cordova*, *supra*, 40 Cal.4th at 435.) For questions regarding compliance with proper procedure or other legal questions, courts review an agency’s action de novo under the “independent judgment” test. (*Id.*) On the other hand, courts review factual disputes only for substantial evidence, thereby “accord[ing] greater deference to the agency’s substantive factual conclusions.” (*Id.*)

Here, Friant Ranch and Sierra Club agree that the case involves the question of whether an EIR includes sufficient information regarding a project’s impacts. However, they disagree on the proper standard of review for answering this question: Sierra Club contends that courts use the independent judgment standard to determine whether an EIR’s analysis is sufficient to meet CEQA’s informational purposes,¹² while Friant Ranch contends that the substantial evidence standard applies to this question.

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¹² Sierra Club acknowledges that courts use the substantial evidence standard when reviewing predicate factual issues, but argues that courts ultimately decide as a matter of law what CEQA requires. (Answering Brief, pp. 14, 23.)

SCAQMD submits that the issue is more nuanced than either party contends. We submit that, whether a CEQA document includes sufficient analysis to satisfy CEQA's informational mandates is a mixed question of fact and law,¹³ containing two levels of inquiry that should be judged by different standards.¹⁴

The state CEQA Guidelines set forth standards for the adequacy of environmental analysis. Guidelines Section 15151 states:

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

In this case, the basic question is whether the underlying analysis of air quality impacts made the EIR "sufficient" as an informative document. However, whether the EIR's analysis was sufficient is judged in light of what was reasonably feasible. This represents a mixed question of fact and law that is governed by two different standards of review.

¹³ Friant Ranch actually states that the claim that an EIR lacks sufficient relevant information is, "most properly thought of as raising mixed questions of fact and law." (Opening Brief, p. 27.) However, the remainder of its argument claims that the court should apply the substantial evidence standard of review to all aspects of the issue.

¹⁴ Mixed questions of fact and law issues may implicate predominantly factual subordinate questions that are reviewed under the substantial evidence test even though the ultimate question may be reviewed by the independent judgment test. *Crocker National Bank v. City and County of San Francisco* (1989) 49 Cal.3d 881, 888-889.

SCAQMD submits that an EIR's sufficiency as an informational document is ultimately a legal question that courts should determine using their independent judgment. This Court's language in *Laurel Heights I* supports this position. As this Court explained: "The court does not pass upon the correctness of the EIR's environmental conclusions, but only upon its *sufficiency as an informative document.*" (*Laurel Heights I, supra*, 47 Cal.3d at 392-393) (emphasis added.) As described above, the Court in *Vineyard Area Citizens v. City of Rancho Cordova, supra*, 40 Cal.4th at 431, also used its independent judgment to determine what level of analysis CEQA requires for water supply impacts. The Court did not defer to the lead agency's opinion regarding the law's requirements; rather, it determined for itself what level of analysis was necessary to meet "[t]he law's informational demands." (*Id.* at p. 432.) Further, existing case law also holds that where an agency fails to comply with CEQA's information disclosure requirements, the agency has "failed to proceed in the manner required by law." (*Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 118.)

However, whether an EIR satisfies CEQA's requirements depends in part on whether it was reasonably feasible for an agency to conduct additional or more thorough analysis. EIRs must contain "a detailed statement" of a project's impacts (Pub. Res. Code § 21061), and an agency must "use its best efforts to find out and disclose all that it reasonably can." (CEQA Guidelines § 15144.) Nevertheless, "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." (CEQA Guidelines § 15151.)

SCAQMD submits that the question of whether additional analysis or a particular study suggested by a commenter is "feasible" is generally a question of fact. Courts have already held that whether a particular alternative is "feasible" is reviewed by the substantial evidence test.

(*Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 598-99; *Center for Biological Diversity v. County of San Bernardino* (2010) 185 Cal.App.4th 866, 883.) Thus, if a lead agency determines that a particular study or analysis is infeasible, that decision should generally be judged by the substantial evidence standard. However, SCAQMD urges this Court to hold that lead agencies must explain the basis of any determination that a particular analysis is infeasible in the EIR itself. An EIR must discuss information, including issues related to the feasibility of particular analyses “in sufficient detail to enable meaningful participation and criticism by the public. ‘[W]hatever is required to be considered in an EIR must be in that formal report; what any official might have known from other writings or oral presentations cannot supply what is lacking in the report.’” (*Laurel Heights I, supra*, 47 Cal.3d at p. 405 (quoting *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831) (discussing analysis of alternatives).) The evidence on which the determination is based should also be summarized in the EIR itself, with appropriate citations to reference materials if necessary. Otherwise commenting agencies such as SCAQMD would be forced to guess where the lead agency's evidence might be located, thus thwarting effective public participation.

Moreover, if a lead agency determines that a particular study or analysis would not result in reliable or useful information and for that reason is not feasible, that determination should be judged by the substantial evidence test. (See *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority, supra*, 57 Cal.4th 439, 448, 457:

whether “existing conditions” baseline would be misleading or uninformative judged by substantial evidence standard.¹⁵)

If the lead agency’s determination that a particular analysis or study is not feasible is supported by substantial evidence, then the agency has not violated CEQA’s information disclosure provisions, since it would be infeasible to provide additional information. This Court’s decisions provide precedent for such a result. For example, this Court determined that the issue of whether the EIR should have included a more detailed discussion of future herbicide use was resolved because substantial evidence supported the agency’s finding that “the precise parameters of future herbicide use could not be predicted.” *Ebbetts Pass Forest Watch v. California Dept. of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 955.

Of course, SCAQMD expects that courts will continue to hold lead agencies to their obligations to consult with, and not to ignore or misrepresent, the views of sister agencies having special expertise in the area of air quality. (*Berkeley Keep Jets Over the Bay v. Board of Port Commissioners* (2007) 91 Cal.App.4th 1344, 1364 n.11.) In some cases, information provided by such expert agencies may establish that the purported evidence relied on by the lead agency is not in fact “substantial”. (*Id.* at pp. 1369-1371.)

In sum, courts retain ultimate responsibility to determine what CEQA requires. However, the law does not require exhaustive analysis, but only what is reasonably feasible. Agencies deserve deference for their factual determinations regarding what type of analysis is reasonably feasible. On the other hand, if a commenter requests more information, and the lead agency declines to provide it but does *not* determine that the

¹⁵ The substantial evidence standard recognizes that the courts "have neither the resources nor the scientific expertise" to weigh conflicting evidence on technical issues. (*Laurel Heights I, supra*, 47 Cal.3d 376, 393.)

requested study or analysis would be infeasible, misleading or uninformative, the question becomes whether the omission of that analysis renders the EIR inadequate to satisfy CEQA's informational purposes. (*Id.* at pp. 1370-71.) Again, this is predominantly a question of law and should be judged by the de novo or independent judgment standard of review. Of course, this Court has recognized that a "project opponent or reviewing court can always imagine some additional study or analysis that might provide helpful information. It is not for them to design the EIR. That further study...might be helpful does not make it necessary." (*Laurel Heights I, supra*, 47 Cal.3d 376, 415 – see also CEQA Guidelines § 15204(a) [CEQA "does not require a lead agency to conduct every test. . . recommended or demanded by commenters."].) Courts, then, must adjudicate whether an omission of particular information renders an EIR inadequate to serve CEQA's informational purposes.¹⁶

¹⁶ We recognize that there is case law stating that the substantial evidence standard applies to "challenges to the scope of an EIR's analysis of a topic" as well as the methodology used and the accuracy of the data relied on in the document "because these types of challenges involve factual questions." (*Bakersfield Citizens for Local Control v. City of Bakersfield, supra*, 124 Cal.App.4th 1184, 1198, and cases relied on therein.) However, we interpret this language to refer to situations where the question of the scope of the analysis really is factual—that is, where it involves whether further analysis is feasible, as discussed above. This interpretation is supported by the fact that the *Bakersfield* court expressly rejected an argument that a claimed "omission of information from the EIR should be treated as inquiries whether there is substantial evidence supporting the decision approving the project." *Bakersfield, supra*, 124 Cal.App.4th at p. 1208. And the *Bakersfield* court ultimately decided that the lead agency must analyze the connection between the identified air pollution impacts and resulting health impacts, even though the EIR already included some discussion of air-pollution-related respiratory illnesses. *Bakersfield, supra*, 124 Cal.App.4th at p. 1220. Therefore, the court must not have interpreted this question as one of the "scope of the analysis" to be judged by the substantial evidence standard.

B. Friant Ranch's Rationale for Rejecting the Independent Judgment Standard of Review is Unsupported by Case Law.

In its brief, Friant Ranch makes a distinction between cases where a required CEQA topic is not discussed at all (to be reviewed by independent judgment as a failure to proceed in the manner required by law) and cases where a topic is discussed, but the commenter claims the information provided is insufficient (to be judged by the substantial evidence test). (Opening Brief, pp. 13-17.) The Court of Appeal recognized these two types of cases, but concluded that both raised questions of law. (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) We believe the distinction drawn by Friant Ranch is unduly narrow, and inconsistent with cases which have concluded that CEQA documents are insufficient. In many instances, CEQA's requirements are stated broadly, and the courts must interpret the law to determine what level of analysis satisfies CEQA's mandate for providing meaningful information, even though the EIR discusses the issue to some extent.

For example, the CEQA Guidelines require discussion of the existing environmental baseline. In *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 954-955, the lead agency had discussed the environmental baseline by describing historic month-end water levels in the affected lakes. However, the court held that this was not an adequate baseline discussion because it failed to discuss the timing and amounts of past actual water releases, to allow comparison with the proposed project. The court evidently applied the independent judgment test to its decision, even though the agency discussed the issue to some extent.

Likewise, in *Vineyard Area Citizens* (2007) 40 Cal.4th 412, this Court addressed the question of whether an EIR's analysis of water supply impacts complied with CEQA. The parties agreed that the EIR was required to analyze the effects of providing water to the development project, "and that in order to do so the EIR had, in some manner, to identify the planned sources of that water." (*Vineyard Area Citizens, supra*, at p. 428.) However, the parties disagreed as to the level of detail required for this analysis and "what level of uncertainty regarding the availability of water supplies can be tolerated in an EIR" (*Id.*) In other words, the EIR had analyzed water supply impacts for the project, but the petitioner claimed that the analysis was insufficient.

This Court noted that neither CEQA's statutory language or the CEQA Guidelines specifically addressed the question of how precisely an EIR must discuss water supply impacts. (*Id.*) However, it explained that CEQA "states that '[w]hile foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.'" (*Id.*, [Guidelines § 15144].) The Court used this general principle, along with prior precedent, to elucidate four "principles for analytical adequacy" that are necessary in order to satisfy "CEQA's informational purposes." (*Vineyard Area Citizens, supra*, at p. 430.) The Court did not defer to the agency's determination that the EIR's analysis of water supply impacts was sufficient. Rather, this Court used its independent judgment to determine for itself the level of analysis required to satisfy CEQA's fundamental purposes. (*Vineyard Area Citizens, supra*, at p. 441: an EIR does not serve its purposes where it neglects to explain likely sources of water and "... leaves long term water supply considerations to later stages of the project.")

Similarly, the CEQA Guidelines require an analysis of noise impacts of the project. (Appendix G, “Environmental Checklist Form.”¹⁷) In *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1123, the court held that the lead agency’s noise impact analysis was inadequate even though it had addressed the issue and concluded that the increase would not be noticeable. If the court had been using the substantial evidence standard, it likely would have upheld this discussion.

Therefore, we do not agree that the issue can be resolved on the basis suggested by Friant Ranch, which would apply the substantial evidence standard to *every* challenge to an analysis that addresses a required CEQA topic. This interpretation would subvert the courts’ proper role in interpreting CEQA and determining what the law requires.

Nor do we agree that the Court of Appeal in this case violated CEQA’s prohibition on courts interpreting its provisions “in a manner which imposes procedural or substantive requirements beyond those explicitly stated in this division or in the state guidelines.” (Pub. Resources Code § 21083.1.) CEQA requires an EIR to describe *all* significant impacts of the project on the environment. (Pub. Resources Code § 21100(b)(2); *Vineyard Area Citizens, supra*, at p. 428.) Human beings are part of the environment, so CEQA requires EIRs to discuss a project’s significant impacts on human health. However, except in certain particular circumstances,¹⁸ neither the CEQA statute nor Guidelines specify the precise level of analysis that agencies must undertake to satisfy the law’s requirements. (see, e.g., CEQA Guidelines § 15126.2(a) [EIRs must describe “health and safety problems caused by {a project’s} physical changes”].) Accordingly, courts must interpret CEQA as a whole to

¹⁷ Association of Environmental Professionals, 2015 CEQA Statute and Guidelines (2015) p.287.

¹⁸ E.g., Pub. Resources Code § 21151.8(C)(3)(B)(iii) (requiring specific type of health risk analysis for siting schools).

determine whether a particular EIR is sufficient as an informational document. A court determining whether an EIR's discussion of human health impacts is legally sufficient does not constitute imposing a new substantive requirement.¹⁹ Under Friant Ranch's theory, the above-referenced cases holding a CEQA analysis inadequate would have violated the law. This is not a reasonable interpretation.

IV. COURTS MUST SCRUPULOUSLY ENFORCE THE REQUIREMENTS THAT LEAD AGENCIES CONSULT WITH AND OBTAIN COMMENTS FROM AIR DISTRICTS

Courts must "scrupulously enforce" CEQA's legislatively mandated requirements. (*Vineyard Area Citizens, supra*, 40 Cal.4th 412, 435.) Case law has firmly established that lead agencies must consult with the relevant air pollution control district before conducting an initial study, and must provide the districts with notice of the intention to adopt a negative declaration (or EIR). (*Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 958.) As *Schenck* held, neither publishing the notice nor providing it to the State Clearinghouse was a sufficient substitute for sending notice directly to the air district. (*Id.*) Rather, courts "must be satisfied that [administrative] agencies have fully complied with the procedural requirements of CEQA, since only in this way can the important public purposes of CEQA be protected from subversion." *Schenck*, 198 Cal.App.4th at p. 959 (citations omitted).²⁰

¹⁹ We submit that Public Resources Code Section 21083.1 was intended to prevent courts from, for example, holding that an agency must analyze economic impacts of a project where there are no resulting environmental impacts (see CEQA Guidelines § 15131), or imposing new procedural requirements, such as imposing additional public notice requirements not set forth in CEQA or the Guidelines.

²⁰ Lead agencies must consult air districts, as public agencies with jurisdiction by law over resources affected by the project, *before* releasing an EIR. (Pub. Resources Code §§ 21104(a); 21153.) Moreover, air

Lead agencies should be aware, therefore, that failure to properly seek and consider input from the relevant air district constitutes legal error which may jeopardize their project approvals. For example, the court in *Fall River Wild Trout Foundation v. County of Shasta*, (1999) 70 Cal.App.4th 482, 492 held that the failure to give notice to a trustee agency (Department of Fish and Game) was prejudicial error requiring reversal. The court explained that the lack of notice prevented the Department from providing any response to the CEQA document. (*Id.* at p. 492.) It therefore prevented relevant information from being presented to the lead agency, which was prejudicial error because it precluded informed decision-making. (*Id.*)²¹

districts should be considered “state agencies” for purposes of the requirement to consult with “trustee agencies” as set forth in Public Resources Code § 20180.3(a). This Court has long ago held that the districts are not mere “local agencies” whose regulations are superseded by those of a state agency regarding matters of statewide concern, but rather have concurrent jurisdiction over such issues. (*Orange County Air Pollution Control District v. Public Util. Com.* (1971) 4 Cal.3d 945, 951, 954.) Since air pollution is a matter of statewide concern, *Id.* at 952, air districts should be entitled to trustee agency status in order to ensure that this vital concern is adequately protected during the CEQA process.

²¹ In *Schenck*, the court concluded that failure to give notice to the air district was not prejudicial, but this was partly because the trial court had already corrected the error before the case arrived at the Court of Appeal. The trial court issued a writ of mandate requiring the lead agency to give notice to the air district. The air district responded by concurring with the lead agency that air impacts were not significant. (*Schenck*, 198 Cal.App.4th 949, 960.) We disagree with the *Schenck* court that the failure to give notice to the air district would not have been prejudicial (even in the absence of the trial court writ) merely because the lead agency purported to follow the air district’s published CEQA guidelines for significance. (*Id.*, 198 Cal.App.4th at p. 960.) In the first place, absent notice to the air district, it is uncertain whether the lead agency properly followed those guidelines. Moreover, it is not realistic to expect that an air district’s published guidelines would necessarily fully address all possible air-quality related issues that can arise with a CEQA project, or that those

Similarly, lead agencies must obtain additional information requested by expert agencies, including those with jurisdiction by law, if that information is necessary to determine a project's impacts. (*Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236-37.) Approving a project without obtaining that information constitutes a failure to proceed in the manner prescribed by CEQA. (*Id.* at p. 1236.)

Moreover, a lead agency can save significant time and money by consulting with the air district early in the process. For example, the lead agency can learn what the air district recommends as an appropriate analysis on the facts of its case, including what kinds of health impacts analysis may be available, and what models are appropriate for use. This saves the lead agency from the need to do its analysis all over again and possibly needing to recirculate the document after errors are corrected, if new significant impacts are identified. (CEQA Guidelines § 15088.5(a).) At the same time, the air district's expert input can help the lead agency properly determine whether another commenter's request for additional analysis or studies is reasonable or feasible. Finally, the air district can provide input on what mitigation measures would be feasible and effective.

Therefore, we suggest that this Court provide guidance to lead agencies reminding them of the importance of consulting with the relevant air districts regarding these issues. Otherwise, their feasibility decisions may be vulnerable to air district evidence that establishes that there is no substantial evidence to support the lead agency decision not to provide specific analysis. (*See Berkeley Keep Jets Over the Bay, supra*, 91 Cal.App.4th 1344, 1369-1371.)

guidelines would necessarily be continually modified to reflect new developments. Therefore we believe that, had the trial court not already ordered the lead agency to obtain the air district's views, the failure to give notice would have been prejudicial, as in *Fall River, supra*, 70 Cal.App.4th 482, 492.

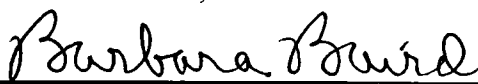
CONCLUSION

The SCAQMD respectfully requests this Court *not* to establish a hard-and-fast rule concerning whether CEQA requires a lead agency to correlate identified air quality impacts of a project with resulting health outcomes. Moreover, the question of whether an EIR is “sufficient as an informational document” is a mixed question of fact and law containing two levels of inquiry. Whether a particular proposed analysis is feasible is predominantly a question of fact to be judged by the substantial evidence standard of review. Where the requested analysis is feasible, but the lead agency relies on legal or policy reasons not to provide it, the question of whether the EIR is nevertheless sufficient as an informational document is predominantly a question of law to be judged by the independent judgment standard of review.

Respectfully submitted,

DATED: April 3, 2015

SOUTH COAST AIR QUALITY
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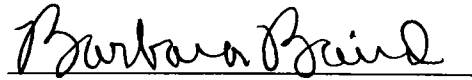
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CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.520(c)(1) of the California Rules of Court, I hereby certify that this brief contains 8,476 words, including footnotes, but excluding the Application, Table of Contents, Table of Authorities, Certificate of Service, this Certificate of Word Count, and signature blocks. I have relied on the word count of the Microsoft Word Vista program used to prepare this Certificate.

DATED: April 3, 2015

Respectfully submitted,


Barbara Baird

PROOF OF SERVICE

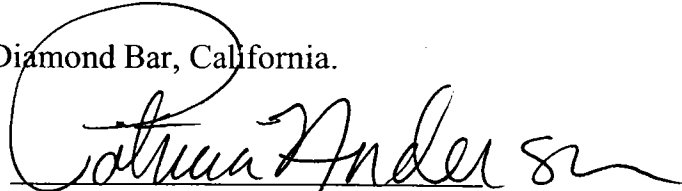
I am employed in the County of Los Angeles, California. I am over the age of 18 years and not a party to the within action. My business address is 21865 Copley Drive, Diamond Bar, California 91765.

On April 3, 2015 I served true copies of the following document(s) described as **APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND [PROPOSED] BRIEF OF *AMICUS CURIAE*** by placing a true copy of the foregoing document(s) in a sealed envelope addressed as set forth on the attached service list as follows:

BY MAIL: I enclosed the document(s) in a sealed envelope or package addressed to the persons at the addresses listed in the Service List and placed the envelope for collection and mailing following our ordinary business practices. I am readily familiar with this District's practice for collection and processing of correspondence for mailing. Under that practice, the correspondence would be deposited with the United States Postal Service, with postage thereon fully prepaid at Diamond Bar, California, in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on April 3, 2015 at Diamond Bar, California.


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SUPREME COURT COPY

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

SUPREME COURT
FILED

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Frank A. McGuire, Clerk
Deputy

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

**APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF
SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN
SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND
REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.**

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APPLICATION

Pursuant to California Rules of Court 8.520(f)(1), proposed Amicus Curiae San Joaquin Valley Unified Air Pollution Control District hereby requests permission from the Chief Justice to file an amicus brief in support of Defendant and Respondent, County of Fresno, and Defendant and Real Parties in Interest Friant Ranch, L.P. Pursuant to Rule 8.520(f)(5) of the California Rules of Court, the proposed amicus curiae brief is combined with this Application. The brief addresses the following issue certified by this Court for review:

Is an EIR adequate when it identifies the health impacts of air pollution and quantifies a project's expected emissions, or does CEQA further require the EIR to *correlate* a project's air quality emissions to specific health impacts?

As of the date of this filing, the deadline for the final reply brief on the merits was March 5, 2015. Accordingly, under Rule 8.520(f)(2), this application and brief are timely.

1. Background and Interest of San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District ("Air District") regulates air quality in the eight counties comprising the San Joaquin Valley ("Central Valley"): Kern, Tulare, Madera, Fresno, Merced, San Joaquin, Stanislaus, and Kings, and is primarily responsible for attaining air quality standards within its jurisdiction. After billions of dollars of investment by Central Valley businesses, pioneering air quality regulations, and consistent efforts by residents, the Central Valley air basin has made historic improvements in air quality.

The Central Valley's geographical, topographical and meteorological features create exceptionally challenging air quality

conditions. For example, it receives air pollution transported from the San Francisco Bay Area and northern Central Valley communities, and the southern portion of the Central Valley includes three mountain ranges (Sierra, Tehachapi, and Coastal) that, under some meteorological conditions, effectively trap air pollution. Central Valley air pollution is only a fraction of what the Bay Area and Los Angeles produce, but these natural conditions result in air quality conditions that are only marginally better than Los Angeles, even though about ten times more pollution is emitted in the Los Angeles region. Bay Area air quality is much better than the Central Valley's, even though the Bay Area produces about six times more pollution. The Central Valley also receives air pollution transported from the Bay Area and northern counties in the Central Valley, including Sacramento, and transboundary anthropogenic ozone from as far away as China.

Notwithstanding these challenges, the Central Valley has reduced emissions at the same or better rate than other areas in California and has achieved unparalleled milestones in protecting public health and the environment:

- In the last decade, the Central Valley became the first air basin classified by the federal government under the Clean Air Act as a “serious nonattainment” area to come into attainment of health-based National Ambient Air Quality Standard (“NAAQS”) for coarse particulate matter (PM10), an achievement made even more notable given the Valley’s extensive agricultural sector. Unhealthy levels of particulate matter can cause and exacerbate a range of chronic and acute illnesses.
- In 2013, the Central Valley became the first air basin in the country to improve from a federal designation of “extreme” nonattainment to

actually attain (and quality for an attainment designation) of the 1-hour ozone NAAQS; ozone creates “smog” and, like PM10, causes adverse health impacts.

- The Central Valley also is in full attainment of federal standards for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.
- The Central Valley continues to make progress toward compliance with its last two attainment standards, with the number of exceedences for the 8-hour ozone NAAQS reduced by 74% (for the 1997 standard) and 38% (for the 2008 standard) since 1991, and for the small particulate matter (PM2.5) NAAQS reduced by 85% (for the 1997 standard) and 61% (for the 2006 standard).

Sustained improvement in Central Valley air quality requires a rigorous and comprehensive regulatory framework that includes prohibitions (e.g., on wood-burning fireplaces in new residences), mandates (e.g., requiring the installation of best available pollution reduction technologies on new and modified equipment and industrial operations), innovations (e.g., fees assessed against residential development to fund pollution reduction actions to “offset” vehicular emissions associated with new residences), incentive programs (e.g., funding replacements of older, more polluting heavy duty trucks and school buses)¹, ongoing planning for continued air quality improvements, and enforcement of Air District permits and regulations.

The Air District is also an expert air quality agency for the eight counties and cities in the San Joaquin Valley. In that capacity, the Air District has developed air quality emission guidelines for use by the Central

¹ San Joaquin’s incentive program has been so successful that through 2012, it has awarded over \$ 432 million in incentive funds and has achieved 93,349 tons of lifetime emissions reductions. See SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2012 PM2.5 PLAN, 6-6 (2012) available at <http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/06%20Chapter%206%20Incentives.pdf>.

Valley counties and cities that implement the California Environment Quality Act (CEQA).² In its guidance, the Air District has distinguished between toxic air contaminants and criteria air pollutants.³ Recognizing this distinction, the Air District's CEQA Guidance has adopted distinct thresholds of significance for *criteria* pollutants (i.e., ozone, PM2.5 and their respective precursor pollutants) based upon scientific and factual data which demonstrates the level that can be accommodated on a cumulative basis in the San Joaquin Valley without affecting the attainment of the applicable NAAQS.⁴ For *toxic air* pollutants, the District has adopted different thresholds of significance which scientific and factual data demonstrates has the potential to expose sensitive receptors (i.e., children, the elderly) to levels which may result in localized health impacts.⁵

The Air District's CEQA Guidance was followed by the County of Fresno in its environment review of the Friant Ranch project, for which the Air District also served as a commenting agency. The Court of Appeal's holding, however, requiring correlation between the project's criteria

² See, e.g., SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, PLANNING DIVISION, GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS (2015), available at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf ("CEQA Guidance").

³ Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from toxic air contaminants and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of toxic air contaminants occurs solely under section 112 of the Act. Compare 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 with 42 U.S.C. § 7411.

⁴ See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 64-66, 80.

⁵ See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 66, 99-101.

pollutants and local health impacts, departs from the Air District's Guidance and approved methodology for assessing criteria pollutants. A close reading of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants (for which a local health risk assessment is feasible and routinely performed) and criteria air pollutants (for which a local health risk assessment is not feasible and would result in speculative results).⁶ The Air District has a direct interest in ensuring the lawfulness and consistent application of its CEQA Guidance, and will explain how the Court of Appeal departed from the Air District's long-standing CEQA Guidance in addressing criteria pollutants and toxic air contaminants in this amicus brief.

2. How the Proposed Amicus Curiae Brief Will Assist the Court

As counsel for the proposed amicus curiae, we have reviewed the briefs filed in this action. In addition to serving as a "commentary agency" for CEQA purposes over the Friant Ranch project, the Air District has a strong interest in assuring that CEQA is used for its intended purpose, and believes that this Court would benefit from additional briefing explaining the distinction between criteria pollutants and toxic air contaminants and the different methodologies employed by local air pollution control agencies such as the Air District to analyze these two categories of air pollutants under CEQA. The Air District will also explain how the Court of Appeal's opinion is based upon a fundamental misunderstanding of these two different approaches by requiring the County of Fresno to correlate the project's *criteria* pollution emissions with *local* health impacts. In doing

⁶ CEQA does not require speculation. *See, e.g., Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1137 (1993) (upholding EIR that failed to evaluate cumulative toxic air emission increases given absence of any acceptable means for doing so).

so, the Air District will provide helpful analysis to support its position that at least insofar as criteria pollutants are concerned, CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible.

Rule 8.520 Disclosure

Pursuant to Cal. R. 8.520(f)(4), neither the Plaintiffs nor the Defendant or Real Party In Interest or their respective counsel authored this brief in whole or in part. Neither the Plaintiffs nor the Defendant or Real Party in Interest or their respective counsel made any monetary contribution towards or in support of the preparation of this brief.

CONCLUSION

On behalf of the San Joaquin Valley Unified Air Pollution Control District, we respectfully request that this Court accept the filing of the attached brief.

Dated: April 2, 2015



Annette A. Ballatore-Williamson
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Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL
DISTRICT

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I. INTRODUCTION.

The San Joaquin Valley Unified Air Pollution Control District (“Air District”) respectfully submits that the Court of Appeal erred when it held that the air quality analysis contained in the Environmental Impact Report (“EIR”) for the Friant Ranch development project was inadequate under the California Environmental Quality Act (“CEQA”) because it did not include an analysis of the correlation between the project’s criteria air pollutants and the potential adverse human health impacts. A close reading of the portion of the administrative record that gave rise to this issue demonstrates that the Court’s holding is based on a misunderstanding of the distinction between toxic air contaminants and criteria air pollutants.

Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants (hereinafter referred to as “TACs”) regulated by the United States Environmental Protection Agency (“EPA”) and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health,

they are distinguishable from TACs and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of TACs occurs solely under section 112 of the Act. *Compare* 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 *with* 42 U.S.C. § 7411.

The most relevant difference between criteria pollutants and TACs for purposes of this case is the manner in which human health impacts are accounted for. While it is common practice to analyze the correlation between an individual facility's TAC emissions and the expected localized human health impacts, such is not the case for criteria pollutants. Instead, the human health impacts associated with criteria air pollutants are analyzed and taken into consideration when EPA sets the national ambient air quality standard ("NAAQS") for each criteria pollutant. 42 U.S.C. § 7409(b)(1). The health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the NAAQS. Accordingly, while the type of individual facility / health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task.

It is clear from a reading of both the administrative record and the Court of Appeal's decision that the Court did not have the expertise to fully

appreciate the difference between TACs and criteria air pollutants. As a result, the Court has ordered the County of Fresno to conduct an analysis that is not practicable and not likely yield valid information. The Air District respectfully requests that this portion of the Court of Appeal's decision be reversed.

II. THE COURT OF APPEAL ERRED IN FINDING THE FRIANT RANCH EIR INADEQUATE FOR FAILING TO ANALYZE THE SPECIFIC HUMAN HEALTH IMPACTS ASSOCIATED CRITERIA AIR POLLUTANTS.

Although the Air District does not take lightly the amount of air emissions at issue in this case, it submits that the Court of Appeal got it wrong when it required Fresno County to revise the Friant Ranch EIR to include an analysis correlating the criteria air pollutant emissions associated with the project with specific, localized health-impacts. The type of analysis the Court of Appeal has required will not yield reliable information because currently available modeling tools are not well suited for this task. Further, in reviewing this issue de novo, the Court of Appeal failed to appreciate that it lacked the scientific expertise to appreciate the significant differences between a health risk assessment commonly performed for toxic air contaminants and a similar type of analysis it felt should have been conducted for criteria air pollutants.

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A. Currently Available Modeling Tools are not Equipped to Provide a Meaningful Analysis of the Correlation between an Individual Development Project's Air Emissions and Specific Human Health Impacts.

In order to appreciate the problematic nature of the Court of Appeals' decision requiring a health risk type analysis for criteria air pollutants, it is important to understand how the relevant criteria pollutants (ozone and particulate matter) are formed, dispersed and regulated.

Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.¹ Once formed, ozone can be transported long distances by wind.² Because of the complexity of ozone formation, a specific tonnage amount of NO_x or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area. In fact, even rural areas that have relatively low tonnages of emissions of NO_x or VOCs can have high levels of ozone concentration simply due to wind transport.³ Conversely, the San Francisco Bay Area has six times more NO_x and VOC emissions per square mile than the San Joaquin Valley, but experiences lower

¹ See United States Environmental Protection Agency, *Ground-level Ozone: Basic Information*, available at: <http://www.epa.gov/airquality/ozonepollution/basic.html> (visited March 10, 2015).

² *Id.*

³ *Id.*

concentrations of ozone (and better air quality) simply because sea breezes disperse the emissions.⁴

Particulate matter (“PM”) can be divided into two categories: directly emitted PM and secondary PM.⁵ While directly emitted PM can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because it can be transported long distances by wind.⁶ Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SO_x) and NO_x.⁷ Because of the complexity of secondary PM formation, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.

The disconnect between the *tonnage* of precursor pollutants (NO_x, SO_x and VOCs) and the *concentration* of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Indeed, the national ambient air quality standards (“NAAQS”), which are statutorily required to be set by the United States Environmental Protection

⁴ *San Joaquin Valley Air Pollution Control District 2007 Ozone Plan*, Executive Summary p. ES-6, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).

⁵ United States Environmental Protection Agency, *Particulate Matter: Basic Information*, available at: <http://www.epa.gov/airquality/particlepollution/basic.html> (visited March 10, 2015).

⁶ *Id.*

⁷ *Id.*

Agency (“EPA”) at levels that are “requisite to protect the public health,” 42 U.S.C. § 7409(b)(1), are established as concentrations of ozone or particulate matter and not as tonnages of their precursor pollutants.⁸

Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period.⁹ Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District’s tools and plans for attaining the NAAQS are regional in nature.

For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NO_x, SO_x and VOCs) and the atmospheric chemistry and meteorology of the Valley.¹⁰ At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor

⁸ See, e.g., United States Environmental Protection Agency, *Table of National Ambient Air Quality Standards*, available at: <http://www.epa.gov/air/criteria.html#3> (visited March 10, 2015).

⁹ *San Joaquin Valley Unified Air Pollution Control District 2013 Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16, available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015).

¹⁰ *Id.* at Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified Air Pollution Control District 2008 PM_{2.5} Plan*, Appendix F, pp. F-2 – F-5, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted_PM2.5/20%20Appendix%20F.pdf (visited March 19, 2015).

emissions Valley wide.¹¹ Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which *all* of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.¹²

Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the Valley can accommodate without affecting the attainment date for the NAAQS.¹³ The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources permitted by the Air District must "offset" their emissions.¹⁴ This "offset"

¹¹ *Id.*

¹² Although the Air District does have a dispersion modeling tool used during its air permitting process that is used to predict whether a particular project's directly emitted PM will either cause an exceedance of the PM NAAQS or contribute to an existing exceedance, this model bases the prediction on a worst case scenario of emissions and meteorology and has no provision for predicting any associated human health impacts. Further, this analysis is only performed for stationary sources (factories, oil refineries, etc.) that are required to obtain a New Source Review permit from the Air District and not for development projects such as Friant Ranch over which the Air District has no preconstruction permitting authority. See San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0; 3.3.9; 4.14.1, available at: <http://www.valleyair.org/rules/currntrules/Rule22010411.pdf> (visited March 19, 2015).

¹³ *San Joaquin Valley Unified Air Pollution Control District Guide to Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22, available at: <http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf> (visited March 30, 2015).

¹⁴ *Id.* at pp. 22, 25.

level allows for growth while keeping the cumulative effects of all new sources at a level that will not impede attainment of the NAAQS.¹⁵ In the Valley, these thresholds are 15 tons per year of PM, and 10 tons of NOx or VOC per year. *Sierra Club, supra*, 172 Cal.Rptr.3d at 303; AR 4554. Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project-level impact analysis but one of regional, “cumulative impacts.”

Accordingly, the significance thresholds applied in the Friant Ranch EIR (15 tons per year of PM and 10 tons of NOx or VOCs) are not intended to be indicative of any localized human health impact that the project may have. While the health effects of air pollution are of primary concern to the Air District (indeed, the NAAQS are established to protect human health), the Air District is simply not equipped to analyze whether and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area. This is true even for projects with relatively high levels of emissions of criteria pollutant precursor emissions.

For instance, according to the EIR, the Friant Ranch project is estimated to emit 109.52 tons per year of ROG (VOC), 102.19 tons per year of NOx, and 117.38 tons per year of PM. Although these levels well

¹⁵ ¹⁵ *San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines* (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).

exceed the Air District's CEQA significance thresholds, this does not mean that one can easily determine the concentration of ozone or PM that will be created at or near the Friant Ranch site on a particular day or month of the year, or what specific health impacts will occur. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone or PM. This is especially true for a project like Friant Ranch where most of the criteria pollutant emissions derive not from a single "point source," but from area wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from and around the site.

In addition, it would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have. As discussed above, the currently available modeling tools are equipped to model the impact of *all* emission sources in the Valley on attainment. According to the most recent EPA-approved emission inventory, the NO_x inventory for the Valley is for the year 2014 is 458.2 tons per day, or 167,243 tons per year and the VOC (or ROG) inventory is 361.7 tons per day, or 132,020.5 tons per year.¹⁶ Running the photochemical grid model used for predicting ozone attainment with the

¹⁶ *San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan*, Appendix B pp. B-6, B-9, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AO_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).

emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information given the relative scale involved.

Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.

For these reasons, it is not the norm for CEQA practitioners, including the Air District, to conduct an analysis of the localized health impacts associated with a project's criteria air pollutant emissions as part of the EIR process. When the accepted scientific method precludes a certain type of analysis, "the court cannot impose a legal standard to the contrary." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 717 n. 8. However, that is exactly what the Court of Appeal has done in this case. Its decision upends the way CEQA air quality analysis of criteria pollutants occurs and should be reversed.

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B. The Court of Appeal Improperly Extrapolated a Request for a Health Risk Assessment for Toxic Air Contaminants into a Requirement that the EIR contain an Analysis of Localized Health Impacts Associated with Criteria Air Pollutants.

The Court of Appeal's error in requiring the new health impact analysis for criteria air pollutants clearly stems from a misunderstanding of terms of art commonly used in the air pollution field. More specifically, the Court of Appeal (and Appellants Sierra Club et al.) appear to have confused the health risk analysis ("HRA") performed to determine the health impacts associated with a project's toxic air contaminants ("TACs"), with an analysis correlating a project's criteria air pollutants (ozone, PM and the like) with specific localized health impacts.

The first type of analysis, the HRA, is commonly performed during the Air District's stationary source permitting process for projects that emit TACs and is, thus, incorporated into the CEQA review process. An HRA is a comprehensive analysis to evaluate and predict the dispersion of TACs emitted by a project and the potential for exposure of human populations. It also assesses and quantifies both the individual and population-wide health risks associated with those levels of exposure. There is no similar analysis conducted for criteria air pollutants. Thus, the second type of analysis (required by the Court of Appeal), is not currently part of the Air District's process because, as outlined above, the health risks associated

with exposure to criteria pollutants are evaluated on a regional level based on the region's attainment of the NAAQS.

The root of this confusion between the types of analyses conducted for TACs versus criteria air pollutants appears to stem from a comment that was presented to Fresno County by the City of Fresno during the administrative process.

In its comments on the draft EIR, the City of Fresno (the only party to raise this issue) stated:

[t]he EIR must disclose the human health related effects of the Project's air pollution impacts. (CEQA Guidelines section 15126.2(a).) The EIR fails completely in this area. The EIR should be revised to disclose and determine the significance of TAC impacts, and of human health risks due to exposure to Project-related air emissions.

(AR 4602.)

In determining that the issue regarding the correlation between the Friant Ranch project's criteria air pollutants and adverse health impacts was adequately exhausted at the administrative level, the Court of Appeal improperly read the first two sentences of the City of Fresno's comment in isolation rather than in the context of the entire comment. *See Sierra Club v. County of Fresno* (2014) 172 Cal.Rptr.3d 271, 306. Although the comment first speaks generally in terms of "human health related effects" and "air pollution," it requests only that the EIR be revised to disclose "the significance of TACs" and the "human health risks due to exposure."

The language of this request in the third sentence of the comment is significant because, to an air pollution practitioner, the language would only have indicated only that a HRA for TACs was requested, and not a separate analysis of the health impacts associated with the project's criteria air pollutants. Fresno County clearly read the comment as a request to perform an HRA for TACs and limited its response accordingly. (AR 4602.)¹⁷ The Air District submits that it would have read the City's comment in the same manner as the County because the City's use of the terms "human health risks" and "TACs" signal that an HRA for TACs is being requested. Indeed, the Air District was also concerned that an HRA be conducted, but understood that it was not possible to conduct such an analysis until the project entered the phase where detailed site specific information, such as the types of emission sources and the proximity of the sources to sensitive receptors became available. (AR 4553.)¹⁸ The City of Fresno was apparently satisfied with the County's discussion of human health risks, as it did not raise the issue again when it commented on the final EIR. (AR 8944 – 8960.)

¹⁷ Appellants do not challenge the manner in which the County addressed TACs in the EIR. (Appellants' Answer Brief p. 28 fn. 7.)

¹⁸ Appellants rely on the testimony of Air District employee, Dan Barber, as support for their position that the County should have conducted an analysis correlating the project's criteria air pollutant emissions with localized health impacts. (Appellants Answer Brief pp. 10-11; 28.) However, Mr. Barber's testimony simply reinforces the Air District's concern that a risk assessment (HRA) be conducted once the actual details of the project become available. (AR 8863.) As to criteria air pollutants, Mr. Barber's comments are aimed at the Air District's concern about the amount of emissions and the fact that the emissions will make it "more difficult for Fresno County and the Valley to reach attainment which means that the health of Valley residents maybe [sic] adversely impacted." Mr. Barber says nothing about conducting a separate analysis of the localized health impacts the project's emissions may have.

The Court of Appeal's holding, which incorrectly extrapolates a request for an HRA for TACs into a new analysis of the localized health impacts of the project's criteria air pollutants, highlights two additional errors in the Court's decision.

First, the Court of Appeal's holding illustrates why the Court should have applied the deferential substantial evidence standard of review to the issue of whether the EIR's air quality analysis was sufficient. The regulation of air pollution is a technical and complex field and the Court of Appeal lacked the expertise to fully appreciate the difference between TACs and criteria air pollutants and tools available for analyzing each type of pollutant.

Second, it illustrates that the Court likely got it wrong when it held that the issue regarding the criteria pollutant / localized health impact analysis was properly exhausted during the administrative process. In order to preserve an issue for the court, '[t]he "exact issue" must have been presented to the administrative agency....' [Citation.] *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521; *Sierra Club v. City of Orange* (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13. "[T]he objections must be sufficiently specific so that the agency has the

opportunity to evaluate and respond to them.’ [Citation.]” *Sierra Club v. City of Orange*, 163 Cal.App.4th at 536.¹⁹

As discussed above, the City’s comment, while specific enough to request a commonly performed HRA for TACs, provided the County with no notice that it should perform a new type of analysis correlating criteria pollutant tonnages to specific human health effects. Although the parties have not directly addressed the issue of failure to exhaust administrative remedies in their briefs, the Air District submits that the Court should consider how it affects the issues briefed by the parties since “[e]xhaustion of administrative remedies is a jurisdictional prerequisite to maintenance of a CEQA action.” *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203.

III. CONCLUSION

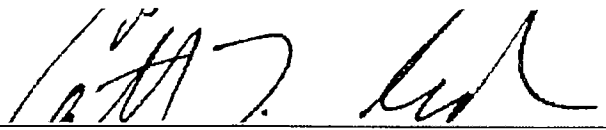
For all of the foregoing reasons, the Air District respectfully requests that the portion of the Court of Appeal’s decision requiring an analysis correlating the localized human health impacts associated with an individual project’s criteria air pollutant emissions be reversed.

¹⁹ *Sierra Club v. City of Orange*, is illustrative here. In that case, the plaintiffs challenged an EIR approved for a large planned community on the basis that the EIR improperly broke up the various environmental impacts by separate project components or “piecemealed” the analysis in violation of CEQA. In evaluating the defense that the plaintiffs had failed to adequately raise the issue at the administrative level, the Court held that comments such as “*the use of a single document for both a project-level and a program-level EIR [is] ‘confusing’*,” and “[t]he lead agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project,” were too vague to fairly raise the argument of piecemealing before the agency. *Sierra Club v. City of Orange*, 163 Cal.App.4th at 537.

correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

Respectfully submitted,

Dated: April 2, 2015



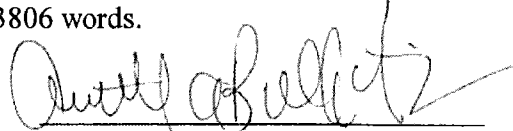
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Attorney for Proposed Amicus
Curiae

SAN JOAQUIN VALLEY
UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.204 of the California Rules of Court, I hereby certify that this document, based on the Word County feature of the Microsoft Word software program used to compose and print this document, contains, exclusive of caption, tables, certificate of word count, signature block and certificate of service, 3806 words.

Dated: April 2, 2015



Annette A. Ballatore-Williamson
District Counsel (SBN 192176)

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

PROOF OF SERVICE

I am over the age of 18 years and not a party to the above-captioned action; that my business address is San Joaquin Valley Unified Air Pollution Control District located at 1990 E. Gettysburg Avenue, Fresno, California 93726.

On April 2, 2015, I served the document described below:

**APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF
SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN
SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO**

On all parties to this action at the following addresses and in the following manner:

PLEASE SEE ATTACHED SERVICE LIST

- (XX) **(BY MAIL)** I caused a true copy of each document(s) to be laced in a sealed envelope with first-class postage affixed and placed the envelope for collection. Mail is collected daily at my office and placed in a United State Postal Service collection box for pick-up and delivery that same day.
- () **(BY ELECTRONIC MAIL)** I caused a true and correct scanned image (.PDF file) copy to be transmitted via electronic mail transfer system in place at the San Joaquin Valley Unified Air Pollution Control District ("District"), originating from the undersigned at 1990 E. Gettysburg Avenue, Fresno, CA, to the address(es) indicated below.
- () **(BY OVERNIGHT MAIL)** I caused a true and correct copy to be delivered via Federal Express to the following person(s) or their representative at the address(es) listed below.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I executed this document on April 2, 2015, at Fresno, California.



Esthela Soto

SERVICE LIST

Sierra Club et al, v. County of Fresno, et al

Supreme Court of California Case No.: S219783

Fifth District Court of Appeal Case No.: F066798

Fresno County Superior Court Case No.: 11CECG00726

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**APPENDIX C:
BIOLOGICAL RESOURCES DATA**

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Biological Resources Assessment for the Los Banos General Plan Update

Merced County, California

Prepared For:

The City of Los Banos

Prepared By:



2525 Warren Drive
Rocklin, California 95677

April 2022

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LIST OF ACRONYMS AND ABBREVIATIONS

Term	Description
BA	Biological Assessment
BCC	Bird of Conservation Concern
BO	Biological Opinion
BRA	Biological Resources Assessment
CARI	California Aquatic Resource Inventory
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Ranks
CTS	California tiger salamander

Term	Description
CWA	Clean Water Act
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
GGS	Giant garter snake
GPS	Global Positioning System
HCP	Habitat Conservation Plan
ITP	Incidental Take Permit
MBTA	Migratory Bird Treaty Act
NAIP	National Agricultural Imagery Program
NAS	Nelson's antelope squirrel
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
OHWM	Ordinary High Water Mark
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Application
SFEI	San Francisco Estuary Institute
SJKF	San Joaquin Kit Fox
SSC	Species of Special Concern
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VELB	Valley elderberry longhorn beetle

1.0 INTRODUCTION

At the request of the City of Los Banos (City), ECORP Consulting, Inc. conducted a Biological Resources Assessment (BRA) for the Los Banos General Plan Environmental Impact Report (EIR) Study Area. As part of this assessment, ECORP collected information on the biological resources present within the EIR Study Area, identified regulatory requirements relating to those resources, and presented recommendations for protecting sensitive resources during future buildout of the General Plan.

1.1 EIR Study Area Location

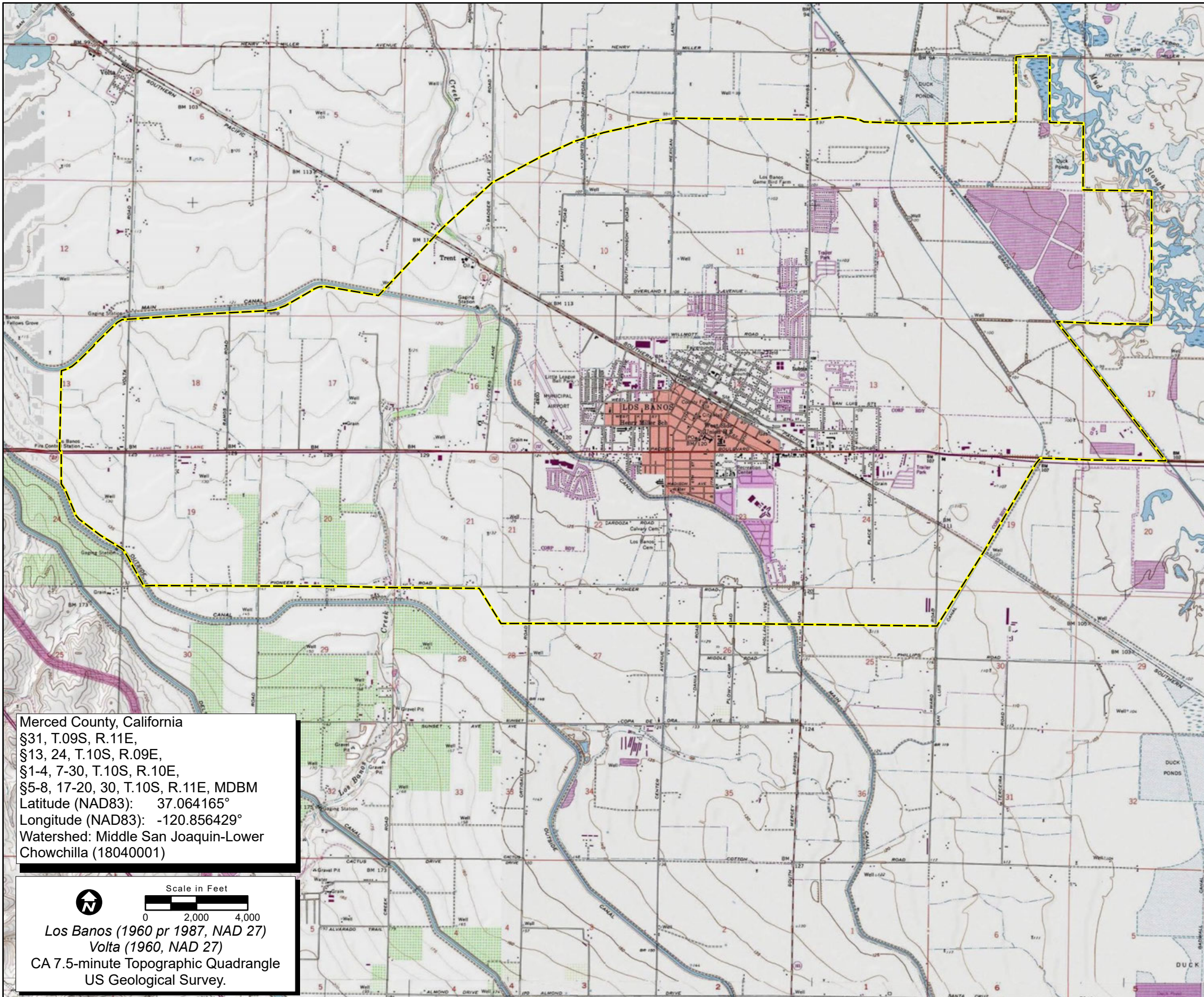
The approximately 14,559-acre EIR Study Area occurs within Section 31, Township 9 South, Range 11 East; Sections 13 and 24, Township 10 South, and Range 9 East; Sections 1-4 and 7-30, Township 10 South, Range 10 East; and Sections 5-8, 17-20, and 30; Township 10 South, Range 11 East (Mount Diablo Base and Meridian) of the "Los Banos, California" and "Volta, California" California 7.5-minute quadrangles (U.S. Geological Survey [USGS] 1960a and 1960b, respectively; Figure 1). The approximate center of the EIR Study Area is located at 37.064165° North and -120.856429° West within the Middle San Joaquin-Lower Chowchilla Watershed (Hydrological Unit Code #18040001; Natural Resources Conservation Service [NRCS], et al. 2016).

1.2 Purpose of this Biological Resources Assessment

The purpose of this BRA is to assess the potential for occurrence of special-status plant and animal species or their habitat, and other sensitive resources such as wetlands or migratory wildlife corridors, within the EIR Study Area. This assessment does not include determinate field surveys conducted according to agency-promulgated protocols. The conclusions and recommendations presented in this report are based upon a review of the literature referenced in this report.

For the purposes of this assessment, special-status species are defined as plants or animals that:

- are listed, proposed for listing, or candidates for future listing as threatened or endangered under the federal Endangered Species Act (ESA);
- are listed or candidates for future listing as threatened or endangered under the California ESA;
- meet the definitions of endangered or rare under Section 15380 of the California Environmental Quality Act (CEQA) Guidelines;
- are identified as a Species of Special Concern (SSC) by the California Department of Fish and Wildlife (CDFW);
- are birds identified as Birds of Conservation Concern (BCC) by the U.S. Fish and Wildlife Service (USFWS);



Map Contents

EIR Study Area - 14,559 acres

Sources: ESRI, USGS

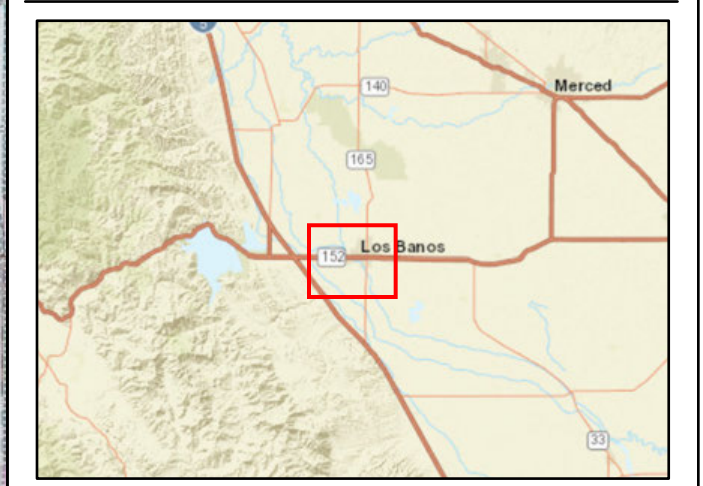


Figure 1. EIR Study Area Location and Vicinity

Location: N:\2021\2021-293 Los Banos General Plan Update\WAPS\Location_Vicinity\LBGP_LnV.aprx - LBGPO_LnV_20220119 (klumquist - 1/19/2022)

- are plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (California Rare Plant Ranks [CRPR] 1 and 2); plants for which more information is needed to determine their status (CRPR 3), or plants of limited distribution (CRPR 4);
- are plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.); or
- are fully protected in California in accordance with the California Fish and Game Code, Sections 3511 (birds), 4700 (mammals), 5050 (amphibians and reptiles), and 5515 (fishes).

Only species that fall into one of the above-listed groups were considered for this assessment. Other species (e.g., California Natural Diversity Database [CNDDDB] tracked species) sometimes found in database searches or within the literature were not included within this analysis.

2.0 REGULATORY SETTING

2.1 Federal Regulations

2.1.1 Federal Endangered Species Act

The ESA protects plants and animals that are listed as endangered or threatened by the USFWS or the National Marine Fisheries Service (NMFS). Section 9 of ESA prohibits the taking of listed wildlife, where take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant on federal land and removing, cutting, digging up, damaging, or destroying any listed plant on non-federal land in knowing violation of state law (16 U.S. Code [USC] 1538). Under Section 7 of ESA, federal agencies are required to consult with the USFWS or NMFS if their actions, including permit approvals or funding, could adversely affect a listed (or proposed) species (including plants) or its critical habitat. Through consultation and the issuance of a Biological Opinion (BO), the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise lawful activity provided the activity will not jeopardize the continued existence of the species. The BO may recommend *reasonable and prudent alternatives* to the project to avoid jeopardizing or adversely modifying habitat. Section 10 of the ESA provides for issuance of incidental take permits where no other federal actions are necessary, provided a Habitat Conservation Plan (HCP) is developed.

Critical Habitat is defined in Section 3 of ESA as:

1. the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection; and
2. specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Critical Habitat designations identify, to the extent known and using the best scientific data available, habitat areas that provide Primary Physical and Biological Features essential to the conservation of the species and that may require special management considerations or protection. These include but are not limited to the following:

- Space for individual and population growth and for normal behavior;
- Food, water, air, light, minerals, or other nutritional or physiological requirements;
- Cover or shelter;
- Sites for breeding, reproduction, or rearing (or development) of offspring; and
- Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species.

2.1.2 Essential Fish Habitat

Essential Fish Habitat (EFH) was defined by the U.S. Congress in the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act, or Magnuson-Stevens Act, as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." Implementing regulations clarified that waters include all aquatic areas and their physical, chemical, and biological properties; substrate includes the associated biological communities that make these areas suitable for fish habitats, and the description and identification of EFH should include habitats used at any time during the species' life cycle. EFH includes all types of aquatic habitat, such as wetlands, coral reefs, sand, seagrasses, and rivers.

2.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the U.S. and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. The protections of the MBTA extend to disturbances that result in abandonment of a nest with eggs or young. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Fish and Game Code.

2.1.4 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 (as amended) provides for the protection of bald eagle and golden eagle by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or

egg, unless allowed by permit [16 USC 668(a); 50 CFR 22]. The USFWS may authorize take of bald eagles and golden eagles for activities where the take is associated with, but not the purpose of, the activity and cannot practicably be avoided (50 CFR 22.26).

2.1.5 Federal Clean Water Act

The purpose of the federal Clean Water Act (CWA) is to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” Section 404 of the CWA prohibits the discharge of dredged or fill material into Waters of the U.S. without a permit from the U.S. Army Corps of Engineers (USACE). The definition of Waters of the U.S. includes rivers, streams, estuaries, the territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas:

“that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3 7b).

The U.S. Environmental Protection Agency (USEPA) also has authority over wetlands and may override a USACE permit.

Substantial impacts to wetlands may require an individual permit. Projects that only minimally affect wetlands may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB).

2.2 State or Local Regulations

2.2.1 California Fish and Game Code

2.2.1.1 California Endangered Species Act

The California ESA (California Fish and Game Code §§ 2050-2116) generally parallels the main provisions of the federal ESA, but unlike its federal counterpart, the California ESA also applies the take prohibitions to species proposed for listing (called *candidates* by the state). Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. *Take* is defined in Section 86 of the California Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The California ESA allows for take incidental to otherwise lawful development projects. State lead agencies are required to consult with the CDFW to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered, threatened or candidate species or result in destruction or adverse modification of essential habitat. For local agency projects with no discretionary state approvals, Section 2081 allows CDFW to authorize incidental take permits if certain conditions are met. Permittees must implement species-specific minimization and avoidance measures, and fully mitigate the impacts of the project.

2.2.1.2 Fully Protected Species

The State of California first began to designate species as *fully protected* prior to the creation of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the state and/or federal ESAs. The regulations that implement the Fully Protected Species Statute (California Fish and Game Code § 4700 for mammals, § 3511 for birds, § 5050 for reptiles and amphibians, and § 5515 for fish) provide that fully protected species may not be taken or possessed at any time. Fish and Game Code prohibits any state agency from issuing incidental take permits for fully protected species. The CDFW will issue licenses or permits for take of these species for necessary scientific research or live capture and relocation pursuant to the permit.

2.2.1.3 Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 was created with the intent to “preserve, protect and enhance rare and endangered plants in this State.” The NPPA is administered by CDFW and provided in California Fish and Game Code §§ 1900-1913. The Fish and Wildlife Commission has the authority to designate native plants as *endangered* or *rare* and to protect endangered and rare plants from take. The California ESA of 1984 (California Fish and Game Code §§ 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the California Fish and Game Code.

2.2.1.4 Birds of Prey

Sections 3800, 3513, and 3503 of the California Fish and Game Code specifically protect birds of prey. Section 3800 states that it is unlawful to take nongame birds, such as those occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, except when in accordance with regulations of the commission or a mitigation plan approved by CDFW for mining operations. Section 3513 specifically prohibits the take or possession of any migratory nongame bird as designated in the MBTA.

Section 3503 of the California Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Additionally, Subsection 3503.5 prohibits the take, possession, or destruction of any birds and their nests in the orders Strigiformes (owls) or Falconiformes (hawks and eagles). These provisions, along with the federal MBTA, serve to protect nesting raptors.

2.2.1.5 California Streambed Alteration Notification/Agreement

Section 1602 of the California Fish and Game Code requires that a Streambed Alteration Agreement (SAA) be obtained from CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” CDFW reviews the proposed actions and, if necessary, submits proposed measures to protect affected fish and wildlife resources to the applicant. The SAA is the final proposal mutually agreed upon by CDFW and the applicant. Projects that

require an SAA often also require a permit from the USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the SAA overlap.

2.2.2 Species of Special Concern

The CDFW defines SSC as a species, subspecies, or distinct population of an animal native to California that is not legally protected under ESA, the California ESA, or the California Fish and Game Code but currently satisfies one or more of the following criteria:

- The species has been completely extirpated from the state or, as in the case of birds, it has been extirpated from its primary seasonal or breeding role.
- The species is listed as federally (but not state) threatened or endangered, or meets the state definition of threatened or endangered but has not formally been listed.
- The species has or is experiencing serious (nonscyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status.
- The species has naturally small populations that exhibit high susceptibility to risk from any factor that if realized, could lead to declines that would qualify it for state threatened or endangered status.
- SSC are typically associated with threatened habitats. Project-related impacts to SSC and state threatened or endangered species are considered significant under CEQA.

2.2.3 California Rare Plant Ranks

The CNPS maintains the Inventory of Rare and Endangered Plants of California (CNPS 2022), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, or have low populations. Plant species meeting one of these criteria are assigned to one of six CRPRs. The rank system was developed in collaboration with government, academia, nongovernmental organizations, and private sector botanists, and is jointly managed by CDFW and the CNPS. The CRPRs are currently recognized in the CNDDDB. The following are definitions of the CNPS CRPRs:

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

Additionally, the CNPS has defined Threat Ranks that are added to the CRPR as an extension. Threat Ranks designate the level of threat on a scale of 1 through 3, with 1 being the most threatened and 3 being the

least threatened. Threat Ranks are generally present for all plants ranked 1B, 2B, or 4, and for the majority of plants ranked 3. Plant species ranked 1A and 2A (presumed extirpated in California), and some species ranked 3, which lack threat information, do not typically have a Threat Rank extension. The following are definitions of the CNPS Threat Ranks:

- Threat Rank 0.1 – Seriously threatened in California (more than 80 percent of occurrences threatened/high degree and immediacy of threat).
- Threat Rank 0.2 – Moderately threatened in California (20 to 80 percent of occurrences threatened/moderate degree and immediacy of threat).
- Threat Rank 0.3 – Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known).

Factors such as habitat vulnerability and specificity, distribution, and condition of occurrences are considered in setting the Threat Rank; differences in Threat Ranks do not constitute additional or different protection (CNPS 2022). Depending on the policy of the lead agency, substantial impacts to plants ranked 1A, 1B, or 2 are typically considered significant under CEQA Guidelines Section 15380. Significance under CEQA is typically evaluated on a case-by-case basis for plants ranked 3 or 4.

2.2.4 Porter-Cologne Water Quality Act

The RWQCB implements water quality regulations under the federal CWA and the Porter-Cologne Water Quality Act. These regulations require compliance with the National Pollutant Discharge Elimination System (NPDES), including compliance with the California Storm Water NPDES General Construction Permit for discharges of storm water runoff associated with construction activities. General Construction Permits for projects that disturb one or more acres of land require development and implementation of a Storm Water Pollution Prevention Plan. Under the Porter-Cologne Water Quality Act, the RWQCB regulates actions that would involve “discharging waste, or proposing to discharge waste, within any region that could affect the water of the state” (Water Code 13260(a)). Waters of the State are defined as “any surface water or groundwater, including saline waters, within the boundaries of the state” (Water Code 13050 (e)), and includes waters that are not regulated by the USACE due to a lack of connectivity with a navigable water body. In 2021, the First Appellate District of the California Courts of Appeal issued an opinion that interpreted the RWQCB’s authority to extend to discharges of dredge and fill materials into Waters of the State. The RWQCB may require issuance of Waste Discharge Requirements for these activities.

2.2.5 California Environmental Quality Act

Per CEQA Guidelines Section 15380, a species not protected on a federal or state list may be considered rare or endangered if the species meets certain specified criteria. These criteria follow the definitions in the federal and California ESAs, and Sections 1900-1913 of the California Fish and Game Code, which deal with rare or endangered plants or animals. Section 15380 was included in the CEQA Guidelines primarily to deal with situations where a project under review may have a significant effect on a species that has not yet been listed by either the USFWS or CDFW.

2.2.5.1 California Environmental Quality Act Significance Criteria

Sections 15063-15065 of the CEQA Guidelines address how an impact is identified as significant and are particularly relevant to SSC. Generally, impacts to listed (i.e., rare, threatened, or endangered) species are considered significant and require lead agencies to prepare an EIR to thoroughly analyze and evaluate the impacts. Assessment of *impact significance* to populations of non-listed species (e.g., SSC) usually considers the proportion of the species' range that will be affected by a project, impacts to habitat, and the regional and population level effects.

Specifically, Section 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. Impacts to biological resources would normally be considered significant if a project would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;
- have a substantial adverse effect on federally protected Waters of the U.S., including wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish or result in the loss of an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA because although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population-wide or region-wide basis.

3.0 METHODS

3.1 Literature Review

The following resources were reviewed to determine the special-status species that have been documented within or in the vicinity of the EIR Study Area or that otherwise have the potential to occur onsite:

- The CNDDDB for the 12 USGS topographic quadrangles centered on the "Los Banos, California" and "Volta, California" 7.5-minute USGS topographic quadrangles (CDFW 2022).
- The USFWS Federal Endangered and Threatened Species list for the EIR Study Area (USFWS 2022).
- The CNPS electronic Inventory of Rare and Endangered Plants of California for the 12 USGS topographic quadrangles centered on the "Los Banos, California" and "Volta, California" 7.5-minute USGS topographic quadrangles (CNPS 2022).
- The National Oceanic and Atmospheric Administration (NOAA) Critical Habitat and Essential Fish Habitat Mapper (NOAA 2022a, b).

Results of the literature review are provided in Attachment A.

3.2 Special-Status Species Considered for the Project

Based on species occurrence information from the literature review, a list of special-status and CNDDDB-tracked plant and animal species that have the potential to occur within the EIR Study Area was generated and is located in Section 4.0. Each of these species' potential to occur onsite was assessed based on the following criteria:

- **Potential to Occur** – Suitable habitat (including soils and elevation requirements) for the species occurs within the EIR Study Area and the species is known to occur within the vicinity of the EIR Study Area
- **Low Potential to Occur** - Marginal or limited amounts of habitat occur or the species is not known to occur within the vicinity of the EIR Study Area
- **Absent** - No suitable habitat (including soils and elevation requirements) or the species is not known to occur in the vicinity of the EIR Study Area

Due to the size of the EIR Study Area, an on-the-ground site reconnaissance was not conducted by ECORP. Determinations regarding each species potential to occur in the Study Area were made based on information available through the CNDDDB, the available literature, and professional judgement. Final determinations regarding species presence should be made based on site investigations conducted during appropriate survey periods.

4.0 RESULTS

4.1 Site Characteristics and Land Use

The EIR Study Area is located within relatively flat terrain situated at an elevational range of approximately 85 to 140 feet above mean sea level in the San Joaquin Valley Subregion of the Great Central Valley floristic region of California (Baldwin et al. 2012). The average winter low temperature in the vicinity of the EIR Study Area is 39.4 degrees Fahrenheit (°F) and the average summer high temperature is 93.1°F. Average annual precipitation is approximately 9.95 inches, which falls as rain (NOAA 2022a).

This BRA focuses on the undeveloped portions of the EIR Study Area. The central portion of the Study Area is occupied by the existing City of Los Banos, which includes a mix of commercial, industrial, residential, and recreational land uses. Biological resources associated with these developed areas are generally limited to common species that are tolerant of urban environments and would not be impacted by buildout of the General Plan.

The undeveloped portions of the EIR Study Area consist primarily of agriculture mixed with low-density residential uses. Surrounding land uses include agriculture, outdoor recreation, and managed wildlife areas. The Los Banos Wildlife Area and North Grassland Wildlife Areas are located northeast and east of the city, respectively, within the Grassland Resource Conservation District (GRCD). The GRCD is part of a large complex of restored and created wetlands established to provide habitat for nesting and wintering waterfowl and water-dependent migratory birds.

4.2 Plant Communities

Plant communities within the EIR Study Area were identified based on aerial photograph interpretation (National Agricultural Imagery Program [NAIP] 2020) and review of existing available literature, including the Draft EIR for the City of Los Banos 2030 General Plan (Dyett & Bhatia, 2007),

4.2.1 Mixed Agriculture

A large portion of the EIR Study Area consists of mixed agriculture, varying from row crops to orchards, vineyards and irrigated pasture. Row crops comprise the majority of the agricultural lands and occur in parcels of various sizes and shapes. Biodiversity within this plant community type is mostly homogenous, and dominant plant species vary from parcel to parcel. Many species of rodents and birds are adapted to agricultural areas. Agricultural fields may be used by foraging raptors and wintering waterfowl. Depending on the farming practices for each parcel, this plant community may offer foraging and cover opportunities for special-status animal species such as lesser sandhill crane (*Antigone canadensis canadensis*). Flooded pastures, ponds, and ditches associated with agricultural communities also provide potential habitat for aquatic species such as giant garter snake (*Thamnophis gigas*)

4.2.2 Ruderal

The ruderal plant community is dominated by species that are well adapted and have naturalized in areas of frequent disturbance or urbanization. Ruderal plant communities can be found throughout the EIR

Study Area and are common along roadsides and irrigation ditches or within firebreaks. Ruderal species typically are nonnative and invasive plant species, but some native species can occur within this plant community.

4.2.3 Mixed Riparian Woodland

A mixed riparian woodland occurs along Los Banos Creek, which flows through the western portion of the EIR Study Area. This vegetation community consists of an intermittent to dense canopy typically dominated by oak (*Quercus* sp.), cottonwood (*Populus* sp.), and willow (*Salix* sp.). The mixed riparian woodland makes up a small portion of the EIR Study Area but provides roosting, foraging and cover habitat for numerous species of birds and waterfowl, and provides suitable habitat for some special-status species such as western pond turtle (*Actinemys marmorata*).

4.2.4 Nonnative Annual Grassland

Nonnative annual grassland is a plant community dominated by nonnative grasses that have naturalized throughout most of the California Central Valley. Nonnative annual grassland can be found within fallow parcels of the EIR Study Area. Wildlife use of annual grasslands includes common species such as black-tailed jackrabbits (*Lepus californicus*), California vole (*Microtus californicus*), and coyote (*Canis latrans*). This plant community can provide habitat for burrowing animals and some special-status plant and wildlife species, such as San Joaquin kit fox (*Vulpes macrotis mutica*). It also occurs in conjunction with aquatic habitats such as vernal pools or seasonal wetlands.

4.2.5 Fresh Emergent Wetland

Fresh emergent wetlands are primarily limited to the far eastern and northern portions of the EIR Study Area, which overlap with the GRCD. Fresh emergent wetlands are characterized by vegetation adapted to continually or seasonally flooded areas. This vegetation type is dominated by perennial monocots that may grow more than 6 feet tall. Fresh emergent wetlands support a high diversity of wildlife, providing food, water, and cover for numerous birds, mammals, reptiles and amphibians. Special-status species that may occur in this plant community include giant garter snake, lesser sandhill crane, and Aleutian Canada goose.

4.3 Soils

Based on aerial photo interpretation (NAIP 2020), much of the EIR Study Area has been altered due to historical agricultural land use. According to data last updated on September 17, 2021, to the Web Soil Survey for Merced County, Western Part (NRCS 2022a), 29 soil units, or types, have been mapped within the EIR Study Area, as summarized below in Table 4-1. A total of 23 of these soil units contain hydric components that are associated with soils found within basin floors, basin rims, alluvial fans, fan aprons, or sloughs (NRCS 2022b).

Table 4-1. Soil Units Occurring within the EIR Study Area¹		
Soil Unit	Hydric Components²	Hydric Component Landform
101 - Agnal clay loam	Yes	Basin floors
141 - Britto clay loam	Yes	Basin floors
144 - Capay clay loam, 0 percent slopes, dry, MLRA 17	Yes	Alluvial fans
148 - Carranza-Woo , 0 to 2 percent slopes	Yes	Fans
153 - Chinvar loam	Yes	Alluvial fans and fan aprons
162 - Damluis clay loam, 2 to 8 percent slopes	No	-
168 - Dosamigos clay loam, partially drained	Yes	Alluvial fans and fan aprons
169 - Dosamigos clay, partially drained	Yes	Alluvial fans and basin floors
171 - Dospalos clay, partially drained	Yes	Basin floors
175 - Edminster loam	Yes	Basin floors
178 - Elnido sandy loam, partially drained	Yes	Basin floors
180 - Elnido clay loam, partially drained	Yes	Basin floors
186 - Fluvaquents, channeled	Yes	Fans and flood plains
192 - Henmel clay loam, partially drained	Yes	Fan aprons, basin floors, rims
228 - Palazzo sandy loam, partially drained	Yes	Basin Floors
234 - Pedcat loam, 0 to 2 percent slopes	Yes	Fan aprons and basin floors
236 - Pedcat clay loam, leveled, 0 to 2 percent slopes	Yes	Fan aprons, basin floors, rims, alluvial fans
253 - Stanislaus clay loam	Yes	Fan aprons
254 - Stanislaus clay loam, wet	Yes	Fan aprons
255 - Stanislaus-Dosamigos-Urban land complex	No	-
256 - Triangle clay	Yes	Basin floors and rims
274 - Woo loam, 0 to 2 percent slopes	No	-
275 - Woo loam, gravelly substratum, 0 to 2 percent slopes	Yes	Alluvial fans
277 - Woo clay loam, 0 to 2 percent slopes	No	-
280 - Woo clay, 0 to 2 percent slopes	Yes	Alluvial fans
282 - Woo-Urban land , 0 to 2 percent slopes	Yes	Alluvial fans
283 - Xerofluvents, channeled	Yes	Sloughs and basin floors
287 - Water	No	-
289 - Miscellaneous water	No	-

¹Source: NRCS 2022a

²Source: NRCS 2022b

4.4 California Aquatic Resource Inventory

The California Aquatic Resource Inventory (CARI; San Francisco Estuary Institute [SFEI] 2017) is a statewide map of surface waters and related habitats combining multiple national and regional datasets, including the National Wetlands Inventory and the National Hydrography Dataset. CARI includes aquatic resource features mapped using a variety of remote sensing and modeling techniques.

As such, these aquatic features may or may not exist as represented. In addition, CARI data varies in detail, accuracy, and age, and is meant to be used as a tool to assist with an aquatic resource delineation but not as the only source of information (SFEI 2017). Therefore, it is recommended that ground-level surveys are conducted to determine the presence of the aquatic resources within the EIR Study Area that may be within the jurisdiction of state and federal agencies.

According to CARI (SFEI 2017, California Wetlands Monitoring Workgroup 2022), four aquatic feature types have been mapped within the EIR Study Area: fluvial unnatural; fluvial natural; lake, reservoir, and natural vegetation; and pond and associated vegetation.

Fluvial systems are dominated by rivers and streams. The fluvial unnatural aquatic feature type corresponds to the irrigation canals and drainage ditches found throughout the EIR Study Area. Fluvial natural corresponds to portions of Los Banos Creek and the drainage channels within the managed wildlife areas in the eastern and northeastern portions of the EIR Study Area.

Lake, reservoir, and natural vegetation corresponds to the larger ponds and wetlands within the managed wildlife areas in the eastern portions of the EIR Study Area.

Pond and associated vegetation correspond to smaller ponded areas along portions of Los Banos Creek and Main Canal, and within the managed wildlife area along the east side of the EIR Study Area.

4.5 Evaluation of Species Identified in the Literature Search

The CNDDDB, CNPS, and USFWS database searches were conducted in February 2022. These queries reported a total of 89 special-status species historically and/or potentially occurring within the search areas. Table 4-2 lists the species identified through the database queries, presents a brief description of their habitat requirements, and provides determination for their potential to occur onsite.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
Plants						
Santa Clara thorn-mint <i>(Acanthomintha lanceolata)</i>	-	-	4.2	Rocky areas within often serpentinite chaparral, cismontane woodland, and costal scrub (260'-3,935').	March-June	Absent. No suitable habitat onsite.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
Forked fiddleneck <i>(Amsinckia furcata)</i>	–	–	4.2	Semi-barren loose shaly slopes in cismontane woodland and valley and foothill grassland (164'–3,281').	February–May	Potential to Occur.
California androsace <i>(Androsace elongata ssp. acuta)</i>	–	–	4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland (492'–4,281').	March–June	Potential to Occur.
Alkali milk-vetch <i>(Astragalus tener var. tener)</i>	–	–	1B.2	Playas, mesic areas within valley and foothill grasslands, and alkaline vernal pools (3'–197').	March–June	Potential to Occur.
Heartscale <i>(Atriplex cordulata var. cordulata)</i>	–	–	1B.2	Alkaline or saline valley and foothill grasslands, meadows and seeps, and chenopod scrub communities (0'–1,837').	April–October	Potential to Occur.
Crownscale <i>(Atriplex coronata var. coronata)</i>	–	–	4.2	Alkaline, often clay substrates in chenopod scrub, valley and foothill grassland, and vernal pools (3'–1,936').	March–October	Potential to Occur.
Lost Hills crownscale <i>(Atriplex coronata var. vallicola)</i>	–	–	1B.2	Alkaline soils in chenopod scrub, valley and foothill grassland and vernal pools (164'–2,087').	April–September	Potential to Occur.
Lesser saltscale <i>(Atriplex minuscula)</i>	–	–	1B.1	Alkaline, sandy soils in chenopod scrub, playas, and valley and foothill grassland (49'–656').	May–October	Potential to Occur.
Vernal pool smallscale <i>(Atriplex persistens)</i>	–	–	1B.2	Alkaline vernal pools (33'–377').	June–October	Low Potential to Occur. Marginally

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
						suitable habitat present onsite.
Lemmon's jewel flower <i>(Caulanthus lemmonii)</i>	-	-	1B.2	Pinyon and juniper woodland and valley and foothill grassland (262'-5,184').	February-May	Potential to Occur.
Parry's rough tarplant <i>(Centromadia parryi ssp. rudis)</i>	-	-	4.2	Alkaline, vernal mesic seeps in valley and foothill grassland and vernal pools, sometimes found on roadsides (0'-328').	May-October	Low Potential to Occur. Marginally suitable habitat present onsite.
Hispid salty bird's-beak <i>(Chloropyron molle ssp. hispidum)</i>	-	-	1B.1	Alkaline soils in meadows and seeps, playas, and valley and foothill grasslands (3'-509').	June-September	Potential to Occur.
Brewer's clarkia <i>(Clarkia breweri)</i>	-	-	4.2	Often within serpentinite chaparral, cismontane woodland, and coastal scrub (705-3,660')	April-June	Absent. No suitable habitat onsite.
Rattan's cryptantha <i>(Cryptantha rattanii)</i>	-	-	4.3	Cismontane woodland, riparian woodland, and valley and foothill grassland (805-3,000').	April-July	Potential to Occur.
Recurved larkspur <i>(Delphinium recurvatum)</i>	-	-	1B.2	Chenopod scrub, cismontane woodland, and valley and foothill grasslands (10'-2,592').	March-June	Potential to Occur.
Protruding buckwheat <i>(Eriogonum nudum var. indictum)</i>	-	-	4.2	Within clay or serpentinite areas of chaparral, chenopod scrub, and cismontane woodland (490-4,800').	March-October	Absent. No suitable habitat onsite.
Idria buckwheat <i>(Eriogonum vestitum)</i>	-	-	4.3	Valley and foothill grassland (770-2,955').	April-August	Potential to Occur.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
Delta button-celery <i>(Eryngium racemosum)</i>	–	CE	1B.1	Vernally mesic clay depressions in riparian scrub communities (10'–98').	June–October	Low Potential to Occur. Marginally suitable habitat present onsite.
Spiny-sepaled button-celery <i>(Eryngium spinosepalum)</i>	–	–	1B.2	Swales, roadside ditches, vernal pools and valley and foothill grassland (262'–3,199').	April–June	Potential to Occur.
Hoover's spurge <i>(Euphorbia hooveri)</i>	FT	–	1B.2	Vernal pools (82'–821').	July–September	Low Potential to Occur. Marginally suitable habitat present onsite.
Hogwallow starfish <i>(Hesperevax caulescens)</i>	–	–	4.2	Mesic areas with clay soil within valley and foothill grassland and shallow vernal pools; sometimes in alkaline areas (0'–1,657').	March–June	Low Potential to Occur. Marginally suitable habitat present onsite.
Alkali-sink goldfields <i>(Lasthenia chrysantha)</i>	–	–	1B.1	Alkaline vernal pools (0–656').	February–April	Low Potential to Occur. Marginally suitable habitat present onsite.
Ferris' goldfields <i>(Lasthenia ferrisiae)</i>	–	–	4.2	Alkaline and clay vernal pools (66'–2,297').	February–May	Low Potential to Occur. Marginally suitable habitat present onsite.
Coulter's goldfields <i>(Lasthenia glabrata ssp. coulteri)</i>	–	–	1B.1	Coastal marshes and swamps, playas, and vernal pools (3'–4,003').	February–June	Potential to Occur.
Serpentine leptosiphon <i>(Leptosiphon ambiguus)</i>	–	–	4.2	Usually serpentinite soils of Cismontane woodland, coastal scrub, and valley and foothill grassland (395'–3710').	March–June	Low Potential to Occur. Marginally suitable habitat present onsite.
Hall's bush-mallow <i>(Malacothamnus hallii)</i>	–	–	1B.2	Chaparral and coastal scrub (32'–2,493').	May–September	Absent. No suitable habitat onsite.
Little mousetail	–	–	3.1	Mesic areas of valley and foothill grassland	March–June	Potential to Occur.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
<i>(Myosurus minimus ssp. apus)</i>				and alkaline vernal pools (66'–2,100').		
Shining navarretia <i>(Navarretia nigelliformis ssp. radians)</i>	–	–	1B.2	Vernal pools within cismontane woodland and valley or foothill grassland (213'–3,281').	April–July	Potential to Occur.
Prostrate vernal pool navarretia <i>(Navarretia prostrata)</i>	–	–	1B.1	Mesic soils within coastal scrub, meadows and seeps, alkaline valley and foothill grassland, and vernal pools (10'–3,970').	April–July	Potential to Occur.
Colusa Grass <i>(Neostapfia colusana)</i>	FT	CE	1B.1	Large vernal pools with adobe soils (16'–656').	May–August	Low Potential to Occur. Marginally suitable habitat present onsite.
California alkali grass <i>(Puccinellia simplex)</i>	–	–	1B.2	Alkaline, vernal mesic areas and sinks, flats and lake margins within chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools (7'–3,051').	March–May	Potential to Occur.
Sanford's arrowhead <i>(Sagittaria sanfordii)</i>	–	–	1B.2	Shallow marshes and freshwater swamps (0'–2,133').	May–October	Low Potential to Occur. Marginally suitable habitat present onsite.
Chaparral ragwort <i>(Senecio aphanactis)</i>	–	–	2B.2	Chaparral, cismontane woodland, coastal scrub; sometimes in alkaline soils (49'–2,625').	January–April	Absent. No suitable habitat onsite.
Arburua Ranch jewelflower <i>(Streptanthus insignis ssp. lyonia)</i>	-	-	1B.2	Grassland and chaparral habitat, usually on serpentine soils (755–2,805').	March–May	Absent. No suitable habitat onsite.
Slender-leaved pondweed	–	–	2B.2	Assorted shallow freshwater marshes	May–July	Low Potential to Occur. Marginally

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
<i>(Stuckenia filiformis ssp. alpina)</i>				and swamps (984'–7,054').		suitable habitat present onsite.
Wright's trichocoronis <i>(Trichocoronis wrightii var. wrightii)</i>	–	–	2B.1	Alkaline soils in meadows and seeps, marshes and swamps, riparian forest, and vernal pools (16'–1,427').	May–September	Low Potential to Occur. Marginally suitable habitat present onsite.
Invertebrates						
Conservancy fairy shrimp <i>(Branchinecta conservatio)</i>	FE	-	-	Vernal pools/wetlands.	November–April	Potential to Occur.
Longhorn fairy shrimp <i>(Branchinecta longiantenna)</i>	FE	-	-	Vernal pools/wetlands.	November–April	Potential to Occur.
Vernal pool fairy shrimp <i>(Branchinecta lynchi)</i>	FT	-	-	Vernal pools/wetlands.	November–April	Potential to Occur.
Monarch butterfly <i>(Danaus plexippus)</i>	FC	-	-	Adult monarchs west of the Rocky Mountains typically overwinter in sheltered wooded groves of Monterey pine, Monterey cypress, and gum eucalyptus along coastal California, then disperse in spring throughout California, Nevada, Arizona, and parts of Oregon and Washington. Adults require milkweed and additional nectar sources during the breeding season. Larval caterpillars feed exclusively on milkweed.	Any season	Potential to Occur.
Valley elderberry longhorn beetle	FT	-	-	Elderberry shrubs.	Any season	Potential to Occur.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
<i>(Desmocerus californicus dimorphus)</i>						
Vernal pool tadpole shrimp <i>(Lepidurus packardii)</i>	FE	-	-	Vernal pools/wetlands.	November-April	Potential to Occur.
Fish						
Hardhead <i>(Mylopharodon conocephalus)</i>	-	-	SSC	Relatively undisturbed streams at low to mid elevations in the Sacramento-San Joaquin and Russian River drainages. In the San Joaquin River, scattered populations found in tributary streams, but only rarely in the valley reaches of the San Joaquin River.	N/A	Absent. No suitable habitat onsite.
Steelhead (CA Central Valley DPS) <i>(Oncorhynchus mykiss)</i>	FT	-	-	Undammed rivers, streams, creeks.	N/A	Absent. No suitable habitat onsite.
Amphibians						
California tiger salamander (Central California DPS) <i>(Ambystoma californiense)</i>	FT	CT	SSC	Vernal pools, wetlands (breeding) and adjacent grassland or oak woodland; needs underground refuge (e.g., ground squirrel and/or gopher burrows). Largely terrestrial as adults.	March-May	Potential to Occur.
Northern leopard frog <i>(Lithobates pipiens)</i>	-	-	SSC	Near permanent or semi-permanent water in a variety of habitats east of the Sierra Nevada-Cascade Crest. This highly aquatic species requires shoreline cover as well as	March - October	Absent. Outside of known range.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
				submerged and emergent aquatic vegetation.		
Foothill yellow-legged frog <i>(Rana boylei)</i>	-	CE	SSC	Foothill yellow-legged frogs can be active all year in warmer locations but may become inactive or hibernate in colder climates. At lower elevations, foothill yellow-legged frogs likely spend most of the year in or near streams. Adult frogs, primarily males, will gather along main-stem rivers during spring to breed.	May–October	Absent. No suitable habitat onsite.
California red-legged frog <i>(Rana draytonii)</i>	FT	-	SSC	Lowlands or foothills at waters with dense shrubby or emergent riparian vegetation. Adults must have aestivation habitat to endure summer dry down.	May 1– November 1	Absent. Outside of known range.
Western spadefoot <i>(Spea hammondi)</i>	-	-	SSC	California endemic species of vernal pools, swales, wetlands and adjacent grasslands throughout the Central Valley.	March–May	Potential to Occur.
Reptiles						
Northern legless lizard <i>(Anniella pulchra)</i>	-	-	SSC	The most widespread of California’s <i>Anniella</i> species. Occurs in sandy or loose soils under sparse vegetation from Antioch south coastally to Ventura. Bush lupine is often an indicator plant,	Generally spring, but depends on location and conditions	Low Potential to Occur. Marginally suitable habitat present onsite.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
				and two melanistic populations are known.		
Northwestern pond turtle <i>(Actinemys marmorata)</i>	-	-	SSC	Uses ponds, streams, detention basins, and irrigation ditches. Requires basking sites and upland habitats up to 0.5 km from water for egg laying.	April–September	Potential to Occur.
Blunt-nosed leopard lizard <i>(Gambelia sila)</i>	FE	CE	FP	Occurs in sparsely vegetated alkali scrub habitats in the southern San Joaquin Valley. Uses mammal burrows, shrubs and other structures for shade.	April–July	Absent. No suitable habitat onsite.
San Joaquin coachwhip <i>(Coluber flagellum ruddocki)</i>	-	-	SSC	Occurs in open, dry, usually flat habitats in Valley grassland and saltbush scrub with little to no shrub cover in the San Joaquin Valley. A dietary generalist.	March–October	Low Potential to Occur. Marginally suitable habitat present onsite.
Giant garter snake <i>(Thamnophis gigas)</i>	FT	CT	-	Freshwater ditches, sloughs, and marshes in the Central Valley. Almost extirpated from the southern parts of its range.	April–October	Low Potential to Occur. Marginally suitable habitat present onsite except for managed wetland areas to east.
Birds						
Aleutian cackling goose <i>(Branta hutchinsii leucopareia)</i>	De-listed	-	CDFW WL	Pasture, marsh (Sacramento/San Joaquin Valley and Delta)	October–March	Potential to Occur. Suitable habitat present onsite.
Clark’s grebe <i>(Aechmophorus clarkii)</i>	-	-	BCC	Winters on salt or brackish bays, estuaries, sheltered seacoasts, freshwater lakes, and rivers. Breeds on freshwater to brackish marshes,	June-August (breeding)	Absent. No suitable habitat onsite.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
				lakes, reservoirs and ponds, with a preference for large stretches of open water fringed with emergent vegetation.		
Yellow rail <i>(Coturnicops noveboracensis)</i>	-	-	BCC, SSC	Found in sedge meadows, dense stands of bulrush, high marshlands dominated by sedges and grasses (in California, found in Lassen, Plumas, Siskiyou, Modoc counties, and San Francisco Bay and Tomales Bay regions)	May- September	Absent. No suitable habitat onsite.
Lesser sandhill crane <i>(Antigone canadensis canadensis)</i>	-	-	SSC	Breeds in Siberia, Alaska, and arctic Canada; winters in southwest US, including CA, south into Mexico. In winter, they forage in burned grasslands, pastures, and feed on waste grain in a variety of agricultural settings (e.g., corn, wheat, milo, rice, oats, and barley), tilled fields, recently planted fields, alfalfa fields, row crops and burned rice fields.	September- March (wintering)	Potential to Occur. Suitable wintering habitat onsite.
American avocet <i>(Recurvirostra americana)</i>			BCC	Nests in scrapes on the ground around wetlands, dikes/levees; or islands.	April-August	Potential to Occur.
Mountain plover <i>(Charadrius montanus)</i>	-	-	BCC, SSC	Breeds in the Great Plains/Midwestern US; winters in California, Arizona, Texas, and Mexico; wintering	September- March (wintering)	Potential to Occur.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
				habitat in California includes tilled fields, heavily grazed open grassland, burned fields, and alfalfa fields.		
Long-billed curlew <i>(Numenius americanus)</i>	-	-	BCC	Breeds east of the Cascades in Washington, Oregon, northeastern California (Siskiyou, Modoc, Lassen counties), east-central California (Inyo County), through Great Basin region into Great Plains. Winters in California, Texas, and Louisiana. Wintering habitat includes tidal mudflats and estuaries, wet pastures, sandy beaches, salt marsh, managed wetlands, evaporation ponds, sewage ponds, and grasslands.	September– March (wintering)	Potential to Occur. Suitable wintering habitat onsite.
Willet <i>(Tringa semipalmata)</i>	-	-	BCC	Breeds locally in interior of western North America. In California, breeding range includes the Klamath Basin and Modoc Plateau and portions of Mono and possibly Inyo counties. Breeding habitat includes prairies, wetlands and grasslands on semiarid plains; in uplands near brackish or saline wetlands; prefers temporary, seasonal, and alkali	April–August	Absent. No suitable habitat onsite.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
				wetlands over semipermanent and permanent wetlands.		
Black tern <i>(Chlidonias niger)</i>	-	-	BCC, SSC	Breeding range includes northeastern California, Central Valley, Great Plains of U.S. and Canada; winters in Central and South America; nesting habitat includes shallow freshwater marsh with emergent vegetation, prairie sloughs, lake margins, river islands, and cultivated rice fields.	May–August	Absent. No suitable habitat onsite.
White-tailed kite <i>(Elanus leucurus)</i>	-	-	CFP	Nesting occurs within trees in low elevation grassland, agricultural, wetland, oak woodland, riparian, savannah, and urban habitats.	March–August	Potential to Occur.
Golden eagle <i>(Aquila chrysaetos)</i>	-	-	BCC, CFP	Nesting habitat includes mountainous canyon land, rimrock terrain of open desert and grasslands, riparian, oak woodland/savannah, and chaparral. Nesting occurs on cliff ledges, riverbanks, trees, and manufactured structures (e.g., windmills, platforms, and transmission towers). Breeding occurs throughout California, except the immediate coast, Central Valley floor, Salton Sea region,	Nest (February–August); winter Central Valley (October–February)	Low Potential to Occur. Marginal foraging habitat present onsite.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
				and the Colorado River region, where they can be found during Winter.		
Northern harrier <i>(Circus hudsonius)</i>	-	-	BCC, SSC	Nests on the ground in open wetlands, marshy meadows, wet/lightly grazed pastures, (rarely) freshwater/brackish marshes, tundra, grasslands, prairies, croplands, desert, shrub-steppe, and (rarely) riparian woodland communities.	April– September	Potential to Occur. Foraging habitat present onsite.
Cooper’s hawk <i>(Accipiter cooperii)</i>	-	-	CDFW WL	Nests in trees in riparian woodlands in deciduous, mixed and evergreen forests, as well as urban landscapes.	March–July	Low Potential to Occur. Marginal nesting habitat present onsite.
Bald eagle <i>(Haliaeetus leucocephalus)</i>	Delisted	CE	CFP, BCC	Typically nests in forested areas near large bodies of water in the northern half of California; nests in trees and rarely on cliffs; wintering habitat includes forest and woodland communities near water bodies (e.g., rivers, lakes), wetlands, flooded agricultural fields, open grasslands.	February– September (nesting); October– March (wintering)	Low Potential to Occur. Marginal foraging habitat present onsite.
Swainson’s hawk <i>(Buteo swainsoni)</i>	-	CT	BCC	Nesting occurs in trees in agricultural, riparian, oak woodland, scrub, and urban landscapes. Forages over grassland, agricultural lands, particularly	March–August	Potential to Occur.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
				during disking/ harvesting, and irrigated pastures.		
Ferruginous hawk <i>(Buteo regalis)</i>	-	-	BCC, CDFW WL	Rarely breeds in California (Lassen County); winter range includes grassland and shrubsteppe habitats from Northern California (except northeast and northwest corners) south to Mexico and east to Oklahoma, Nebraska, and Texas.	September– March (wintering)	Potential to Occur. Suitable foraging habitat present onsite.
Burrowing owl <i>(Athene cunicularia)</i>	-	-	BCC, SSC	Nests in burrows or burrow surrogates in open, treeless areas within grassland, steppe, and desert biomes. Often with other burrowing mammals (e.g., prairie dogs, California ground squirrels). May also use manufactured habitat such as agricultural fields, golf courses, cemeteries, roadside, airports, vacant urban lots, and fairgrounds.	February– August	Potential to Occur.
Nuttall's woodpecker <i>(Dryobates nuttallii)</i>	-	-	BCC	Resident from northern California south to Baja California. Nests in tree cavities in oak woodlands and riparian woodlands.	April–July	Potential to Occur.
Merlin <i>(Falco columbarius)</i>	-	-	CDFW WL	Breeds in Oregon, Washington and north into Canada. Winters in southern Canada to South America, including California. Breeds near forest	September– April (wintering in the Central Valley); does not breed in California	Low Potential to Occur. Marginal wintering habitat present onsite.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
				openings, fragmented woodlots, and riparian areas. Wintering habitat includes wide variety, open forests, grasslands, tidal flats, plains, and urban settings.		
Prairie falcon <i>(Falco mexicanus)</i>	-	-	CDFW WL	Found in open habitat at all elevations up to 3,350 meters. Nests on cliffs and bluffs in arid plains and steppes. In California, nests throughout state except northwest corner, along immediate coast, and the Central Valley floor. Winters throughout California, in open habitats, such as grasslands in Central Valley.	March–July (breeding); September–February (wintering in Central Valley)	Potential to Occur. Suitable foraging habitat onsite.
Loggerhead shrike <i>(Lanius ludovicianus)</i>	-	-	BCC, SSC	Found throughout California in open country with short vegetation, pastures, old orchards, grasslands, agricultural areas, open woodlands. Not found in heavily forested habitats.	March–July	Potential to Occur.
Yellow-billed magpie <i>(Pica nuttallii)</i>	-	-	BCC	Endemic to California; found in the Central Valley and coast range south of San Francisco Bay and north of Los Angeles County; nesting habitat includes oak savannah with large expanses of open ground; also found in	April–June	Potential to Occur.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
				urban parklike settings.		
California horned lark <i>(Eremophila alpestris actia)</i>	-	-	CDFW WL	San Joaquin Valley, coast range from Sonoma County south to Baja California; grassland and agricultural areas.	March–July	Potential to Occur.
Song sparrow "Modesto" <i>(Melospiza melodia heermanni)</i>	-	-	SSC	Resident in central and southwest California, including Central Valley; nests in marsh and scrub habitats.	April–June	Potential to Occur. Suitable nesting habitat present onsite.
Yellow-headed blackbird <i>(Xanthocephalus xanthocephalus)</i>	-	-	SSC	In California, breeds in the Great Basin region, along Colorado River south to Baja California, Salton Sea, Kern, Ventura, Riverside, San Diego and possibly Orange and Lake counties, and locally in the Central Valley. Nests are constructed over deep water in emergent vegetation of prairie wetlands, quaking aspen parklands, mountain meadows, forest edges, large lakes.	April–July	Low Potential to Occur. Marginal wintering habitat present onsite.
Bullock's oriole <i>(Icterus bullockii)</i>			BCC	Breeding habitat includes riparian and oak woodlands.	March–July	Potential to Occur.
Tricolored blackbird <i>(Agelaius tricolor)</i>	-	CT	BCC, SSC	Breeds locally west of Cascade-Sierra Nevada and southeastern deserts from Humboldt and Shasta counties south to San Bernardino, Riverside and San	March–August	Potential to Occur.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
				Diego counties. Central California, Sierra Nevada foothills and Central Valley, Siskiyou, Modoc and Lassen counties. Nests colonially in freshwater marsh, blackberry bramble, milk thistle, triticale fields, weedy (i.e., mustard, mallow) fields, giant cane, safflower, stinging nettles, tamarisk, riparian scrublands and forests, fiddleneck and fava bean fields.		
Saltmarsh common yellowthroat <i>(Geothlypis trichas sinuosa)</i>	-	-	BCC, SSC	Breeds in salt marshes of San Francisco Bay; winters San Francisco south along coast to San Diego County	March–July	Absent. No suitable habitat onsite.
Mammals						
Nelson's antelope squirrel <i>(Ammospermophilus nelsoni)</i>	-	CT	-	Dry, sparsely vegetated areas with loam soils in chenopod scrub habitats in the western San Joaquin Valley from 200-1200 feet in elevation. Needs widely scattered shrubs, forbs, and grasses in broken terrain with gullies and washes.	Any season	Low Potential to Occur. On the edge of the known range for the species.
Giant kangaroo rat <i>(Dipodomys ingens)</i>	FE	CE	-	Annual grasslands on the western side of the San Joaquin Valley. Marginal habitat in alkali scrub. Needs level terrain	Any season	Absent. Outside known range for the species.

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
				and sandy loam soils for burrowing.		
Fresno kangaroo rat <i>(Dipodomys nitratoideus exilis)</i>	FE	CE	-	Elevated grassy patches on alkali plains or in grassy terrain with scattered alkali patches. Friable soils for burrow digging and annual and native forbs and grasses for foraging are necessary habitat components. Distribution is limited to the flat San Joaquin Valley Floor from Merced County to the northern border of Kings County.	Any season	Absent. Outside known range for the species.
Western mastiff bat <i>(Eumops perotis californicus)</i>	-	-	SSC	Primarily a cliff-dwelling species, found in similar crevices in large boulders and buildings.	April-September	Low Potential to Occur. Marginal roosting habitat present.
Hoary bat <i>(Lasiurus cinereus)</i>	-	-	SSC	Dense foliage of medium to large trees; roost primarily in foliage of both coniferous and deciduous trees. Roosts are usually at the edge of a clearing. Some unusual roosting situations have been reported in caves, beneath a rock ledge, in a woodpecker hole, in a grey squirrel nest, under a driftwood plank, and clinging to the side of a building.	April-September	Potential to Occur.
American badger <i>(Taxidea taxus)</i>	-	-	SSC	Drier open stages of most shrub, forest, and herbaceous	Any season	Low Potential to Occur. Marginal

Table 4-2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	FESA	CESA/ NPPA	Other			
				habitats with friable soils.		habitat present onsite.
San Joaquin kit fox <i>(Vulpes macrotis mutica)</i>	FE	CT	-	Native and nonnative grasslands, oak savannah adjacent to grasslands, agricultural lands, lands that are dryland farmed, alkali scrub, and ruderal land.	May 1– November 1	Potential to Occur.

Status Codes:

- FESA Federal Endangered Species Act
- CESA California Endangered Species Act
- FE FESA listed, Endangered.
- FP FESA listed, Protected
- FT FESA listed, Threatened
- FC Candidate for FESA listing as Threatened or Endangered
- BCC USFWS Bird of Conservation Concern (USFWS 2021)
- CT CESA- or NPPA listed, Threatened
- CE CESA or NPPA listed, Endangered
- CFP California Fish and Game Code Fully Protected Species (§ 3511-birds, § 4700-mammals, §5 050-reptiles/amphibians)
- CDFW WL CDFW Watch List
- SSC CDFW Species of Special Concern
- 1B CRPR/Rare or Endangered in California and elsewhere
- 2B CRPR/Plants rare, threatened, or endangered in California but more common elsewhere
- 3 CRPR/Plants About Which More Information is Needed – A Review List
- 4 CRPR/Plants of Limited Distribution – A Watch List
- 0.1 Threat Rank/Seriously threatened in California (over 80 percent of occurrences threatened / high degree and immediacy of threat)
- 0.2 Threat Rank/Moderately threatened in California (20-80 percent occurrences threatened / moderate degree and immediacy of threat)
- 0.3 Threat Rank/Not very threatened in California (<20 percent of occurrences threatened / low degree and immediacy of threat or no current threats known)
- Delisted Formally Delisted (delisted species are monitored for five years)

A total of 30 special-status plants, 6 invertebrates, 2 amphibians, 4 reptiles, 23 birds, and 5 mammal species were found to have some potential to occur within the EIR Study Area based on the literature review. Detailed descriptions of these species are provided in Attachment A.

4.6 Wildlife Movement Corridors, Linkages, and Significant Ecological Areas

The EIR Study Area was assessed for its ability to function as a wildlife corridor. The concept of habitat corridors addresses the linkage between large blocks of habitat that allow safe movement for mammals and other wildlife species from one habitat area to another. The definition of a corridor is varied, but corridors may include areas such as greenbelts, refuges, underpasses, riparian areas, creeks, and

biogeographic land bridges. In general, a corridor can be described as a linear habitat embedded within a dissimilar matrix that connects two or more larger blocks of habitat.

Habitat for wildlife species within the EIR Study Area is mainly fragmented by irrigation canals, Highways 165 and 33, and urban development. The agricultural fields and nonnative annual grassland habitats provide potential opportunities for wildlife movement through the EIR Study Area. Wildlife movement through these areas is likely limited to periods when vehicle traffic is at a minimum or when agricultural machinery is not in operation. The mixed riparian woodland within Los Banos Creek, which transects the western portion of the EIR Study Area, may serve as a wildlife corridor but is constrained by the narrow width of the corridor and lack of continuous vegetation cover.

The far eastern portion of the EIR Study Area overlaps with managed wetlands that are part of the GRCD. The GRCD contains approximately 75,000 acres and encompasses several state wildlife areas. The area is part of the largest contiguous block of wetlands remaining in California's Central Valley and is a major wintering ground for migratory waterfowl and shorebirds along the Pacific Flyway. The U.S. Fish and Wildlife Service ranks the habitat provided by the GRCD as the most important complex of wetlands in the San Joaquin Valley (GRCD, 2022).

4.7 Critical Habitat and Essential Fish Habitat

There is no designated critical habitat or essential fish habitat in the EIR Study Area.

4.8 Sensitive Natural Communities

Five sensitive natural communities were identified as having potential to occur within the EIR Study Area based on the literature review (CDFW 2022). These included Valley Sink Scrub, Cismontane Alkali Marsh, Coastal and Valley Freshwater Marsh, Great Valley Cottonwood Riparian Forest, and Sycamore Alluvial Woodland.

A review of aerial imagery shows historical and current land use impacts within the EIR Study Area. Past disturbance, urbanization, agricultural development, and introduction of non-native species limit the presence of sensitive natural communities; however, portions of the EIR Study Area support riparian woodland and freshwater wetlands habitats, as described in Section 3.

5.0 RECOMMENDATIONS

The following recommendations are included with the assumption that properties within the EIR Study Area will be developed, or the current land use will be altered in the future. Prior to development or change in land use within a property, the following measures are recommended to avoid and minimize potential impacts to biological resources.

5.1 Aquatic Resources

It is recommended that an aquatic resources delineation be conducted to detect potential Waters of the U.S./State that may be present within a proposed project area. The following mitigation measures are recommended to minimize any proposed impacts to Waters of the U.S./State:

- Obtain authorization to fill wetlands and other Waters of the U.S. under the Section 404 of the federal CWA (Section 404 Permit) from USACE prior to discharging any dredged or fill materials into any Waters of the U.S. Develop mitigation measures as part of the Section 404 Permit to ensure no net loss of wetland function and values.
- Obtain a Water Quality Certification or waiver pursuant to Section 401 of the CWA from the RWQCB for Section 404 permit actions.
- Pursuant to the Porter-Cologne Water Quality Act, obtain a permit authorization from the RWQCB prior to the discharge of material in an area that could affect Waters of the State.

If there are aquatic features present within a proposed project area that may be subject to CDFW Section 1602 jurisdiction, the following measure is recommended to minimize any proposed impacts to the bed, bank, or channel of rivers, streams, or lakes:

- Obtain an SAA pursuant to Section 1602 of the California Fish and Game Code for any activity that will impact the bed, bank, or channel of any river, stream, or lake. Develop mitigation measures in consultation with CDFW as part of the SAA process to ensure protections for affected fish and wildlife resources.

5.2 Special-Status Species

The EIR Study Area provides potential habitat for 70 special status plant and wildlife species. For proposed projects within the EIR Study Area, it is recommended that a BRA and a ground-level assessment be conducted to determine if there are any special-status species or their habitats that may be impacted by the project.

5.2.1 Plants

If the BRA conducted for a proposed project identifies there is habitat for special-status plants, the following measures are recommended to minimize potential impacts to special-status plants:

- Perform focused special-status plant surveys of the proposed project area according to CDFW, CNPS, and USFWS protocols (CDFW 2018; CNPS 2001; USFWS 2000). Surveys should be timed according to the blooming period for target species, and known reference populations should be visited prior to surveys to confirm the species is blooming where known to occur.
- If surveys identify any special-status plants within the proposed project area, the plant populations should be marked with flagging and avoided during project construction activities. If avoidance is not feasible, minimization or avoidance measures should be developed in consultation with CDFW and/or USFWS.
- If no special-status plants are found during the surveys, no further measures are necessary.

5.2.2 Invertebrates

If the BRA conducted for a proposed project identifies there is habitat for special-status invertebrates, the following measures are recommended to minimize potential impacts to special-status invertebrates such as federally listed large branchiopods (e.g., longhorn fairy shrimp, vernal pool fairy shrimp, conservancy fairy shrimp, and tadpole shrimp), monarch butterfly, and VELB.

5.2.2.1 Large Branchiopods

- Conduct a survey for federally listed large branchiopods pursuant to the USFWS *Survey Guidelines for the Listed Large Branchiopods* (USFWS 2017a) within the aquatic resources that are suitable habitat within the proposed project area.
- If surveys identify the presence of listed large branchiopods within an aquatic feature, project-related impacts to that aquatic feature should be avoided. If avoidance is not feasible, minimization or avoidance measures should be developed in consultation with USFWS and incidental take authorization obtained pursuant to federal ESA Section 7 or Section 10.

5.2.2.2 Valley Elderberry Longhorn Beetle

- Per the USFWS *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* (USFWS 2017b), conduct an assessment for VELB habitat (i.e., elderberry shrubs) within the proposed project area and a 165-foot buffer area.
- If elderberry shrubs are not present, no further action or mitigation is necessary.
- If elderberry shrubs are present within the survey area, project activities may occur up to 20 feet from the dripline of the elderberry shrubs if precautions are implemented to minimize the potential for indirect impacts (USFWS 2017b). If proposed impacts to the elderberry shrub are unavoidable, mitigation measures should be developed in consultation with USFWS and incidental take authorization obtained pursuant to federal ESA Section 7 or Section 10.

5.2.3 Amphibians

5.2.3.1 California Tiger Salamander (Central California DPS)

The EIR Study Area contains potential habitat for CTS. The following measures are recommended to avoid and minimize impacts to this species:

- Conduct a survey for CTS habitat within the proposed project area as outlined within the *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander* (USFWS 2003). Additional surveys may be required in consultation with USFWS and CDFW (USFWS 2003).

- If the proposed project area supports CTS habitat, project-related impacts to that habitat should be avoided, and avoidance measures should be developed in consultation with USFWS and CDFW.
- If CTS breeding habitat is present within the proposed project area and proposed impacts are unavoidable, minimization or avoidance measures should be developed in consultation with USFWS and incidental take authorization obtained pursuant to federal ESA Section 7 or Section 10. In addition, a CDFW Incidental Take Permit (ITP) should be obtained pursuant to California ESA Section 2081.

5.2.3.2 Western Spadefoot

The EIR Study Area contains potential habitat for western spadefoot. To avoid or minimize impacts to western spadefoot, the following measures are recommended:

- Preconstruction surveys for western spadefoot should be conducted within the limits of construction to detect adults, larvae, and/or egg masses within 14 days prior to the start of construction.
- If no western spadefoots are found, no further measures pertaining to this species are necessary.
- If adults, larvae, or egg masses are found, they should be relocated to suitable habitat in consultation with CDFW.

5.2.4 Reptiles

The EIR Study Area contains potential habitat for four special-status reptile species. Recommendations relating to GGS are described in Section 5.2.4.1. The following measures are recommended to avoid and minimize impacts to northwestern pond turtle, northern legless lizard, and San Joaquin coachwhip:

- Preconstruction surveys should be conducted within 48 hours prior to the start of construction.
- If northwestern pond turtle, northern legless lizard, and San Joaquin coachwhip are not found, no further measures pertaining to these species are necessary.
- If any of the special-status reptiles are found within an area proposed for impact, a qualified biologist should relocate the animal to a suitable location away from the proposed work area, in consultation with CDFW.

5.2.4.1 Giant Garter Snake

The EIR Study Area contains potential habitat for the GGS. The following measures are recommended to avoid and minimize impacts this species:

- Conduct an assessment for GGS habitat as described in the *Draft Recovery Plan for the Giant Garter Snake* (USFWS 1999a). If GGS habitat is absent from the proposed project area, and CDFW

and USFWS concur with the assessment, no further measures pertaining to this species are necessary.

- If the proposed project area supports GGS habitat, project-related impacts to that habitat should be avoided, and avoidance measures should be developed in consultation with USFWS and CDFW.
- If proposed impacts to GGS habitat are unavoidable, minimization or avoidance measures should be developed in consultation with USFWS and incidental take authorization obtained pursuant to the federal ESA Section 7 or Section 10. In addition, a CDFW ITP should be obtained pursuant to California ESA Section 2081.

5.2.5 Birds

Suitable nesting habitat for several special-status birds is present within the EIR Study Area. In addition to the special-status birds, all native birds, including raptors, are protected under the California Fish and Game Code and the MBTA. If present, proposed projects could result in harassment to or take of nesting individuals. To avoid and minimize impacts to protected birds and/or active nests, the following measures are recommended.

5.2.5.1 Nesting Birds

A preconstruction survey for nesting birds should be conducted by a qualified wildlife biologist within the proposed project area and a 100-foot buffer. If an active nest is located, a no-disturbance buffer should be established as determined by the biologist in consultation with CDFW and maintained until it is confirmed by the biologist that nestlings have fledged or the nest is otherwise no longer active.

5.2.5.2 Raptors

A preconstruction survey for nesting raptors should be conducted by a qualified wildlife biologist within the proposed project area and a 500-foot buffer. If an active nest is located, a no-disturbance buffer should be established as determined by the biologist in consultation with CDFW and maintained until a qualified biologist determines that nestlings have fledged or the nest is otherwise no longer active.

5.2.5.3 Swainson's Hawk

A preconstruction survey for nesting raptors should be conducted by a qualified wildlife biologist within the proposed project area and a 0.25-mile buffer. If Swainson's hawks are found to be nesting in the survey area, a no-disturbance buffer should be established in consultation with CDFW and maintained until a qualified biologist determines that nestlings have fledged or the nest is otherwise no longer active.

5.2.5.4 Burrowing Owl

The EIR Study Area contains suitable habitat for the burrowing owl. The following measures are recommended to avoid and minimize impacts to this species:

- A habitat assessment for burrowing owl habitat should be conducted within the proposed project area and a 500-foot buffer in accordance with the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). No further measures are necessary if the habitat assessment finds that the Proposed Project Area does not contain suitable burrowing owl habitat.
- If the proposed project area contains suitable habitat for burrowing owl, preconstruction surveys should be conducted to identify potential and active burrows.
- If the proposed project area supports suitable burrowing owl burrows, project-related impacts to those burrows should be avoided, and avoidance measures should be developed in consultation with CDFW. If proposed impacts to suitable burrowing owl burrows are unavoidable, exclusion and relocation measures should be developed in consultation with CDFW.

5.2.6 Mammals

5.2.6.1 *Nelson's Antelope Squirrel*

The Nelson's antelope squirrel (NAS) has low potential to occur within the EIR Study Area, and the EIR Study Area is on the edge of the known range of this species. The following are recommendations to minimize impacts to Nelson's antelope squirrel that may occur within a proposed project area:

- Conduct an assessment within the proposed project area for NAS habitat as described in *Annual Report on the Status of California State Listed Threatened and Endangered Animal and Plants* (CDFG 2005), and the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998). If NAS habitat is absent and CDFW concurs with the assessment, no further measures pertaining to this species are necessary.
- If the proposed project area supports NAS habitat, preconstruction surveys should be conducted to identify potential and active burrows.
- If the proposed project area supports suitable NAS burrows, project-related impacts to those burrows should be avoided, and avoidance measures should be developed in consultation with CDFW. If proposed impacts to suitable NAS burrows are unavoidable, minimization or alternative mitigation measures should be developed in consultation with CDFW.

5.2.6.2 *Western Mastiff Bat and Hoary Bat*

The EIR Study Area contains roosting habitat for western mastiff bat and hoary bat. To avoid and minimize impacts to special-status bats, the following measures are recommended:

- A preconstruction habitat assessment should be conducted to identify features that provide suitable bat-roosting habitat (e.g., trees with cavities or exfoliating bark, rock outcrops). Suitable habitat features should be surveyed for evidence of roosting bats (e.g., guano and urine staining), and if necessary, evening emergence surveys and/or acoustic monitoring should be conducted to determine the extent of use by bats.

- If any special-status bats are found, additional minimization and avoidance measure should be developed in consultation with CDFW.

5.2.6.3 American Badger

American badger has low potential to occur within the EIR Study Area; however, the EIR Study Area is within the known range of this species. The following measures are recommended to avoid and minimize impacts to American badger:

- A biologist should conduct a preconstruction survey 24 to 48 hours prior to the initiation of project construction for large mammal dens that occur onsite. If a large mammal den is encountered and contains sign of American badger activity, additional minimization and avoidance measures should be developed in consultation with CDFW.

5.2.6.4 San Joaquin Kit Fox

The EIR Study Area contains potential habitat for San Joaquin kit fox (SJKF). The following are recommendations to avoid and minimize impacts to SJKF that may occur within a proposed project area:

- Conduct an early evaluation survey for the proposed project area as outlined in the USFWS *San Joaquin Kit Fox Survey Protocol for the Northern Range* (USFWS 1999b). Additional surveys and avoidance measures may be required upon consultation with USFWS to determine if the proposed project will result in take of SJKF (USFWS 1999b).
- If the proposed project will result in take of SJKF, project modification or minimization measures should be developed in consultation with USFWS pursuant to Section 7 or Section 10 of the federal ESA.
- Prior to and during ground disturbance activities of a proposed project, preconstruction surveys and avoidance measures should be followed as outlined in the USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 2011).

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LIST OF ATTACHMENTS

Attachment A – Special-Status Species Descriptions

Attachment B – Literature Review Species Lists

ATTACHMENT A

Special-Status Species Descriptions

Attachment A

Special-Status Species Descriptions

Plants

Forked Fiddleneck

Forked fiddleneck (*Amsinckia furcata*) is not listed pursuant to either the federal or California Endangered Species Acts (ESA), but is designated as a California Rare Plant Rank (CRPR) 4.2 species. This species is an herbaceous annual that occurs in cismontane woodland and valley and foothill grassland. Forked fiddleneck blooms from February through May and is known to occur at elevations ranging from 165 to 3,280 feet above mean sea level (MSL). Forked fiddleneck is endemic to California; its current range includes Fresno, Kings, Kern, Merced, San Benito, and San Luis Obispo counties (California Native Plant Society [CNPS] 2022).

No California Natural Diversity Database (CNDDDB) occurrences of forked fiddleneck have been reported within 15 miles of the Environmental Impact Report (EIR) Study Area (California Department of Fish and Wildlife [CDFW] 2022); however, the nonnative annual grassland and ruderal areas within the EIR Study Area provides suitable habitat for this species. Forked fiddleneck has potential to occur within the EIR Study Area.

California Androsace

California androsace (*Androsace elongata* ssp. *acuta*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous annual that occurs in chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland. California androsace blooms from March through June and is known to occur at elevations ranging from 490 to 4,280 feet above MSL. The current range of this species in California includes Alameda, Contra Costa, Colusa, Fresno, Glenn, Kern, Los Angeles, Merced, Monterey, Riverside, San Bernardino, San Benito, Santa Clara, San Diego, Siskiyou, San Joaquin, San Luis Obispo, San Mateo, Stanislaus, and Tehama counties (CNPS 2022).

No CNDDDB occurrences of California androsace have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the nonnative annual grassland and ruderal areas within the EIR Study Area provides suitable habitat for this species. California androsace has potential to occur within the EIR Study Area.

Akali Milk-Vetch

Alkali milk-vetch (*Astragalus tener* var. *tener*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in alkaline areas of playas, adobe clay valley and foothill grasslands, and vernal pools. Alkali milk-vetch blooms from March through June and is known to occur at elevations ranging from 5 to 195 feet above MSL. Alkali milk-vetch is endemic to California; the current range of this species includes Alameda, Contra Costa, Merced, Monterey, Napa, San Benito, Santa Clara, San Francisco, San Joaquin, Solano, Sonoma, Stanislaus, and Yolo counties; it is likely extirpated from Contra Costa, Monterey, San Benito, Santa Clara, San Francisco, San Joaquin, Sonoma, and Stanislaus counties (CNPS 2022).

Three CNDDDB occurrences of alkali milk-vetch have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland and ruderal areas within the EIR Study Area provide suitable habitat for this species. Alkali milk-vetch has potential to occur within the EIR Study Area.

Heartscale

Heartscale (*Atriplex cordulata* var. *cordulata*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual found within alkaline or saline sandy valley and foothill grasslands, meadows and seeps, and chenopod scrub communities. Heartscale flowers from April through October and is known to occur at elevations ranging from sea level to 1,835 feet above MSL. Heartscale is endemic to California; the current range of this species includes Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Kings, Madera, Merced, San Joaquin, Solano, Stanislaus, Tulare, and Yolo counties; it is considered extirpated from San Joaquin, Stanislaus, and Yolo counties (CNPS 2022).

Ten CNDDDB occurrences of heartscale have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland, ruderal areas, and agriculture fields within the EIR Study Area provide suitable habitat for this species. Heartscale has potential to occur within the EIR Study Area.

Crownscale

Crownscale (*Atriplex coronata* var. *coronata*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous annual that occurs in alkaline and often clay soils within chenopod scrub, valley and foothill grassland, and vernal pools. Crownscale blooms from March through October and is known to occur at elevations ranging from 5 to 1,935 feet above MSL. Crownscale is endemic to California; the current range of this species includes Alameda, Contra Costa, Fresno, Kings, Kern, Merced, Monterey, San Benito, San Luis Obispo, Solano, Stanislaus, and Tulare counties (CNPS 2022).

No CNDDDB occurrences of crownscale have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the nonnative annual grassland, ruderal areas, and agriculture fields within the EIR Study Area provide suitable habitat for this species. Crownscale has potential to occur within the EIR Study Area.

Lost Hills Crownscale

Lost Hills crownscale (*Atriplex coronata* var. *vallicola*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in alkaline soils in chenopod scrub, valley and foothill grassland, and alkaline vernal pools. Lost Hills crownscale differs from heartscale primarily in the shape and size of the fruiting bracts. Lost Hills crownscale flowers from April through September and is known to occur at elevations ranging from 165 feet to 2,085 feet above MSL. Lost Hills crownscale is endemic to California; the current range of this species includes Fresno, Kings, Kern, Merced, Monterey, San Benito, San Luis Obispo, and Tulare counties (CNPS 2022).

Three CNDDDB occurrences of Lost Hills crownscale have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland, ruderal areas, and agriculture fields within the EIR Study Area provide suitable habitat for this species. Lost Hills crownscale has potential to occur within the EIR Study Area.

Lesser Saltscale

Lesser saltscale (*Atriplex minuscula*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in alkaline and sandy soils in chenopod scrub, playas, and valley and foothill grassland. Lesser saltscale blooms from May through October and is known to occur from 50 to 655 feet above MSL. Lesser saltscale is endemic to California; the current range of this species includes Alameda, Butte, Fresno, Kern, Kings, Madera, Merced, Stanislaus, and Tulare counties. It is likely extirpated from Stanislaus County (CNPS 2022).

One CNDDDB occurrence of lesser saltscale has been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland, ruderal areas, and agriculture fields within the EIR Study Area provide suitable habitat for this species. Lesser saltscale has potential to occur within the EIR Study Area.

Vernal Pool Smallscale

Vernal pool smallscale (*Atriplex persistens*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in alkaline vernal pools. Vernal pool smallscale blooms from June through October and is known to occur at elevations ranging from 35 to 375 feet above MSL. Vernal pool small scale is endemic to California; the current range of this species includes Colusa, Glenn, Madera, Merced, Solano, Stanislaus, and Tulare counties. It is likely extirpated in Stanislaus County (CNPS 2022).

Eight CNDDDB occurrences of vernal pool smallscale have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grasslands within the EIR Study Area provide marginally suitable habitat for this species. Vernal pool smallscale has low potential to occur within the EIR Study Area.

Lemmon's Jewel Flower

Lemmon's jewel flower (*Caulanthus lemmonii*) is not listed pursuant to either the federal or California ESAs, but is designated a CRPR 1B.2 species. This species is an herbaceous annual that occurs in pinyon and juniper woodlands, and valley and foothill grasslands at elevations from 262 to 5,184 feet above MSL (CNPS 2022). Lemmon's jewel flower blooms from February through May (CNPS 2022). This species is endemic to California; its current range includes Alameda, Fresno, Kings, Kern, Merced, Monterey, Santa Barbara, San Benito, San Joaquin, San Luis Obispo, Stanislaus, and Ventura counties. It is considered extirpated from Alameda County (CNPS 2022).

One CNDDDB occurrence of Lemmon's jewel flower has been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland and ruderal areas within the EIR Study Area provide suitable habitat for this species. Lemmon's jewel flower has potential to occur within the EIR Study Area.

Parry's Rough Tarplant

Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous annual that occurs in vernal pools and valley and foothill grassland with alkaline and vernal mesic soils, seeps, and sometimes roadsides. Parry's rough tarplant blooms from May through October and is known to occur at elevations ranging from sea level to 328 feet above MSL. Parry's rough tarplant is endemic to California; its current range includes Butte, Colusa, Glenn, Lake, Merced, Modoc, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, and Yolo counties (CNPS 2022).

No CNDDDB occurrences of Parry's rough tarplant have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, nonnative annual grassland and ruderal areas within the EIR Study Area provide marginally suitable habitat for this species. Parry's rough tarplant has low potential to occur within the EIR Study Area.

Hispid Salty Bird's-beak

Hispid salty bird's-beak (*Chloropyron molle* ssp. *hispidum*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. This species is an herbaceous, hemiparasite annual that occurs on alkaline soils in meadows and seeps, playas, and valley and foothill grasslands. Hispid salty bird's-beak blooms from June through September and is known to occur at elevations ranging from three feet to 509 feet above MSL (CNPS 2022). Hispid salty bird's-beak is endemic to California; the current range of this species includes Alameda, Fresno, Kern, Merced, Placer, and Solano counties (CNPS 2022).

Twenty-nine CNDDDB occurrences of hispid salty bird's-beak have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland and ruderal areas within the EIR Study Area provide suitable habitat for this species. Hispid salty bird's-beak has potential to occur within the EIR Study Area.

Rattan's Cryptantha

Rattan's cryptantha (*Cryptantha rattanii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.3 species. This species is an herbaceous annual that occurs within cismontane woodland, riparian woodland, and valley and foothill grassland. Rattan's cryptantha blooms from April through July, and is known to occur at elevations ranging from 805 to 3,000 feet above MSL (CNPS 2022). This species endemic to California is its current range includes Fresno, Merced, Monterey, San Benito, Santa Barbara, Santa Clara, and Stanislaus counties (CNPS 2022).

No CNDDDB occurrences of Rattan's cryptantha have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, nonnative annual grassland and ruderal areas within the EIR Study Area provide suitable habitat for this species. Rattan's cryptantha has potential to occur within the EIR Study Area.

Recurved Larkspur

Recurved larkspur (*Delphinium recurvatum*) is not listed pursuant to either the federal or California ESAs, but is designated a CRPR 1B.2 species. This species is an herbaceous perennial that occurs in alkaline substrates in chenopod scrub, cismontane woodland, and valley and foothill grasslands. Recurved larkspur blooms from March through June and is known to occur at elevations ranging from 9 to 2,592 feet above MSL (CNPS 2022). Recurved larkspur is endemic to California; the current range of this species includes Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solano, Sutter, and Tulare counties. The species is presumed extirpated from Butte and Colusa counties (CNPS 2022).

Two CNDDDB occurrences of recurved larkspur have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland and ruderal areas within the EIR Study Area provide suitable habitat for this species. Recurved larkspur has potential to occur within the EIR Study Area.

Idria buckwheat

Idria buckwheat (*Eriogonum vestitum*) is not listed pursuant to either the federal or California ESAs, but is designated a CRPR 4.3 species. This species is an herbaceous annual that occurs in valley and foothill grasslands. Idria buckwheat blooms from April through August and is known to occur at elevations ranging from 770 to 2,955 feet above MSL (CNPS 2022). Idria buckwheat is endemic to California, and its current range includes Fresno, Merced, and San Benito counties (CNPS 2022).

No CNDDDB occurrences of Idria buckwheat have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, nonnative annual grassland and ruderal areas within the EIR Study Area provide suitable habitat for this species. Idria buckwheat has potential to occur within the EIR Study Area.

Delta Button-celery

Delta button-celery (*Eryngium racemosum*) is not listed pursuant to the federal ESA but is listed as endangered pursuant to the California ESA and is designated as a CRPR 1B.1 species. This species is an herbaceous annual / perennial that occurs in vernal mesic clay depressions in riparian scrub

communities. Delta button-celery blooms from June through October and is known to occur at elevations ranging from 10 to 98 feet above MSL (CNPS 2022). Delta button-celery is endemic to California; the current range of this species includes Calaveras, Contra Costa, Merced, San Joaquin, and Stanislaus counties. It is believed to be extirpated from San Joaquin County (CNPS 2022).

Twelve CNDDDB occurrences of Delta button-celery have been reported within 15 miles of the EIR Study Area (CDFW 2022); the mixed riparian areas within the EIR Study Area provide marginally suitable habitat for this species. Delta button-celery has low potential to occur within the EIR Study Area.

Spiny-sepaled Button-celery

Spiny-sepaled button-celery (*Eryngium spinosepalum*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual/perennial that occurs in valley and foothill grassland and vernal pools (CNPS 2022). Spiny-sepaled button-celery blooms from April through June and is known to occur at elevations ranging from 262 to 3,199 feet above MSL (CNPS 2022). Spiny-sepaled button-celery is endemic to California; the current range of this species includes Contra Costa, Fresno, Kern, Madera, Merced, San Luis Obispo, Stanislaus, Tulare, and Tuolumne counties (CNPS 2022).

Two CNDDDB occurrences of spiny-sepaled button-celery have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland, ruderal areas, and ditches within the EIR Study Area provides suitable habitat for this species. Spiny-sepaled button-celery has potential to occur within the EIR Study Area.

Hoover's Spurge

Hoover's spurge (*Euphorbia hooveri*) is listed as threatened pursuant to the federal ESA, is not listed pursuant to the California ESA, and is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in vernal pools (CNPS 2022). Hoover's spurge blooms from July through September and is known to occur at elevations ranging from 82 to 820 feet above MSL (CNPS 2022). Hoover's spurge is endemic to California; its current range includes Butte, Colusa, Glenn, Merced, Stanislaus, Tehama, and Tulare counties (CNPS 2022).

One CNDDDB occurrence of Hoover's spurge has been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland within the EIR Study Area provides marginally suitable habitat for this species. Hoover's spurge has low potential to occur within the EIR Study Area.

Hogwallow Starfish

Hogwallow starfish (*Hesperevax caulescens*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous annual that occurs in mesic, clay areas within valley and foothill grassland and shallow vernal pools, sometimes in alkaline areas.

Hogwallow starfish blooms from March through June and is known to occur from sea level to 1,655 feet above MSL. Hogwallow starfish is endemic to California; the current range of this species includes Alameda, Amador, Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Mariposa, Merced, Monterey,

Sacramento, San Diego, San Joaquin, San Luis Obispo, Solano, Sonoma, Stanislaus, Sutter, Tehama, Tuolumne, Yolo, and Yuba counties. It is presumed extirpated in San Diego County (CNPS 2022).

No CNDDDB occurrences of hogwallow starfish have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, nonnative annual grassland found within the EIR Study Area provides marginally suitable habitat for this species. Hogwallow starfish has low potential to occur within the EIR Study Area.

Alkali-sink Goldfields

Alkali-sink goldfields (*Lasthenia chrysantha*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in alkaline vernal pools (CNPS 2022). Alkali-sink goldfields blooms from February through April and is known to occur at elevations ranging from sea level to 600 feet above MSL (CNPS 2022). Alkali-sink goldfields is endemic to California; its current range includes Fresno, Kern, Kings, Madera, Merced, Sacramento, Solano, Stanislaus, and Tulare counties (CNPS 2022).

Two CNDDDB occurrences of alkali-sink goldfields have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland within the EIR Study Area provides marginally suitable habitat for this species. Alkali-sink goldfields has low potential to occur within the EIR Study Area.

Ferris' Goldfields

Ferris goldfields (*Lasthenia ferrisiae*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous annual that occurs in alkaline and clay soils in vernal pools. Ferris goldfields blooms from February through May and is known to occur at elevations ranging from 66 to 2,297 feet above MSL. Ferris goldfields is endemic to California; its current range includes Alameda, Butte, Contra Costa, Colusa, Fresno, Kings, Kern, Merced, Monterey, Sacramento, San Benito, San Joaquin, San Luis Obispo, Solano, Stanislaus, Tulare, Ventura, and Yolo counties (CNPS 2022).

No CNDDDB occurrences of Ferris' goldfields have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, nonnative annual grassland within the EIR Study Area provides marginally suitable habitat for this species. Ferris' goldfields has low potential to occur within the EIR Study Area.

Coulter's Goldfields

Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in coastal salt marshes and swamps, playas, and vernal pools (CNPS 2022). Coulter's goldfields blooms from February through June and is known to occur at elevations ranging from three to 4,003 feet above MSL (CNPS 2022). The current range of this species in California includes Colusa, Kern, Los Angeles, Merced, Orange, Riverside, Santa Barbara, San Bernardino, San Diego, San Luis Obispo, Solano, Santa Rosa Island, Tehama, Tulare, Ventura, and Yolo counties. It is presumed extirpated in Kern, Los Angeles, and San Bernardino counties and its distribution is uncertain in Tulare County (CNPS 2022).

One CNDDDB occurrence of Coulter's goldfields has been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland within the EIR Study Area provides suitable habitat for this species. Coulter's goldfields has potential to occur within the EIR Study Area.

Serpentine Leptosiphon

Serpentine leptosiphon (*Leptosiphon ambiguus*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous annual that usually occurs in serpentine soil within cismontane woodland, coastal scrub, and valley and foothill grassland (CNPS 2022). Serpentine leptosiphon blooms from March through June and is known to occur at elevations ranging from 393 to 3,707 feet above MSL (CNPS 2022). Serpentine bird's-beak is endemic to California; its current range includes Alameda, Contra Costa, Merced, San Benito, Santa Clara, Santa Cruz, San Joaquin, San Mateo, and Stanislaus counties (CNPS 2022).

No CNDDDB occurrences of serpentine leptosiphon have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, nonnative annual grassland within the EIR Study Area provides marginally suitable habitat for this species. Serpentine leptosiphon has low potential to occur within the EIR Study Area.

Little Mousetail

Little mousetail (*Myosurus minimus* ssp. *apus*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 3.1 species. This species is an herbaceous annual that occurs in mesic areas of valley and foothill grassland and alkaline vernal pools (CNPS 2022). Little mousetail blooms from March through June and is known to occur at elevations ranging from 66 to 2,100 feet above MSL (CNPS 2022). The current range of little mousetail in California includes Alameda, Contra Costa, Colusa, Lake, Merced, Riverside, San Bernardino, San Diego, Solano, Tulare, and Yolo counties (CNPS 2022).

No CNDDDB occurrences of little mousetail have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, nonnative annual grassland within the EIR Study Area provides suitable habitat for this species. Little mousetail has potential to occur within the EIR Study Area.

Shining Navarretia

Shining navarretia (*Navarretia nigelliformis* ssp. *radians*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in cismontane woodland, valley and foothill grassland, and vernal pools, sometimes in clayey soils (CNPS 2022). Shining navarretia blooms from April through July and is known to occur at elevations ranging from 213 to 3,281 feet above MSL (CNPS 2022). Shining navarretia is endemic to California; its current range includes Alameda, Contra Costa, Colusa, Fresno, Madera, Merced, Monterey, San Benito, San Joaquin, San Luis Obispo, Stanislaus, and Tulare counties (CNPS 2022).

One CNDDDB occurrence of shining navarretia has been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland within the EIR Study Area provides suitable habitat for this species. Shining navarretia has potential to occur within the EIR Study Area.

Prostrate Vernal Pool Navarretia

Prostrate vernal pool navarretia (*Navarretia prostrata*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in mesic soils within coastal scrub, meadows and seeps, alkaline soils in valley and foothill grasslands, and vernal pools (CNPS 2022). Prostrate vernal pool navarretia blooms from April through July and is known to occur at elevations ranging from 10 to 3,970 feet above MSL (CNPS 2022). Prostrate vernal pool navarretia is endemic to California; the current range of this species includes Alameda, Fresno, Los Angeles, Merced, Monterey, Orange, Riverside, San Bernardino, San Benito, Santa Clara, San Diego, and San Luis Obispo counties (CNPS 2022).

Seven CNDDDB occurrences of prostrate vernal pool navarretia have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland within the EIR Study Area provides suitable habitat for this species. Prostrate vernal pool navarretia has potential to occur within the EIR Study Area.

Colusa Grass

Colusa grass (*Neostapfia colusana*) is listed as threatened pursuant to the federal ESA, as endangered pursuant to the California ESA, and is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in large vernal pools with adobe soils (CNPS 2022). Colusa grass blooms from May through August and is known to occur at elevations ranging from 16 to 656 feet above MSL (CNPS 2022). Colusa grass is endemic to California; the current range of this species includes Colusa, Glenn, Merced, Solano, Stanislaus, and Yolo counties. It is likely extirpated from Colusa County (CNPS 2022).

One CNDDDB occurrence of Colusa grass has been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland within the EIR Study Area provides marginally suitable habitat for this species. Colusa grass has low potential to occur within the EIR Study Area.

California Akali Grass

California alkali grass (*Puccinellia simplex*) is not listed pursuant to either the federal or California ESAs, and is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in alkaline, vernal mesic chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools along sinks, flats, and lake margins (CNPS 2022). California alkali grass blooms between March and May and is known to occur at elevations ranging from seven to 3,051 feet above MSL (CNPS 2022). The current range for this species in California includes Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Los Angeles, Madera, Merced, Napa, San Bernardino, Santa Clara, Santa Cruz, San Luis Obispo, Solano, Stanislaus, Tulare, and Yolo counties. It is presumed extirpated in Kings County (CNPS 2022).

Four CNDDDB occurrences of California alkali grass have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland within the EIR Study Area provides suitable habitat for this species. California alkali grass has potential to occur within the EIR Study Area.

Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is not listed pursuant to the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is a perennial rhizomatous herb that occurs in shallow, freshwater marshes and swamps (CNPS 2022). Sanford's arrowhead blooms from May through October and is known to occur at elevations ranging from sea level to 2,135 feet above MSL (CNPS 2022).

Sanford's arrowhead is endemic to California; the current range of this species includes Butte, Del Norte, El Dorado, Fresno, Madera, Marin, Mariposa, Merced, Napa, Sacramento, San Bernardino, San Joaquin, Shasta, Solano, Sutter, Tehama, Tulare, Ventura, and Yuba counties. It is presumed extirpated in Ventura County (CNPS 2022).

Four CNDDDB occurrences of Sanford's arrowhead have been reported within 15 miles of the EIR Study Area (CDFW 2022); drainages or irrigation ditches within the EIR Study Area provide marginally suitable habitat for this species. Sanford's arrowhead has low potential to occur within the EIR Study Area.

Slender-leaved Pondweed

Slender-leaved pondweed (*Stuckenia filiformis* ssp. *alpina*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 2B.2 species. This species is an herbaceous perennial aquatic rhizome that occurs in assorted shallow freshwater marshes and swamps (CNPS 2022). Slender-leaved pondweed blooms from May through July and is known to occur at elevations ranging from 984 to 7,054 feet above MSL (CNPS 2022). The current range of this species in California includes Alameda, Butte, Contra Costa, El Dorado, Lassen, Merced, Mono, Modoc, Mariposa, Nevada, Placer, Santa Clara, Shasta, Sierra, San Mateo, Solano, and Sonoma counties. It is presumed extirpated in Santa Clara County (CNPS 2022).

One CNDDDB occurrence of slender-leaved pondweed has been reported within 15 miles of the EIR Study Area (CDFW 2022); drainages or irrigation ditches within the EIR Study Area provide marginally suitable habitat for this species. Slender-leaved pondweed has low potential to occur within the EIR Study Area.

Wright's Trichocoronis

Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 2B.1 species. This species is an herbaceous annual that occurs on alkaline soils in meadows and seeps, marshes and swamps, riparian forest, and vernal pools (CNPS 2022). Wright's trichocoronis blooms from May through September and is known to occur at elevations ranging from 16 to 1,427 feet above MSL (CNPS 2022). The current range for this species in California includes Colusa, Merced, Riverside, San Joaquin, and Sutter counties. It is believed to be extirpated from Colusa, San Joaquin, and Sutter counties (CNPS 2022).

Four CNDDDB occurrences of Wright's trichocoronis have been reported within 15 miles of the EIR Study Area (CDFW 2022); the mixed riparian woodland and the nonnative annual grassland within the EIR Study Area provide marginally suitable habitat for this species. Wright's trichocoronis has low potential to occur within the EIR Study Area.

Invertebrates

Conservancy Fairy Shrimp

The conservancy fairy shrimp (*Branchinecta conservatio*) is listed as endangered pursuant to the federal ESA. This fairy shrimp is endemic to California and is found in grasslands in the northern two thirds of the Central Valley (Eriksen and Belk 1999). The historic distribution of conservancy fairy shrimp is not known, but it likely occurred throughout a large portion of the Central Valley and Southern Coastal regions of California (U.S. Fish and Wildlife Service [USFWS] 2005a). Until recently, this species has only been known from a few disjunct populations in California, including four clustered populations in the Vina Plains area in Tehama and Butte counties, Jepson Prairie Preserve in Solano County, the Sacramento National Wildlife Refuge in Glenn County, the Tule Ranch Unit of CDFW's Yolo Basin Wildlife Area in Yolo County, the Grasslands Ecological Area in Merced County, one location in Stanislaus County, three locations in the Southern Sierra Foothills Vernal Pool Region, and two locations near the Santa Barbara Vernal Pool Region (USFWS 2003a, 2006). The USFWS reported in April 2007 that a single conservancy fairy shrimp was documented in one vernal pool within the Mariner Conservation Bank in Placer County near the city of Lincoln, California.

The life cycle of conservancy fairy shrimp is reliant on the ephemeral conditions of its vernal habitat. It inhabits a variety of different landforms and soil types, and is often found in large, turbid pools with low conductivity, total dissolved solids, and alkalinity (USFWS 2005a).

Eight CNDDDB occurrences of conservancy shrimp have been reported within 15 miles of the EIR Study Area (CDFW 2022); vernal pools and seasonal wetlands found within the EIR Study Area provide suitable habitat for this species. Conservancy shrimp has potential to occur within the EIR Study Area.

Longhorn Fairy Shrimp

Longhorn fairy shrimp (*Branchinecta longiantenna*) was federally listed as endangered under the ESA on September 19, 1994 (USFWS 1994). The range of longhorn fairy shrimp is restricted to the eastern edge of the Central Coast Ranges. Known occurrences of longhorn fairy shrimp include Kesterson National Wildlife Refuge and Carrizo Plain National Monument (USFWS 2002), Vasco Caves Regional Preserve, Brushy Peak Regional Preserve (Jones & Stokes 2007; USFWS 2002), and on private lands in the Altamont Pass area (CDFW 2022). This species can be found in clear-water depressional pools in sandstone outcrops, grassland vernal pools, and in large playa pools in valley saltbush scrub. Longhorn fairy shrimp cysts (embryonic eggs) hatch soon after pools fill when water temperature is approximately 10°C. Maturation is achieved in 23 days under optimal conditions, but 43 days is more typical (Eriksen and Belk 1999). The species has been observed from late December to mid-May in pools that are filled by winter and spring rains.

Two CNDDDB occurrences of longhorn fairy shrimp have been reported within 15 miles of the EIR Study Area (CDFW 2022); vernal pools and seasonal wetlands found within the EIR Study Area provide suitable habitat for this species. Longhorn fairy shrimp has potential to occur within the EIR Study Area.

Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp (*Branchinecta lynchi*) is listed as threatened pursuant to the federal ESA. Historically, the range of vernal pool fairy shrimp extended throughout the California Central Valley. Vernal pool fairy shrimp populations have been found in several locations throughout California, with habitat extending from Stillwater Plain in Shasta County through the Central Valley to Pixley in Tulare County, and along the Central Coast range from northern Solano County to Pinnacles National Monument in San Benito County (Eng et al. 1990; Fugate 1992; Sugnet and Associates 1993). Additional populations occur in San Luis Obispo, Santa Barbara, and Riverside counties. The historic and current ranges of vernal pool fairy shrimp are very similar in extent; however, the remaining populations are more fragmented and isolated than during historical times (USFWS 2005a).

The life cycle of vernal pool fairy shrimp is adapted to seasonally inundated features such as vernal pools, seasonal wetlands, and seasonal wetland swales. Fairy shrimp embryos survive the dry season in cyst form. Cysts hatch soon after pools become inundated during the wet season. Fairy shrimp complete their life cycle quickly and feed on small particles of detritus, algae, and bacteria (Eriksen and Belk 1999).

Critical Habitat for federally listed vernal pool species was designated in August 2003 by USFWS (2003a) and revised in 2005 (USFWS 2005b) and 2006 (USFWS 2006). The *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (Recovery Plan)* includes vernal pool fairy shrimp conservation strategies (USFWS 2005a). No Critical Habitat occurs in the EIR Study Area.

Nine CNDDDB occurrences of vernal pool fairy shrimp have been reported within 15 miles of the EIR Study Area (CDFW 2022); vernal pools and seasonal wetlands found within the EIR Study Area provide suitable habitat for this species. Vernal pool fairy shrimp has potential to occur within the EIR Study Area.

Monarch

The monarch (*Danaus plexippus*) is a candidate for listing under the federal ESA. This butterfly occurs throughout a variety of habitats and requires blooming nectar resources for adults to feed on during breeding and migration, and milkweed (*Asclepias* spp.) for oviposition and larval feeding. During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily *Asclepias* spp.). Larvae emerge after two to five days and then develop through five larval instars over a period of 9 to 18 days, feeding on milkweed and sequestering toxic cardenolides as a defense against predators. The larvae then pupate into chrysalises before emerging six to 14 days later as adult butterflies. Multiple generations of monarchs are produced during the breeding season, with most adult butterflies living approximately two to five weeks. Overwintering adults enter into reproductive diapause and live six to nine months (USFWS 2020).

Monarchs breed year-round in many regions. Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration. Monarchs may use a variety of roosting trees along fall migration routes. Migratory individuals of eastern and western North America require a specific microclimate at overwintering sites that provides protection from the elements and moderate

temperatures. Migratory monarchs in the western population primarily overwinter in groves of a variety of tree species along the coast of California and Baja California (USFWS 2020).

No CNDDDB occurrences of monarch have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the mixed riparian woodland and nonnative annual grassland found within the EIR Study Area provide suitable habitat for this species. Monarch has potential to occur within the EIR Study Area.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*, VELB) is listed as threatened pursuant to the federal ESA (USFWS 1980). The VELB is completely dependent on its larval host plant, elderberry (*Sambucus* sp.), which occurs in riparian and other woodland and scrub communities (USFWS 1999a, 2017a). Elderberry plants are considered to be habitat for the species if located within the range of the beetle and having one or more stems measuring 1.0 inch or greater in diameter at ground level (USFWS 1999a). The adult flight season extends from late March through July (USFWS 2017). During that time, the adults feed on foliage and perhaps flowers, mate, and females lay eggs on living elderberry plants (Barr 1991). The first instar larvae bore into live elderberry stems, where they develop for one to two years feeding on the pith. The fifth instar larvae create exit holes in the stems and then plug the holes and remain in the stems through pupation (Talley et al. 2007).

VELB occurs in metapopulations throughout the Central Valley (Collinge et. al 2001 as cited in USFWS 2017). These metapopulations (subpopulations) occur throughout contiguous riparian habitat and shift temporarily and spatially based on changing environmental conditions. This temporal and spatial shifting of the metapopulations results in a patchy and ever-changing distribution of the species. Research indicates that dense elderberry shrub clumps in healthy riparian habitat is the primary habitat for the VELB (USFWS 2017). The beetle's current distribution extends from Shasta County in the north to Fresno County in the south and includes everything from the valley floor up into the lower foothills (USFWS 2017). The vast majority of VELB occurrences have been recorded below 500 feet (152 meters); however, rare occurrences have been recorded up to approximately 3,000 feet (USFWS 1999a; USFWS 2017).

One CNDDDB occurrence of VELB has been reported within 15 miles of the EIR Study Area (CDFW 2022); the mixed riparian woodland found within the EIR Study Area provides suitable habitat for this species. VELB has potential to occur within the EIR Study Area.

Vernal Pool Tadpole Shrimp

Vernal pool tadpole shrimp (*Lepidurus packardii*) is listed as endangered pursuant to the federal ESA. The historic range of the vernal pool tadpole shrimp likely extended throughout the Central Valley of California, and has been documented from east of Redding in Shasta County south to Fresno County, and from the San Francisco Bay Wildlife Refuge in Alameda County. The historic and current ranges of vernal pool tadpole shrimp are very similar in extent; however, the remaining populations are more fragmented and isolated than during historical times (USFWS 2005a).

This species is associated with low-alkalinity seasonal pools in grasslands throughout the northern and eastern portions of the Central Valley. Suitable vernal pools and seasonal swales are generally underlain

by hardpan or sandstone. Tadpole shrimp embryos survive the dry season in cyst form. Cysts hatch soon after pools become inundated during the wet season. Sexually mature adults may persist three to four weeks after habitat inundation (Sugnet and Associates 1993).

Critical Habitat for federally listed vernal pool species was designated in August 2003 by USFWS (2003a) and revised in 2005 (USFWS 2005b) and 2006 (USFWS 2006). The *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (Recovery Plan)* includes vernal pool tadpole shrimp conservation strategies (USFWS 2005a). No Critical Habitat occurs in the EIR Study Area.

Twelve CNDDDB occurrences of vernal pool tadpole shrimp have been reported within 15 miles of the EIR Study Area (CDFW 2022); vernal pools and seasonal wetlands found within the EIR Study Area provide suitable habitat for this species. Vernal pool tadpole has potential to occur within the EIR Study Area.

Amphibians

California Tiger Salamander – Central Valley DPS (Ambystoma californiense)

The Central Valley Distinct Population Segment (DPS) of California tiger salamander (*Ambystoma californiense*, CTS) was listed as threatened by the USFWS on August 4, 2004 (Federal Register Vol. 69, No. 149: 47212). The Santa Barbara County DPS and Sonoma County DPS, both of which are disjunct from the larger range of the salamander, are federally listed as endangered. As of August 19, 2010, the CTS was listed as a threatened species under the California ESA throughout its range.

California tiger salamanders are endemic to California's Central Valley from Yolo County south to Kern County, and from Santa Barbara County north through the inner coast range to Sonoma County (USFWS 2003b, 2015). Populations at the north and south edges of the historical distribution are extirpated, many populations within the interior of the range have been lost, and abundance has been reduced in many areas. Large areas of habitat conversion to agriculture and urban infrastructure have caused extirpations throughout Central California. Conversion of ephemeral breeding waters to perennial ponds and streams allows the introduction of predators and competitors including fish, crayfish (*Procambarus clarkii*), American bullfrogs (*Lithobates catesbeianus*), and (in some locations) introduced tiger salamanders (*Ambystoma tigrinum*) (Ryan et al. 2009).

This species is most commonly associated with annual grassland habitats and vernal pool landscapes but may also occur within open woodlands in low hills and valleys. Necessary habitat components for California tiger salamanders include intact open terrestrial landscapes used by adults for most of their life history, and ponded aquatic features where reproduction occurs. Tiger salamanders spend most of their adult life within terrestrial subterranean refuges such as California ground squirrel (*Otospermophilus beecheyi*) or Botta's pocket gopher (*Thomomys bottae*) burrows (Stebbins 2003, Loredó et al. 1996). Foraging takes place within these subterranean refugia and out in the open at night or during rains. Suitable breeding sites include vernal pools, seasonal wetlands, stock ponds, or, rarely, slow-moving streams. They may use permanent manufactured ponds if predatory species (e.g., fish, crayfish) are absent.

Nine CNDDDB occurrences of CTS have been reported within 15 miles of the EIR Study Area (CDFW 2022); vernal pools and seasonal wetlands found within the EIR Study Area may provide suitable breeding habitat for this species, and the nonnative annual grassland found within the EIR Study Area provides suitable terrestrial habitat for this species. CTS has potential to occur within the EIR Study Area.

Western Spadefoot

The western spadefoot (*Spea hammondi*) is not listed pursuant to either the California or federal ESAs; however, it is designated as a CDFW species of special concern (SSC). Necessary habitat components of the western spadefoot include loose friable soils in which to burrow in upland habitats and breeding ponds. Breeding sites include temporary rain pools such as vernal pools and seasonal wetlands, or pools within portions of intermittent drainages (Thomson et al. 2016). Spadefoots spend most of their adult life within underground burrows or other suitable refugia such as rodent burrows. In California, western spadefoots are known to occur from the Redding area in Shasta County south to northwestern Baja California at elevations below 4,475 feet (Thomson et al. 2016).

Ten CNDDDB occurrences of western spadefoot have been reported within 15 miles of the EIR Study Area (CDFW 2022); vernal pools and seasonal wetlands found within the EIR Study Area provide suitable breeding habitat for this species, and the nonnative annual grassland found within the EIR Study Area provides suitable terrestrial habitat. Western spadefoot has potential to occur within the EIR Study Area.

Reptiles

Northern Legless Lizard

The northern legless lizard (*Anniella pulchra*) is one of five species of legless lizard in California (Papenfuss and Parham 2013). Although CDFW only recognizes two subspecies (*A. p. pulchra* and *A. p. nigra*), all California legless lizards are considered SSCs. They are not listed under state or federal endangered species acts.

Although lacking legs, the legless lizards (*Anniella*) are decidedly lizards as shown by their eyelids, which are lacking in all snakes. Like snakes, however, these species lack external ear openings. The northern legless lizard has the largest range of all California *Anniella*, ranging from sites in and around Antioch, in the east Bay, south to northern San Luis Obispo County. Two disjunct segments of this species range occur: one in the eastern foothills of Tulare and Fresno counties, and another at the western edge of the Antelope Valley in Kern and Los Angeles counties. A large area of undetermined species status connects those populations to areas occupied by Southern Sierra legless lizard (*A. campi*), Bakersfield legless lizard (*A. grinnelli*), Temblor legless lizard (*A. alexandrae*), and southern California legless lizard (*A. stebbinsi*). Although not recognized by taxonomists, a melanistic form of *A. pulchra* that exists in Monterey Bay is considered to be the subspecies *A. p. nigra* by CDFW.

One CNDDDB occurrence of northern legless lizard has been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland and the ruderal areas found within the EIR Study Area

provide marginally suitable habitat for this species. Northern legless lizard has low potential to occur within the EIR Study Area.

Northwestern Pond Turtle

The northwestern pond turtle (*Actinemys marmorata*) is not listed pursuant to either the California or federal ESAs; however, it is designated an SSC by CDFW. The range of the northwestern pond turtle in California extends from the Oregon border south to the Stockton area in the Central Valley, and the western slope of the Sierra-Cascade (Bury et al. 2012a). The elevational range extends from sea level to 2,000 meters, but it becomes rare at the higher elevations (Stebbins 2003).

Northwestern pond turtles can occur in a variety of waters including ponds, lakes, streams, reservoirs, rivers, settling ponds of wastewater treatment plants, and other permanent and ephemeral wetlands (Bury et al. 2012b). However, in streams and other lotic features they generally require slack- or slow-water aquatic microhabitats (Thomson et al. 2016). Northwestern pond turtles also require basking areas such as logs, rocks, banks, and brush piles for thermoregulation (Bury et al. 2012b).

Northwestern pond turtles are typically active between March or April through October or November, the timing of which depends on variables such as latitude, elevation, and local climate (Bury et al. 2012b). Courtship and mating typically occur during late April and early May, but could occur throughout summer and into fall (Bury et al. 2012b). Suitable nest sites are usually five to 500 meters upland from water in areas with short grasses and forbs (Bury et al. 2012b). Nesting sites are typically south- or west-facing in direct sunlight with soils that have a high silt or clay component (Rathbun et al. 1992, 2002). Hatchling northwestern pond turtles usually overwinter in nests (Reese and Welsh 1997) while adults overwinter on land or in the water depending on specific location and habitat (Bury et al. 2012b).

Nineteen CNDDDB occurrences of northwestern pond turtle have been reported within 15 miles of the EIR Study Area (CDFW 2022); the mixed riparian woodland, irrigation ditches, and fresh emergent wetlands within the EIR Study Area provide suitable habitat for this species. Northwestern pond turtle has potential to occur within the EIR Study Area.

San Joaquin Coachwhip

The San Joaquin coachwhip (*Coluber flagellum ruddocki*) is a California SSC but is not listed pursuant to the federal or California ESAs. The San Joaquin coachwhip is found in dry, open areas (e.g., grassland and saltbush scrub [Thomson et al 2016]) in the western San Joaquin Valley from Colusa County, south along the west side of the San Joaquin Valley to the Grapevine in Kern County and west to the inner South Coast Ranges. An isolated population has been identified in the Sutter Buttes (Hayes and Cliff 1982). San Joaquin coachwhip populations have declined throughout much of their historical range due to habitat loss associated with agricultural and urban development.

The San Joaquin coachwhip, like other *C. flagellum* subspecies, maintains a higher active body temperature than many other snakes (Brattstrom 1965). It will not emerge from its burrow until temperatures reach 28°C; therefore, it does not emerge from the burrow until late in the season (April or May) and late in the day (Hammerson 1977). This snake uses mammal burrows for refuge and for nesting

sites. The San Joaquin coachwhip feeds on lizards, small birds, and small mammals and may eat carrion (Thomson et al. 2016). This species needs large, open areas with little tree cover (Morafka and Banta 1976), and mating occurs in May, with oviposition occurring in June or July (Thomson et al. 2016.).

Eleven CNDDDB occurrences of San Joaquin coachwhip have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland found within the EIR Study Area provides marginally suitable habitat for this species. San Joaquin coachwhip has low potential to occur within the EIR Study Area.

Giant Garter Snake

The giant garter snake (GGS) is listed as a threatened species pursuant to both the California and federal ESAs. Giant garter snakes typically inhabit perennial ponds, marshes, slow-moving streams, and agricultural ditches containing adequate water during the spring and summer months. Giant garter snakes are most active from early spring through mid-fall (USFWS 1999b). The GGS is endemic to the floors of the Sacramento and San Joaquin Valleys of California and probably occurred historically from Butte County south to Buena Vista Lake in Kern County (USFWS 1999b).

Seasonally, the GGS becomes active in early spring, emerging from overwintering sites to bask on emergent willows, tules, saltbush, and riprap (Hansen and Tremper in Rossman et al. 1996). Live young are born in late July through early September (Hansen and Hansen 1990) and by October, most snakes begin searching for overwintering sites. Most are in hibernacula by November (Hansen and Hansen 1990).

The GGS is one of the most aquatic garter snakes (USFWS 1999b). It is rarely found far from water and occupies habitat such as marshes and sloughs, irrigation and drainage canals, small lakes and ponds, rice agricultural fields, and low gradient streams (USFWS 1999b). Waters inhabited by this species typically feature substrates of soil, mud, or other fines. Giant garter snakes use grassy bank-side habitats for basking and use higher elevation uplands for cover and retreat from floodwaters during the inactive winter season (USFWS 1999b). Essential habitat components required are permanent water to support a sufficient prey base, emergent vegetation for escape cover and foraging habitat, near-bank upland habitat for basking, and higher-elevation habitats for winter refugia (USFWS 1999b).

Networks of canals near rice agriculture (aquatic agriculture) are positively associated with GGS presence; however, population density and body condition are lower in rice agriculture than in natural landscapes (Halstead et al. 2010).

Thirty-three CNDDDB occurrences of GGS have been reported within 15 miles of the EIR Study Area (CDFW 2022); the irrigation ditches within the EIR Study Area provide marginally suitable habitat for this species. Giant garter snake has low potential to occur within these portions EIR Study Area. Wetland communities associated with the managed wildlife areas in the eastern and northeastern portion of the EIR Study Area provide high quality habitat for this species.

Birds

Aleutian Cackling Goose

The Aleutian cackling goose (*Branta hutchinsii leucopareia*) was formerly listed and protected under the Federal ESA. It was considered recovered and delisted in 2001. The Aleutian cackling goose breeds on the outer Aleutian Islands, and winters in California within coastal Humboldt and Del Norte counties, and the Sacramento and San Joaquin Valleys. They can be found foraging on grasses, grains and other vegetation in pastures and wetlands during winter (October through March).

Two CNDDDB occurrence of Aleutian cackling goose have been reported within 15 miles of the EIR Study Area (CDFW 2022); the agricultural fields, nonnative annual grassland, and fresh emergent wetland communities within the EIR Study Area provide suitable wintering habitat for this species. Aleutian cackling goose has potential to occur within the EIR Study Area.

Lesser Sandhill Crane

Lesser sandhill crane (*Antigone canadensis canadensis*) is not listed pursuant to the California or federal ESAs, but is considered a CDFW SSC. This subspecies nests from Alaska south to Oregon and winters in California, in the Central Valley. Wintering habitat includes wetlands and agricultural fields (Gerber et al. 2020).

No CNDDDB occurrences of lesser sandhill crane have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the agricultural fields, nonnative annual grassland, and fresh emergent wetland communities within the EIR Study Area provide suitable wintering habitat for this species. Lesser sandhill crane has potential to occur within the EIR Study Area.

American Avocet

American avocet (*Recurvirostra americana*) is not listed pursuant to the California or federal ESAs but is considered a USFWS Bird of conservation concern (BCC). In California, American avocets breed from coastal Sonoma County south to the Mexican border; in the Central Valley and other lowland valleys west of the Cascades and Sierra Nevada; in the Antelope Valley, Los Angeles County; and east of the Sierra-Cascades in Siskiyou, Modoc, Lassen, Mono and Inyo counties (Ackerman et al. 2020). American avocets nest on the ground in scrapes around wetlands, on dikes/levees, or on islands (Ackerman et al. 2020). Breeding occurs from April through August.

No CNDDDB occurrences of American avocet have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the agricultural fields, ditches, nonnative annual grassland, and fresh emergent wetland communities found within the EIR Study Area provide suitable habitat for this species. American avocet has potential to occur within the EIR Study Area.

Mountain Plover

The mountain plover (*Charadrius montanus*) is not listed pursuant to either the California or federal ESAs; however, it is designated as a BCC by the USFWS and as an SSC by the CDFW. This species' breeding range includes Montana, eastern Colorado, Wyoming, New Mexico, Texas, and Oklahoma; the wintering range extends from north-central California to Mexico (Knopf and Wunder 2020). Within their wintering (September through March) range, which consists primarily of the Sacramento, San Joaquin, and Imperial Valleys, mountain plovers can be found in plowed fields, heavily grazed annual grassland, and burned fields (Knopf and Rupert 1995; Knopf and Wunder 2020).

Two CNDDDB occurrences of mountain plover have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the agricultural fields and nonnative annual grassland found within the EIR Study Area provide suitable wintering habitat for this species. Mountain plover has potential to occur within the EIR Study Area.

Long-billed Curlew

The long-billed curlew (*Numenius americanus*) is not listed pursuant to either the California or federal ESAs but is designated as a BCC by the USFWS and is a CDFW *watch list* species. The breeding range of this species includes the Great Plains, Great Basin and intermontane valleys of the western U.S. and southwestern Canada (Dugger and Dugger 2020). Their wintering range in the U.S. includes California, Louisiana, and Texas. Winter foraging habitat includes rice fields (flooded and unflooded), managed wetlands, evaporation ponds, sewage ponds, and grasslands (Dugger and Dugger 2020).

No CNDDDB occurrences of long-billed curlew have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the agricultural fields, nonnative annual grassland, and fresh emergent wetland communities found within the EIR Study Area provide suitable wintering habitat for this species. Long-billed curlew has potential to occur within the EIR Study Area.

White-tailed Kite

White-tailed kite (*Elanus leucurus*) is not listed pursuant to either the federal or California ESAS; however, the species is fully protected pursuant to Section 3511 of the California Fish and Game Code. This species is a common resident in the Central Valley and the entire length of the California coast, and all areas up to the Sierra Nevada foothills and southeastern deserts (Dunk 2020). In northern California, white-tailed kite nesting occurs from March through early August, with nesting activity peaking from March through June. Nesting occurs in trees within riparian, oak woodland, savannah, and agricultural communities that are near foraging areas such as low elevation grasslands, agricultural, meadows, farmlands, savannahs, and emergent wetlands (Dunk 2020).

No CNDDDB occurrences of white-tailed kite have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the mixed riparian woodland, agricultural fields, and nonnative annual grassland found within the EIR Study Area provide suitable habitat for this species. White-tailed kite has potential to occur within the EIR Study Area.

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is not listed pursuant to either the California or federal ESAs. However, it is fully protected under Section 3511 of the California Fish and Game Code and the federal Bald and Golden Eagle Protection Act. Golden eagles generally nest on cliff ledges and/or large lone trees in rolling to mountainous terrain. Golden eagles nest throughout California except the flat portions of the Central Valley, the immediate coast, and portions of southeastern California (Katzner et al. 2020). Occurrences within the Central Valley are usually dispersing post-breeding birds, non-breeding sub-adults, or migrants. Foraging habitat includes open grassland and savannah. Nesting occurs during February through August.

Two CNDDDB occurrences of golden eagle have been reported within 15 miles of the EIR Study Area (CDFW 2022); the agricultural fields and nonnative annual grassland found within the EIR Study Area provide marginally suitable foraging habitat for this species. Golden eagle has low potential to occur within the EIR Study Area.

Northern Harrier

The northern harrier (*Circus hudsonius*) is not listed pursuant to either the California or federal ESAs; however, it is a USFWS BCC and a CDFW SSC. This species is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California. The northern harrier is a ground-nesting species, and typically nests in emergent wetland/marsh, open grasslands, or savannah communities, usually in areas with dense vegetation (Smith et al. 2020). Foraging occurs within a variety of open environments such as marshes, agricultural fields, and grasslands. Nesting occurs during April through September.

Six CNDDDB occurrences of northern harrier have been reported within 15 miles of the EIR Study Area (CDFW 2022); the agricultural fields, nonnative annual grassland, and fresh emergent wetland communities found within the EIR Study Area provide suitable nesting and foraging habitat for this species. Northern harrier has potential to occur within the EIR Study Area.

Cooper's Hawk

The Cooper's hawk (*Accipiter cooperii*) is not listed pursuant to either the California or federal ESAs. However, it is a CDFW *watch list* species and is currently tracked in the CNDDDB. Typical nesting and foraging habitats include riparian woodland, dense oak woodland, and other woodlands near water. Cooper's hawk nests throughout California from Siskiyou County to San Diego County, including the Central Valley (Rosenfield et al. 2020). Breeding occurs during March through July, with a peak from May through July.

No CNDDDB occurrences of Cooper's hawk have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the mixed riparian woodland found within the EIR Study Area provides marginally suitable habitat for this species. Cooper's hawk has low potential to occur within the EIR Study Area.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) has been delisted under the federal ESA but remains listed as Endangered under the California ESA. It is fully protected pursuant to the California Fish and Game Code Section 3511 and the federal Bald and Golden Eagle Protection Act. It is a Bureau of Land Management sensitive species, and a U.S. Forest Service sensitive species. Bald eagles breed at lower elevations in the northern Sierra Nevada and North Coast ranges. Bald eagles breed in forested areas adjacent to large waterbodies (Buehler 2020). Tree species used for nesting is quite variable and includes conifers (dominant where available), oaks, hickories, cottonwoods and aspens (Buehler 2020). Nest trees are generally the largest tree available in a suitable area (Buehler 2020). Breeding activity occurs during late-February through September, with peaks in activity from March to June.

No CNDDDB occurrences of bald eagle have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the mixed agricultural fields and nonnative annual grassland found within the EIR Study Area provide marginally suitable foraging habitat for this species. Bald eagle has low potential to occur within the EIR Study Area.

Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is listed as a threatened species pursuant to the California ESA. This species nests in North America (Canada, western U.S., and Mexico) and typically winters from South America north to Mexico. However, a small population has been observed wintering in the Sacramento-San Joaquin River Delta (Bechard et al. 2020). In California, the nesting season for Swainson's hawk ranges from mid-March to late August.

Swainson's hawks nest within tall trees in a variety of wooded communities including riparian, oak woodland, roadside landscape corridors, urban areas, and agricultural areas, among others. Foraging habitat includes open grassland, savannah, low-cover row crop fields, and livestock pastures. In the Central Valley, Swainson's hawks typically feed on a combination of California vole (*Microtus californicus*), California ground squirrel (*Spermophilus beecheyi*), ring-necked pheasant (*Phasianus colchicus*), many passerine birds, and grasshoppers (*Melanoplus* species). Swainson's hawks are opportunistic foragers and will readily forage in association with agricultural mowing, harvesting, discing, and irrigating (Estep 1989). The removal of vegetative cover by such farming activities results in more readily available prey items for this species.

Ninety-three CNDDDB occurrences of the Swainson's hawk have been reported within 15 miles of the EIR Study Area (CDFW 2022); the mixed riparian woodland and nonnative annual grassland found within the EIR Study Area provide suitable nesting and foraging habitat for this species. Swainson's hawk has potential to occur within the EIR Study Area.

Ferruginous Hawk

Ferruginous hawks (*Buteo regalis*) are not listed pursuant to either the California or federal ESAs. However, they are a CDFW *watch list* species and USFWS BCC. This species typically occurs in open environments and nests from Oregon to Canada, though nesting has been documented in Lassen County, California (Small 1994). For the remainder of the state, including the Central Valley, ferruginous hawk occurrences are restricted to the non-breeding season (approximately September through March) (Small 1994). Wintering habitat includes a variety of open communities including annual grasslands, agricultural areas, deserts, and savannahs, where there is an abundance of ground squirrels, prairie dogs, lagomorphs, or pocket gophers (Ng et al. 2020).

Twenty-eight CNDDDB occurrences of the ferruginous hawk have been reported within 15 miles of the EIR Study Area (CDFW 2022); the agricultural fields and nonnative annual grassland found within the EIR Study Area provide suitable wintering habitat for this species. Ferruginous hawk has potential to forage within the EIR Study Area.

Burrowing Owl

Burrowing owl (*Athene cunicularia*) is not listed pursuant to either the California or federal ESAs; however, it is designated as a BCC by the USFWS and as an SSC by the CDFW. Burrowing owls inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. They can also inhabit developed areas such as golf courses, cemeteries, city roadsides, airports, vacant lots in residential areas, school campuses, agricultural areas, and fairgrounds (Poulin et al. 2020). This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel (*Spermophilus beecheyi*), but may also use man-made structures such as concrete culverts or pipes; concrete, asphalt, or wood debris piles; or openings beneath concrete or asphalt pavement (California Department of Fish and Game [CDFG] 2012). The breeding season typically occurs between February 1 and August 31 (California Burrowing Owl Consortium 1993; CDFG 2012).

Eighteen CNDDDB occurrences of burrowing owl have been reported within 15 miles of the EIR Study Area (CDFW 2022); the agricultural fields, nonnative annual grassland, and irrigation ditches found within the EIR Study Area provide suitable habitat for this species. Burrowing owl has potential to occur within the EIR Study Area.

Nuttall's Woodpecker

Nuttall's woodpecker (*Dryobates nuttallii*) is not listed under either the California or federal ESAs but is considered a USFWS BCC. They are resident from Siskiyou County south to Baja California. Nuttall's woodpeckers nest in tree cavities primarily within oak woodlands, but also can be found in riparian woodlands (Lowther et al. 2020). Breeding occurs during April through July.

No CNDDDB occurrences of Nuttall's woodpecker have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the riparian oak woodland found within the EIR Study Area provides suitable habitat for this species. Nuttall's woodpecker has potential to nest and forage within the EIR Study Area

Merlin

The merlin (*Falco columbarius*) is not listed pursuant to either the California or federal ESAs but is a CDFW *watch list* species and is currently tracked in the CNDDDB. This falcon breeds in Canada and Alaska and occurs in California as a migrant and during the non-breeding season (September through April). Foraging habitat in winter includes open forests, grasslands, and tidal flats (Warkentin et al. 2020).

No CNDDDB occurrences of merlin have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the agricultural fields and nonnative annual grassland found within the EIR Study Area provide suitable wintering habitat for this species. Merlin has low potential to occur within the EIR Study Area.

Prairie Falcon

Prairie falcons (*Falco mexicanus*) are not listed pursuant to either the California or federal ESAs; however, they are a CDFW *watch list* species. The breeding distribution of prairie falcons includes the entire state except the extreme northwestern part of the state and coastal areas (Steenhof 2020). Breeding habitat includes open habitat at all elevation up to 3,350 meter in arid plains and steppes, wherever cliffs or bluffs are present (Steenhof 2020). They nest primarily on shelves, ledges, or potholes in cliffs, but may also use trees, power line structures, buildings, mine highwalls, caves, or stone quarries (Steenhof 2020). Nesting occurs during March through July. Prairie falcons have not been documented to nest in the Central Valley but may occur as migrants and wintering birds.

Four CNDDDB occurrences of the prairie falcon has been reported within 15 miles of the EIR Study Area (CDFW 2022); the agricultural fields and nonnative annual grassland found within the EIR Study Area provide suitable foraging habitat for this species. Prairie falcon has potential to forage within the EIR Study Area.

Loggerhead Shrike

Loggerhead shrike (*Lanius ludovicianus*) is not listed pursuant to either the California or federal ESAs but is considered an SSC by the CDFW. Loggerhead shrikes nest throughout California except the northwestern corner, montane forests, and high deserts (Small 1994). Loggerhead shrikes nest in small trees and shrubs in open country with short vegetation such as pastures, old orchards, mowed roadsides, cemeteries, golf courses, agricultural fields, riparian areas, and open woodlands (Yosef 2020). The nesting season extends from March through July.

Two CNDDDB occurrences of the loggerhead shrike have been reported within 15 miles of the EIR Study Area (CDFW 2022); the agricultural fields and nonnative annual grassland found within the EIR Study Area provide suitable habitat for this species. Loggerhead shrike has potential to occur within the EIR Study Area

Yellow-Billed Magpie

Yellow-billed magpie (*Pica nuttalli*) is not listed pursuant to either the California or federal ESAs but is considered a USFWS BCC. This endemic species is a yearlong resident of the Central Valley and Coast

Ranges from San Francisco Bay to Santa Barbara County. Yellow-billed magpies build large, bulky nests in trees in a variety of open woodland habitats, typically near grassland, pastures, or cropland. Nest building begins in late January to mid-February and may take up to six to eight weeks to complete, with eggs laid during April through May and fledging occurring during May through June (Koenig and Reynolds 2020). The young leave the nest at about 30 days after hatching (Koenig and Reynolds 2020). Yellow-billed magpies are highly susceptible to West Nile Virus, which may have been the cause of death to thousands of magpies during 2004-2006 (Koenig and Reynolds 2020).

No CNDDDB occurrences of the yellow-billed magpie have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the mixed riparian woodland and nonnative annual grassland found within the EIR Study Area provide suitable habitat for this species. Yellow-billed magpie has potential to occur within the EIR Study Area.

California Horned Lark

The California horned lark (*Eremophila alpestris actia*) is not listed pursuant to either the California or federal ESAs but is a CDFW *watch list* species. Horned larks are widely distributed throughout North America, with 21 recognized subspecies (American Ornithologists' Union 1957). The California horned lark is one of approximately nine subspecies that breeds and/or winters in California and is found in the Coast Range and southern San Joaquin Valley south into northern Baja California (Beason 2020). The California horned lark is resident and non-migratory. They are found in grasslands and other open habitats with sparse vegetation. Nests are grass-lined and built on the ground. The breeding season extends from March through July, with a peak of activity in May.

Eight CNDDDB occurrences of the California horned lark have been reported within 15 miles of the EIR Study Area (CDFW 2022); the agricultural fields and nonnative annual grassland found within the EIR Study Area provide suitable habitat for this species. California horned lark has potential occur within the EIR Study Area.

Song Sparrow "Modesto" Population

The song sparrow (*Melospiza melodia*) is considered one of the most polytypic songbirds in North America (Miller 1956 as cited in Arcese et al. 2020). The subspecies *Melospiza melodia heermanni* includes synonyms *M. m. mailliardi* (the *Modesto song sparrow*) and *M. m. cooperi* (Arcese et al. 2020). The *Modesto song sparrow* is not listed pursuant to either the California or federal ESAs but is a CDFW SSC. The subspecies *M. m. heermanni* can be found in central and southwestern California to northwestern Baja California (Arcese et al. 2020). Song sparrows in this group may have slight morphological differences but they are genetically indistinguishable. The *Modesto song sparrow* occurs in the Central Valley from Colusa County south to Stanislaus County, and east of the Suisun Marshes (Grinnell and Miller 1944). Nesting habitat includes riparian thickets and freshwater marsh communities, with nesting occurring from April through June.

No CNDDDB occurrences of the song sparrow have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the mixed riparian woodland found within the EIR Study Area provides suitable nesting habitat for this species. Song sparrow has potential to nest within the EIR Study Area.

Yellow-headed Blackbird

The yellow-headed blackbird (*Xanthocephalus xanthocephalus*) is not listed pursuant to either the California or federal ESAs but is a CDFW SSC. In California, yellow-headed blackbirds breed along the lower Colorado River; at the Salton Sea; locally in Kern Ventura, Riverside, San Diego, and possibly Orange counties; at Clear Lake in Lake County; locally in the Central Valley from Tehama to Kern counties; in the Klamath Basin and Modoc Plateau; and in the Mono Basin (Twedt and Crawford 2020). Yellow-headed blackbirds nest in colonies in emergent vegetation of deep-water palustrine wetlands (Twedt and Crawford 2020). Foraging occurs in emergent marsh, along shorelines, or in adjacent grasslands and croplands. Nesting generally occurs from April through July.

One CNDDDB occurrence of the yellow-headed blackbird has been reported within 15 miles of the EIR Study Area (CDFW 2022); the agricultural fields, nonnative annual grassland, and fresh emergent wetland communities found within the EIR Study Area provides marginally suitable wintering habitat for this species. Yellow-headed blackbird has low potential to occur within the EIR Study Area.

Bullock's Oriole

The Bullock's oriole (*Icterus bullockii*) is not listed pursuant to either the California or federal ESAs but is a USFWS BCC. In California, Bullock's orioles are found throughout the state except at the higher elevations of mountain ranges and the eastern deserts (Small 1994). They are found in riparian and oak woodlands where nests are built in deciduous trees, but may also use orchards, conifers, and eucalyptus trees (Flood et al 2020). Nesting occurs from March through July.

No CNDDDB occurrences of Bullock's oriole have been reported within 15 miles of the EIR Study Area (CDFW 2022); however, the mixed riparian woodland found within the EIR Study Area provides suitable nesting and foraging habitat for this species. Bullock's oriole has potential to occur within the EIR Study Area.

Tricolored Blackbird

Tricolored blackbird (*Agelaius tricolor*) was granted emergency listing for protection under the California ESA in December 2014, but the listing status was not renewed in June 2015. After an extensive status review, the California Fish and Game Commission listed tricolored blackbirds as a threatened species in 2018. In addition, it is a USFWS BCC and a CDFW SSC. This colonial nesting species is distributed widely throughout the Central Valley, Coast Range, and into Oregon, Washington, Nevada, and Baja California (Beedy et al. 2020). Tricolored blackbirds nest in colonies that can range from several pairs to several thousand pairs depending on prey availability, the presence of predators, or level of human disturbance. Tricolored blackbird nesting habitat includes emergent marsh, riparian woodland/scrub, blackberry thickets, and densely vegetated agricultural and idle fields (e.g., wheat, triticale, safflower, fava bean fields,

thistle, mustard, cane, and fiddleneck), usually with some nearby standing water or ground saturation (Beedy et al. 2020). They feed mainly on grasshoppers during the breeding season, but may also forage upon a variety of other insects, grains, and seeds in open grasslands, wetlands, feedlots, dairies, and agricultural fields (Beedy et al. 2020). The nesting season is generally from March through August.

Forty-eight CNDDDB occurrences of the tricolored blackbird have been reported within 15 miles of the EIR Study Area (CDFW 2022); the agricultural fields, nonnative annual grassland, and fresh emergent wetland communities within the EIR Study Area provide suitable nesting and foraging habitat for this species. Tricolored blackbird has potential to nest and forage within the EIR Study Area.

Mammals

Nelson's Antelope Squirrel

Nelson's antelope squirrel (*Ammospermophilus nelsoni*, NAS) is listed as threatened pursuant to the California ESA. The species' historical range included the western and southern portions of the Tulare Basin; San Joaquin Valley, Kern County to near Tipton (Tulare County); the upper Cuyama Valley; and the Carrizo and Elkhorn Plains (Williams and Kilburn 1992). Grinnell and Dixon (1918) noted that this species was unevenly distributed and occurred in abundance in only a few localities (Williams and Kilburn 1992). Today, only the Carrizo and Elkhorn Plains and western Kern County, around Elk Hills, support significant populations of NAS. Smaller populations also inhabit marginal habitat in the foothills of the western edge of the San Joaquin Valley (CDFG 2005). The NAS inhabits dry grasslands with sandy loam soils, widely spaced alkali scrub vegetation, and dry washes. NAS population declines are due to the conversion of approximately 80 percent of the species' original geographic range to agriculture, and no prime habitat remains within the San Joaquin Valley (CDFG 2005).

Two CNDDDB occurrences of NAS have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland found within the EIR Study Area provide marginally suitable habitat for this species. The NAS has low potential to occur within the EIR Study Area.

Western Mastiff Bat

Western mastiff bat (*Eumops perotis californicus*) is not listed pursuant to either the California or federal ESAs; however, it is designated as an SSC by the CDFW. This species is distributed from central California to central Mexico and northern Argentina (Harvey et al. 2011). It is most commonly found in rugged rocky canyons and cliffs, where day roosting is available in crevices (Harvey et al. 2011). Colonies are usually fewer than 100, with adult males sometimes found in maternity colonies (Harvey et al. 2011). Roosting sites may be occupied year-round, but the four seasons are usually spent in different roosts (Harvey et al. 2011). One offspring is usually born between May and September in the United States, with twins occurring rarely. (Harvey et al. 2011).

One CNDDDB occurrence of western mastiff bat has been reported within 15 miles of the EIR Study Area (CDFW 2022); the roofing of rural or abandoned structures found within the EIR Study Area provide

marginally suitable habitat for this species. Western mastiff bat has low potential to roost within the EIR Study Area.

Hoary Bat

Hoary bat (*Lasiurus cinereus*) is not listed pursuant to either the California or federal ESAs; however, this species is a CDFW SSC. Hoary bats can be distinguished from other species by a combination of its large size, frosted fur, and golden coloration around the face. This bat is widespread in California, although distribution is patchy in the southern deserts. Hoary bats are solitary roosters, concealing themselves in the foliage of both coniferous and deciduous trees. Suitable roosting habitat includes woodlands and forests with medium- to large-size trees and dense foliage, to elevations up to 13,000 feet. This species is highly migratory, making long migrations to and from warmer winter habitats. Sexes are separated geographically throughout most of the summer range. Hoary bats feed primarily on moths, foraging in open areas or along habitat edges (Zeiner et al. 1990).

One CNDDDB occurrence of hoary bat has been reported within 15 miles of the EIR Study Area (CDFW 2022); the mixed riparian woodland found within the EIR Study Area provides suitable roosting habitat for this species. Hoary bat has potential to roost within the EIR Study Area.

American Badger

American badger (*Taxidea taxus*) is designated in California as an SSC. The species historically ranged throughout much of the state except in humid coastal forests. Badgers were once numerous in the Central Valley; however, populations now occur in low numbers in the surrounding peripheral parts of the valley and in the adjacent lowlands of eastern Monterey, San Benito, and San Luis Obispo counties (Williams 1986). Badgers occupy a variety of habitats including grasslands and savannas. The principal requirements seem to be significant food supply, friable soils, and relatively open, uncultivated ground (Williams 1986).

Twelve CNDDDB occurrences of American badger have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland found within the EIR Study Area provides marginal habitat for this species. American badger has low potential to occur within the EIR Study Area.

San Joaquin Kit fox

The San Joaquin kit fox (*Vulpes macrotis mutica*) is listed as threatened under the California ESA and as endangered under the federal ESA. Although the precise historical range of the San Joaquin kit fox is unknown, Grinnell et al. (1937) believed that prior to 1930 San Joaquin kit fox occupied most of the San Joaquin Valley from southern Kern County north to Tracy, San Joaquin County, on the west side, and near La Grange, Stanislaus County, on the east side. Since then, the San Joaquin kit fox population has declined primarily as a result of habitat loss to agricultural, urban, industrial and mineral development in the San Joaquin Valley. San Joaquin kit fox has been listed as endangered for more than 30 years, yet despite the loss of habitat and apparent decline in numbers since the early 1970s, there has never been a comprehensive survey of its entire range or habitat that was once thought to be occupied (USFWS 1983;

Morrell 1975). Local surveys, research projects and incidental sightings indicate that kit foxes currently inhabit some areas of suitable habitat on the San Joaquin Valley floor and in the surrounding foothills of the coastal ranges and Sierra Nevada; Tehachapi Mountains, from southern Kern County north to Contra Costa, Alameda, and San Joaquin counties on the west; near La Grange in Stanislaus County on the east side of the Valley (Williams in litt. 1990); and across some of the larger scattered islands of natural land on the valley floor in Kern, Tulare, Kings, Fresno, Madera, and Merced counties (USFWS 1998).

In the central and northern portions of the range, the kit fox is associated with valley sink scrub, interior Coast Range saltbush scrub, upper Sonoran subshrub scrub, annual grassland, valley oak woodland, and the remaining native grasslands. Agriculture dominates this region where kit foxes mostly inhabit grazed, non-irrigated grasslands, but also live next to and forage in tilled or fallow fields, irrigated row crops, orchards, and vineyards (Bell 1994; Hall 1983; USFWS 1998). They usually inhabit areas with loose-textured (friable) soils, suitable for den excavation (USFWS 1983). Where soils make digging difficult, the foxes frequently use and modify burrows built by other animals (Orloff et al. 1986). Structures such as culverts, abandoned pipelines, and well casings also may be used as den sites (USFWS 1983).

Kit foxes are primarily nocturnal and carnivorous, but are commonly seen during the day in the late spring and early summer (Orloff et al. 1986). Major prey includes kangaroo rats, black-tailed hares, desert cottontails, deer mice, California ground squirrels, ground nesting birds, and insects (Scrivner et al. 1987).

Sixty CNDDDB occurrences of San Joaquin kit fox have been reported within 15 miles of the EIR Study Area (CDFW 2022); the nonnative annual grassland, agricultural fields, and ruderal areas found within the EIR Study Area provide suitable habitat for this species. San Joaquin kit fox has potential to occur within the EIR Study Area.

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ATTACHMENT B

Literature Review Species Lists



Selected Elements by Element Code
 California Department of Fish and Wildlife
 California Natural Diversity Database



Query Criteria: Quad (Volta (3712018) OR Los Banos (3712017) OR Howard Ranch (3712121) OR Ingomar (3712028) OR San Luis Ranch (3712027) OR Turner Ranch (3712026) OR Delta Ranch (3712016) OR Dos Palos (3612086) OR Charleston School (3612087) OR Ortigalita Peak NW (3612088) OR Los Banos Valley (3612181) OR San Luis Dam (3712111))

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AAAAA01181	<i>Ambystoma californiense pop. 1</i> California tiger salamander - central California DPS	Threatened	Threatened	G2G3	S3	WL
AAABF02020	<i>Spea hammondi</i> western spadefoot	None	None	G2G3	S3	SSC
AAABH01022	<i>Rana draytonii</i> California red-legged frog	Threatened	None	G2G3	S2S3	SSC
AAABH01050	<i>Rana boylei</i> foothill yellow-legged frog	None	Endangered	G3	S3	SSC
AAABH01170	<i>Lithobates pipiens</i> northern leopard frog	None	None	G5	S2	SSC
ABNJB05035	<i>Branta hutchinsii leucopareia</i> cackling (=Aleutian Canada) goose	Delisted	None	G5T3	S3	WL
ABNKC11011	<i>Circus hudsonius</i> northern harrier	None	None	G5	S3	SSC
ABNKC19070	<i>Buteo swainsoni</i> Swainson's hawk	None	Threatened	G5	S3	
ABNKC19120	<i>Buteo regalis</i> ferruginous hawk	None	None	G4	S3S4	WL
ABNKC22010	<i>Aquila chrysaetos</i> golden eagle	None	None	G5	S3	FP
ABNKD06090	<i>Falco mexicanus</i> prairie falcon	None	None	G5	S4	WL
ABNME01010	<i>Coturnicops noveboracensis</i> yellow rail	None	None	G4	S1S2	SSC
ABNNB03100	<i>Charadrius montanus</i> mountain plover	None	None	G3	S2S3	SSC
ABNSB10010	<i>Athene cunicularia</i> burrowing owl	None	None	G4	S3	SSC
ABPAT02011	<i>Eremophila alpestris actia</i> California horned lark	None	None	G5T4Q	S4	WL
ABPBR01030	<i>Lanius ludovicianus</i> loggerhead shrike	None	None	G4	S4	SSC
ABPBXB0020	<i>Agelaius tricolor</i> tricolored blackbird	None	Threatened	G1G2	S1S2	SSC
ABPBXB3010	<i>Xanthocephalus xanthocephalus</i> yellow-headed blackbird	None	None	G5	S3	SSC



Selected Elements by Element Code
California Department of Fish and Wildlife
California Natural Diversity Database



Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AFCHA0209K	<i>Oncorhynchus mykiss irideus pop. 11</i> steelhead - Central Valley DPS	Threatened	None	G5T2Q	S2	
AFCJB25010	<i>Mylopharodon conocephalus</i> hardhead	None	None	G3	S3	SSC
AMACC01020	<i>Myotis yumanensis</i> Yuma myotis	None	None	G5	S4	
AMACC05030	<i>Lasiurus cinereus</i> hoary bat	None	None	G3G4	S4	
AMACD02011	<i>Eumops perotis californicus</i> western mastiff bat	None	None	G4G5T4	S3S4	SSC
AMAFB04040	<i>Ammospermophilus nelsoni</i> Nelson's (=San Joaquin) antelope squirrel	None	Threatened	G2G3	S2S3	
AMAFD01060	<i>Perognathus inornatus</i> San Joaquin pocket mouse	None	None	G2G3	S2S3	
AMAFD03080	<i>Dipodomys ingens</i> giant kangaroo rat	Endangered	Endangered	G1G2	S1S2	
AMAJA03041	<i>Vulpes macrotis mutica</i> San Joaquin kit fox	Endangered	Threatened	G4T2	S2	
AMAJF04010	<i>Taxidea taxus</i> American badger	None	None	G5	S3	SSC
ARAAD02030	<i>Emys marmorata</i> western pond turtle	None	None	G3G4	S3	SSC
ARACC01020	<i>Anniella pulchra</i> Northern California legless lizard	None	None	G3	S3	SSC
ARACF07010	<i>Gambelia sila</i> blunt-nosed leopard lizard	Endangered	Endangered	G1	S1	FP
ARADB21021	<i>Masticophis flagellum ruddocki</i> San Joaquin coachwhip	None	None	G5T2T3	S2?	SSC
ARADB36150	<i>Thamnophis gigas</i> giant gartersnake	Threatened	Threatened	G2	S2	
CTT36210CA	<i>Valley Sink Scrub</i> Valley Sink Scrub	None	None	G1	S1.1	
CTT42120CA	<i>Valley Sacaton Grassland</i> Valley Sacaton Grassland	None	None	G1	S1.1	
CTT45320CA	<i>Alkali Seep</i> Alkali Seep	None	None	G3	S2.1	
CTT52310CA	<i>Cismontane Alkali Marsh</i> Cismontane Alkali Marsh	None	None	G1	S1.1	
CTT52410CA	<i>Coastal and Valley Freshwater Marsh</i> Coastal and Valley Freshwater Marsh	None	None	G3	S2.1	
CTT61410CA	<i>Great Valley Cottonwood Riparian Forest</i> Great Valley Cottonwood Riparian Forest	None	None	G2	S2.1	



Selected Elements by Element Code
 California Department of Fish and Wildlife
 California Natural Diversity Database



Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
CTT62100CA	Sycamore Alluvial Woodland Sycamore Alluvial Woodland	None	None	G1	S1.1	
ICBRA03010	Branchinecta conservatio Conservancy fairy shrimp	Endangered	None	G2	S2	
ICBRA03020	Branchinecta longiantenna longhorn fairy shrimp	Endangered	None	G1	S1S2	
ICBRA03030	Branchinecta lynchi vernal pool fairy shrimp	Threatened	None	G3	S3	
ICBRA06010	Linderiella occidentalis California linderiella	None	None	G2G3	S2S3	
ICBRA10010	Lepidurus packardii vernal pool tadpole shrimp	Endangered	None	G4	S3S4	
IICOL48011	Desmocerus californicus dimorphus valley elderberry longhorn beetle	Threatened	None	G3T2	S3	
IIHYM24480	Bombus crotchii Crotch bumble bee	None	None	G3G4	S1S2	
IMBIV19010	Gonidea angulata western ridged mussel	None	None	G3	S1S2	
PDAPI0Z0S0	Eryngium racemosum Delta button-celery	None	Endangered	G1	S1	1B.1
PDAPI0Z0Y0	Eryngium spinosepalum spiny-sepaled button-celery	None	None	G2	S2	1B.2
PDAST5L030	Lasthenia chrysantha alkali-sink goldfields	None	None	G2	S2	1B.1
PDAST5L0A1	Lasthenia glabrata ssp. coulteri Coulter's goldfields	None	None	G4T2	S2	1B.1
PDAST8H060	Senecio aphanactis chaparral ragwort	None	None	G3	S2	2B.2
PDAST9F031	Trichocoronis wrightii var. wrightii Wright's trichocoronis	None	None	G4T3	S1	2B.1
PDBRA0M0E0	Caulanthus lemmonii Lemmon's jewelflower	None	None	G3	S3	1B.2
PDBRA2G0Q1	Streptanthus insignis ssp. lyonii Arburua Ranch jewelflower	None	None	G3G4T2	S2	1B.2
PDCHE040B0	Atriplex cordulata var. cordulata heartscale	None	None	G3T2	S2	1B.2
PDCHE042M0	Atriplex minuscula lesser saltscale	None	None	G2	S2	1B.1
PDCHE042P0	Atriplex persistens vernal pool smallscale	None	None	G2	S2	1B.2
PDCHE04371	Atriplex coronata var. vallicola Lost Hills crownscale	None	None	G4T3	S3	1B.2



Selected Elements by Element Code
 California Department of Fish and Wildlife
 California Natural Diversity Database



Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
PDEUP0D150	<i>Euphorbia hooveri</i> Hoover's spurge	Threatened	None	G1	S1	1B.2
PDFAB0F8R1	<i>Astragalus tener var. tener</i> alkali milk-vetch	None	None	G2T1	S1	1B.2
PDMAL0Q0F0	<i>Malacothamnus hallii</i> Hall's bush-mallow	None	None	G2	S2	1B.2
PDPLM0C0J2	<i>Navarretia nigelliformis ssp. radians</i> shining navarretia	None	None	G4T2	S2	1B.2
PDPLM0C0Q0	<i>Navarretia prostrata</i> prostrate vernal pool navarretia	None	None	G2	S2	1B.2
PDRAN0B1J0	<i>Delphinium recurvatum</i> recurved larkspur	None	None	G2?	S2?	1B.2
PDSCR0J0D1	<i>Chloropyron molle ssp. hispidum</i> hispid salty bird's-beak	None	None	G2T1	S1	1B.1
PMALI040Q0	<i>Sagittaria sanfordii</i> Sanford's arrowhead	None	None	G3	S3	1B.2
PMPOA4C010	<i>Neostapfia colusana</i> Colusa grass	Threatened	Endangered	G1	S1	1B.1
PMPOA53110	<i>Puccinellia simplex</i> California alkali grass	None	None	G3	S2	1B.2
PM POT03091	<i>Stuckenia filiformis ssp. alpina</i> northern slender pondweed	None	None	G5T5	S2S3	2B.2

Record Count: 71

IPaC resource list

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

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

Location

Merced County, California



Local office

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📅 (916) 414-6713

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

Endangered species

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

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

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

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

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

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

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

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

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

Mammals

NAME	STATUS
<p>Fresno Kangaroo Rat <i>Dipodomys nitratoides exilis</i></p> <p>Wherever found</p> <p>There is final critical habitat for this species. The location of the critical habitat is not available.</p> <p>https://ecos.fws.gov/ecp/species/5150</p>	Endangered

<p>San Joaquin Kit Fox <i>Vulpes macrotis mutica</i></p> <p>Wherever found</p> <p>No critical habitat has been designated for this species.</p> <p>https://ecos.fws.gov/ecp/species/2873</p>	Endangered
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Reptiles

NAME	STATUS
<p>Blunt-nosed Leopard Lizard <i>Gambelia silus</i></p> <p>Wherever found</p> <p>No critical habitat has been designated for this species.</p> <p>https://ecos.fws.gov/ecp/species/625</p>	Endangered

<p>Giant Garter Snake <i>Thamnophis gigas</i></p> <p>Wherever found</p> <p>No critical habitat has been designated for this species.</p> <p>https://ecos.fws.gov/ecp/species/4482</p>	Threatened
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Amphibians

NAME	STATUS
<p>California Red-legged Frog <i>Rana draytonii</i></p> <p>Wherever found</p> <p>There is final critical habitat for this species. The location of the critical habitat is not available.</p> <p>https://ecos.fws.gov/ecp/species/2891</p>	Threatened

<p>California Tiger Salamander <i>Ambystoma californiense</i></p> <p>There is final critical habitat for this species. The location of the critical habitat is not available.</p> <p>https://ecos.fws.gov/ecp/species/2076</p>	Threatened
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Fishes

NAME	STATUS
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Delta Smelt *Hypomesus transpacificus* Threatened
 Wherever found
 There is **final** critical habitat for this species. The location of the critical habitat is not available.
<https://ecos.fws.gov/ecp/species/321>

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle <i>Desmocerus californicus dimorphus</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp <i>Lepidurus packardii</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2246	Endangered

Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

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

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

NAME

BREEDING SEASON (IF A
BREEDING SEASON IS INDICATED
FOR A BIRD ON YOUR LIST, THE
BIRD MAY BREED IN YOUR
PROJECT AREA SOMETIME WITHIN
THE TIMEFRAME SPECIFIED,
WHICH IS A VERY LIBERAL
ESTIMATE OF THE DATES INSIDE

WHICH THE BIRD BREEDS
ACROSS ITS ENTIRE RANGE.
"BREEDS ELSEWHERE" INDICATES
THAT THE BIRD DOES NOT LIKELY
BREED IN YOUR PROJECT AREA.)

Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Jan 1 to Aug 31

Black Tern *Chlidonias niger*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3093>

Breeds May 15 to Aug 20

Clark's Grebe *Aechmophorus clarkii*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds Jun 1 to Aug 31

Common Yellowthroat *Geothlypis trichas sinuosa*

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/2084>

Breeds May 20 to Jul 31

Golden Eagle *Aquila chrysaetos*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Breeds Jan 1 to Aug 31

Nuttall's Woodpecker *Picoides nuttallii*

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/9410>

Breeds Apr 1 to Jul 20

Tricolored Blackbird *Agelaius tricolor*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3910>

Breeds Mar 15 to Aug 10

Willet *Tringa semipalmata*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9726>

Probability of Presence Summary

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

Probability of Presence (■)

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

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

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

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

Breeding Season (■)

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

Survey Effort (|)

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

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

No Data (-)

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

Survey Timeframe

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



Common
Yellowthroat
BCC - BCR (This is a
Bird of
Conservation
Concern (BCC) only
in particular Bird
Conservation
Regions (BCRs) in
the continental
USA)



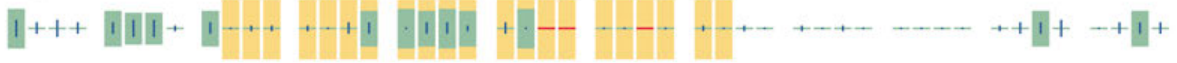
Golden Eagle
Non-BCC
Vulnerable (This is
not a Bird of
Conservation
Concern (BCC) in
this area, but
warrants attention
because of the
Eagle Act or for
potential
susceptibilities in
offshore areas
from certain types
of development or
activities.)



Nuttall's
Woodpecker
BCC - BCR (This is a
Bird of
Conservation
Concern (BCC) only
in particular Bird
Conservation
Regions (BCRs) in
the continental
USA)



Tricolored
Blackbird
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



NOT FOR CONSULTATION

Willet
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



Yellow-billed
Magpie
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



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

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

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

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

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

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

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

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

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

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

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring

in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

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

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

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

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEM1K](#)
[PEM1A](#)
[PEM1C](#)
[PEM1Fh](#)
[PEM1Ch](#)
[PEM1Kx](#)
[PEM1F](#)
[PEM1Cx](#)
[PEM1Ah](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PFOC](#)
[PSSC](#)
[PSSCh](#)

FRESHWATER POND

[PUBGh](#)
[PABFh](#)
[PABKx](#)
[PUBKx](#)
[PUBK](#)
[PUBHh](#)
[PUBF](#)
[PUSC](#)

LAKE

[L2ABKx](#)
[L2UBGh](#)

RIVERINE

[R2UBHx](#)
[R5UBFx](#)
[R2UBH](#)
[R4SBCx](#)
[R5UBF](#)
[R4SBC](#)
[R2USC](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions







Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION



Search Results

36 matches found. Click on scientific name for details

Search Criteria: Quad is one of [3712121:3712111:3612181:3612088:3612087:3712016:3712026:3712028:3712027:3612086:3712018:3712017]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
<u><i>Acanthomintha lanceolata</i></u>	Santa Clara thorn-mint	Lamiaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2	 © 2005 Barry Breckling
<u><i>Amsinckia furcata</i></u>	forked fiddleneck	Boraginaceae	annual herb	Feb-May	None	None	G4	S4	4.2	 © 2017 Keir Morse
<u><i>Androsace elongata</i> ssp. <i>acuta</i></u>	California androsace	Primulaceae	annual herb	Mar-Jun	None	None	G5?T3T4	S3S4	4.2	 © 2008 Aaron Schusteff
<u><i>Astragalus tener</i> var. <i>tener</i></u>	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2	No Photo Available
<u><i>Atriplex cordulata</i> var. <i>cordulata</i></u>	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	 © 1994 Robert E. Preston, Ph.D.
<u><i>Atriplex coronata</i> var. <i>coronata</i></u>	crownscale	Chenopodiaceae	annual herb	Mar-Oct	None	None	G4T3	S3	4.2	 © 1994 Robert E. Preston, Ph.D.
<u><i>Atriplex coronata</i> var. <i>vallicola</i></u>	Lost Hills crownscale	Chenopodiaceae	annual herb	Apr-Sep	None	None	G4T3	S3	1B.2	No Photo Available
<u><i>Atriplex minuscula</i></u>	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	None	None	G2	S2	1B.1	 © 2000

Robert E.
Preston,
Ph.D.

<u><i>Atriplex persistens</i></u>	vernal pool smallscale	Chenopodiaceae	annual herb	Jun-Oct	None	None	G2	S2	1B.2	No Photo Available
<u><i>Caulanthus lemmonii</i></u>	Lemmon's jewelflower	Brassicaceae	annual herb	Feb-May	None	None	G3	S3	1B.2	No Photo Available
<u><i>Centromadia parryi ssp. rudis</i></u>	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	None	None	G3T3	S3	4.2	No Photo Available
<u><i>Chloropyron molle ssp. hispidum</i></u>	hispid salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Sep	None	None	G2T1	S1	1B.1	No Photo Available
<u><i>Clarkia breweri</i></u>	Brewer's clarkia	Onagraceae	annual herb	Apr-Jun	None	None	G4	S4	4.2	No Photo Available
<u><i>Cryptantha rattanii</i></u>	Rattan's cryptantha	Boraginaceae	annual herb	Apr-Jul	None	None	G4	S4	4.3	No Photo Available
<u><i>Delphinium recurvatum</i></u>	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	None	None	G2?	S2?	1B.2	No Photo Available
<u><i>Eriogonum nudum var. indictum</i></u>	protruding buckwheat	Polygonaceae	perennial herb	(Apr)May- Oct(Dec)	None	None	G5T4	S4	4.2	No Photo Available
<u><i>Eriogonum vestitum</i></u>	Idria buckwheat	Polygonaceae	annual herb	Apr-Aug	None	None	G3	S3	4.3	No Photo Available
<u><i>Eryngium racemosum</i></u>	Delta button- celery	Apiaceae	annual/perennial herb	(May)Jun- Oct	None	CE	G1	S1	1B.1	No Photo Available
<u><i>Eryngium spinosepalum</i></u>	spiny-sepaled button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	1B.2	No Photo Available
<u><i>Euphorbia hooveri</i></u>	Hoover's spurge	Euphorbiaceae	annual herb	Jul- Sep(Oct)	FT	None	G1	S1	1B.2	No Photo Available
<u><i>Hesperervax caulescens</i></u>	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	 © 2017 John Doyen
<u><i>Lasthenia chrysantha</i></u>	alkali-sink goldfields	Asteraceae	annual herb	Feb-Apr	None	None	G2	S2	1B.1	 © 2009 California State University,


<i>Lasthenia ferrisiae</i>	Ferris' goldfields	Asteraceae	annual herb	Feb-May	None	None	G3	S3	4.2	 © 2009 Zoya Akulova
<i>Lasthenia glabrata ssp. coulteri</i>	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	None	None	G4T2	S2	1B.1	 © 2013 Keir Morse
<i>Leptosiphon ambiguus</i>	serpentine leptosiphon	Polemoniaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2	 © 2010 Aaron Schusteff
<i>Malacothamnus hallii</i>	Hall's bush-mallow	Malvaceae	perennial deciduous shrub	(Apr)May-Sep(Oct)	None	None	G2	S2	1B.2	 © 2017 Keir Morse
<i>Myosurus minimus ssp. apus</i>	little mousetail	Ranunculaceae	annual herb	Mar-Jun	None	None	G5T2Q	S2	3.1	No Photo Available
<i>Navarretia nigelliformis ssp. radians</i>	shining navarretia	Polemoniaceae	annual herb	(Mar)Apr-Jul	None	None	G4T2	S2	1B.2	No Photo Available
<i>Navarretia prostrata</i>	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.2	No Photo Available
<i>Neostapfia colusana</i>	Colusa grass	Poaceae	annual herb	May-Aug	FT	CE	G1	S1	1B.1	No Photo Available
<i>Puccinellia simplex</i>	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G3	S2	1B.2	No Photo Available
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	No Photo Available
<i>Senecio aphanactis</i>	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	None	None	G3	S2	2B.2	No Photo Available
<i>Streptanthus insignis ssp. lyonii</i>	Arburua Ranch jewelflower	Brassicaceae	annual herb	Mar-May	None	None	G3G4T2	S2	1B.2	No Photo Available
<i>Stuckenia filiformis ssp. alpina</i>	northern slender pondweed	Potamogetonaceae	perennial rhizomatous herb (aquatic)	May-Jul	None	None	G5T5	S2S3	2B.2	 Dana York (2016)

<u>Trichocoronis wrightii var. wrightii</u>	Wright's trichocoronis	Asteraceae	annual herb	May-Sep	None	None	G4T3	S1	2B.1	No Photo Available
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Showing 1 to 36 of 36 entries

Suggested Citation:

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<p>CONTACT US</p> <p>Send questions and comments to rareplants@cnps.org.</p>  <p>Developed by Rincon Consultants, Inc.</p>	<p>ABOUT THIS WEBSITE</p> <p>About the Inventory Release Notes Advanced Search Glossary</p>	<p>ABOUT CNPS</p> <p>About the Rare Plant Program CNPS Home Page About CNPS Join CNPS</p>	<p>CONTRIBUTORS</p> <p>The Calflora Database The California Lichen Society California Natural Diversity Database The Jepson Flora Project The Consortium of California Herbaria CalPhotos</p>
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**APPENDIX D:
CULTURAL RESOURCES DATA**



March 11, 2022

Joanna Jansen
PlaceWorks, Inc.
1625 Shattuck Avenue, Suite 300
Berkeley, CA 94709

RE: *Cultural Resources Records Search and Data Gathering Summary for the Los Banos General Plan Environmental Impact Report (EIR) Project, Merced County*

Greetings,

The purpose of this letter report is to relay information that ECORP Consulting, Inc. gathered to inform the cultural resource sensitivity of the City of Los Banos General Plan Environmental Impact Report (EIR) Area (Figure 1). ECORP reviewed current laws and regulations regarding cultural resources that may apply to the City and available literature, current cultural sources, lists, and databases to gather the requisite information to inform the EIR.

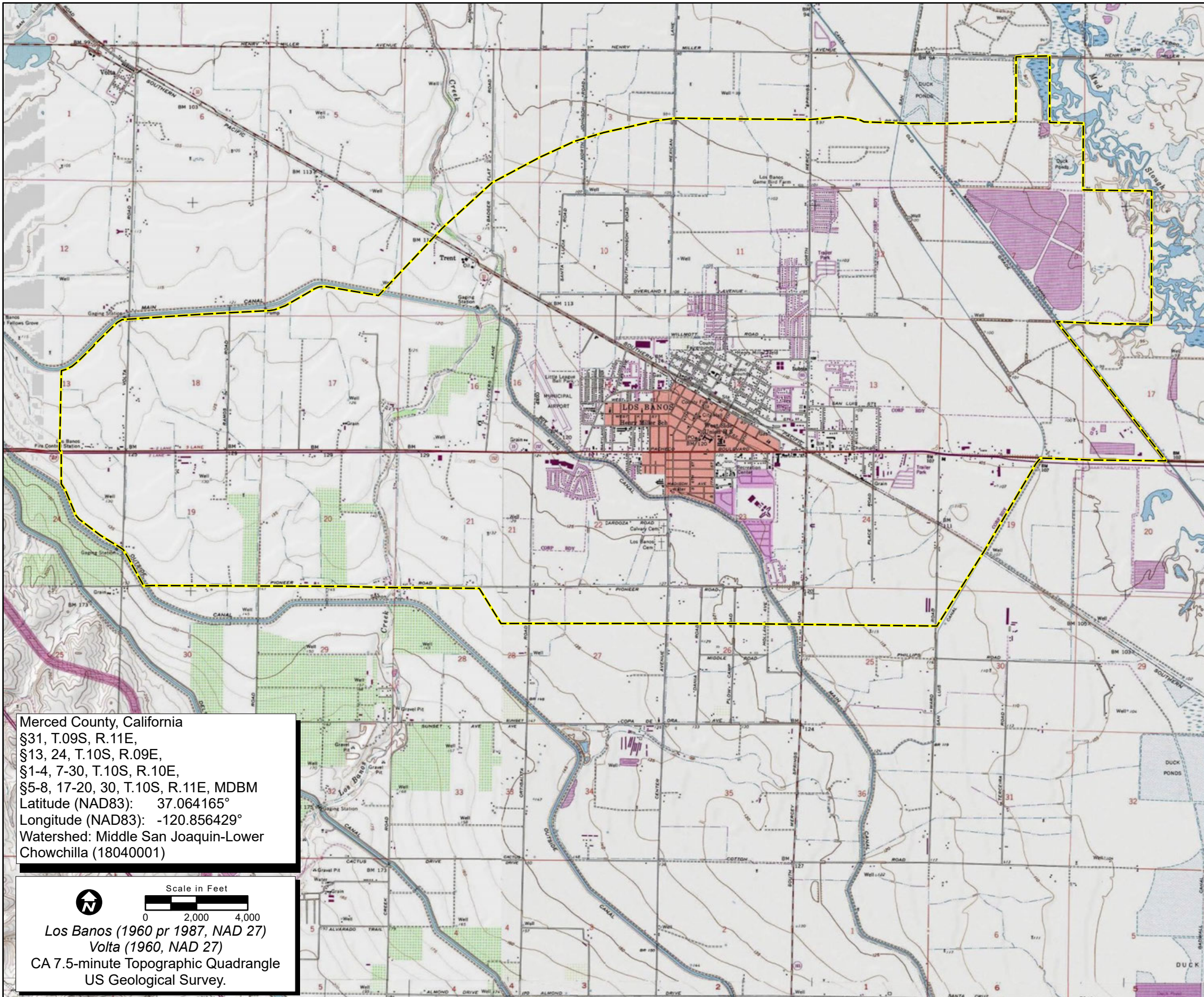
The purpose of this letter report is to provide an overview of cultural resources in the City, including an overview of the pre-contact (prehistoric) era and historic era cultural setting of the City, a discussion of federal, state, and local regulations pertaining to the management of cultural resources, the known cultural resources within the City limits, and a discussion of the types of cultural resources likely to be encountered during future planning and projects.

Registered Professional Archaeologist (RPA) Brian S. Marks, Ph.D. and architectural historian Jeremy Adams, M.A. supervised all work completed for this review. Dr. Marks meets the Secretary of the Interior's Professional Qualification Standards (PQS) for historic and prehistoric archaeology. Jeremy Adams meets the PQS for history and architectural history.

METHODS

Records Search and Literature Review

ECORP reviewed the current laws and regulations regarding cultural resources at the federal, state, and local level. This includes cultural resources laws at the federal level in U.S. Government Codes (USC) and Code of Federal Regulations (CFR), the California Public Resources Code (PRC), the City of Los Banos Municipal Code, and any existing guiding policies and implementing actions in the current Los Banos 2030 General Plan.



Map Contents

EIR Study Area - 14,559.1 ac.

Sources: ESRI, USGS

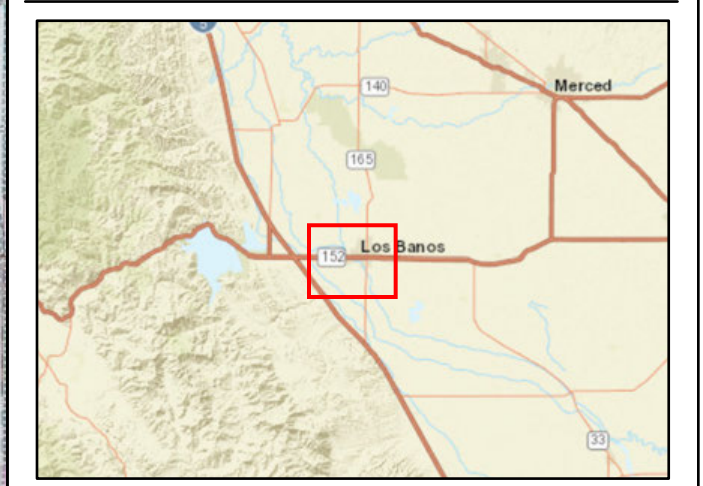


Figure 1. Project Location and Vicinity

Location: N:\2021\2021-293 Los Banos General Plan Update\WAPS\Location_Vicinity\LBGP_LnV.aprx - LBGPO_LnV_20220119 (klumquist - 1/19/2022)

The Central California Information Center (CCIC) of the California Historical Resources Information System (CHRIS) at California State University, Stanislaus completed the records search for the Area of Potential Effects on January 21, 2022 (Southern San Joaquin Valley Information Center search #12054I, provided as Attachment A). The purpose of the records searches was to determine the extent of previous cultural surveys and studies conducted within the limits of the Los Banos General Plan Area and what previously documented, pre-contact or historic archaeological sites, architectural resources, or traditional cultural properties exist within this area.

In addition to the official records and maps for archaeological sites and surveys in Merced County, ECORP reviewed the following historic references: Built Environment Resource Directory for Madera County (California Office of Historic Preservation [OHP] 2020); Historic Property Data File for Madera County (OHP 2012); *The National Register Information System* (National Park Service [NPS] 2022); *Office of Historic Preservation, California Historical Landmarks* (OHP 2020); *California Historical Landmarks* (OHP 1996 and updates); California Points of Historical Interest (OHP 1992 and updates); *Directory of Properties in the Historical Resources Inventory* (1999); *Caltrans Local Bridge Survey* (Caltrans 2019); *Caltrans State Bridge Survey* (Caltrans 2018); and *Historic Spots in California* (Kyle 2002).

Other references examined include historic General Land Office (GLO) land patent records (Bureau of Land Management [BLM] 2022). ECORP sent a request for a review of the Sacred Lands File of the Native American Heritage Commission on January 30, 2022. ECORP reviewed historic maps and aerial photographs of the area for general information on how the landscape of the City evolved historically.

CULTURAL SETTING

Local Pre-Contact History

Los Banos is set within an area that was occupied for thousands of years before European Contact. The earliest human occupations in the region date to the Middle Pacific period around 1000 B.C., represented by the Crane Flat phase of the Yosemite Complex located approximately 70 miles northeast of Los Banos (Bennyhoff 1956; Fitzwater 1962; Riley 1984). This phase is distinguished by projectile dart points made from obsidian, a tool-making stone which was readily available from this area (Doolittle 2002).

Groundstone items consist of manos and metates with little evidence of the use of mortars or pestles. Fifty miles to the east, in the Buchanan Reservoir area, a contemporary sequence called the Chowchilla phase is also identified as the beginning of the cultural sequence with similar projectile points, including forms with contracting stemmed and concave base types (Moratto 1972). A few large settlements have been documented along the Chowchilla River from this period, giving the phase its name. Unlike the Crane Flat phase, the Chowchilla phase sites have produced cobble mortars with simple cylindrical pestles. Funerary practices include extended and semi-extended burials with abundant grave goods that include shell beads and ornaments and ochre staining (Doolittle 2002).

In the Late Pacific period, the Yosemite Complex sites exhibit smaller and lighter projectile points, and also the use of bedrock mortar technology. This period is divided into Tamarack and Mariposa phases. The Tamarack phase is earlier, yields the earliest arrow-sized points in the area, and marks the inception of bedrock mortar technology. The Mariposa Phase, beginning around 1500 B.C., is linked with the

ethnographic Miwok culture. This phase yield smaller projectile points of triangular and side-notched form and more refined mortars and pestles. Bedrock mortar sites from the Mariposa phase can contain hundreds of depressions reflecting intensification of acorn processing and larger population (Doolittle 2002).

Similarly, the Buchanan Reservoir area in the Late Period is reflected by two comparable phases; the Raymond and Madera phases. The Raymond phase is the earlier of the two and is characterized by smaller, arrow-sized points similar to Great Basin Rose Springs and Eastgate types. Some projectile points have contracting stems comparable to northern California Gunther types. Burials from this phase are generally tightly flexed with few grave goods, some of which display evidence of violent death. Cobble mortars and pestles are still being used with little use of bedrock mortars. The succeeding Madera phase, beginning around A.D. 1500, is marked by a rise in population and more stability. Smaller projectile points become more common, similar to the Mariposa phase of the Yosemite Complex, and mark the appearance of new artifact types, such as steatite beads and bowls, bedrock mortars, shaft straighteners, and pendants. Funerary customs also become more differentiated, possibly reflecting a hierarchy of social class. Flexed burials may have been associated with low status individuals, whereas cremation may have been reserved for high-status ones. The use of sweathouses and ceremonial assembly chambers are also documented from the Madera phase (Doolittle 2002).

Although the Yosemite Valley Complex and Buchanan Reservoir area are associated, respectively, with Central and Southern Sierra Miwok/Foothill Yokuts peoples, the relative proximity of these cultural phases to the Los Banos area provide a broad scope of the types of cultural remains that can be expected to occur within the Los Banos area, which falls within the Northern Valley Yokuts territory.

Ethnography

Ethnographically, present-day Los Banos lies in Northern Valley Yokuts territory; bounded to the north by Bay and Plains Miwok, to the west by the Costanoan, to the east by the northern, Central, and Southern Miwok, and to the south by the Southern Valley Yokuts. The San Joaquin River forms the central spine of the Northern Valley Yokuts territory that runs north collecting water from primary drainages that flow southwest from the Sierra Nevada. Within the territory, Los Banos lies in an area dominated ethnographically by the Nopchinchí Tribelet, who inhabited the area west of the San Joaquin River near Las Banos Creek and Little Panoche Creek. The environment consisted of marshland flanking rivers and streams separated by more arid plains with sparse vegetation. Despite the hot summers of the Central Valley, the abundance of animal life made settlement attractive in the region. Rivers were well stocked with fish, mussels, and pond turtles, with migratory birds nesting along riverbanks. Elk and pronghorn sheep roamed the plains and edges of the marshland, while smaller mammals were omnipresent and included jackrabbits, ground squirrels, and quail (Wallace 1978).

Archaeological evidence indicates that the Yokuts were relative latecomers to the region, moving northward from the main bend in the San Joaquin River and displacing Costanoans and Miwok in their path. The Northern Valley Yokuts were firmly established by the time of early nineteenth century when Spanish expeditions were making exploratory incursions into the interior of California. By this time, the population is estimated as 30,000, with the main concentrations along the San Joaquin River and its main

tributaries. They were organized in territorial tribelets of up to 300 people. Gathering parties left the villages seasonally to collect seeds and acorns. Acorn processing and fishing were the main subsistence activities, followed by hunting for fowl. Hunting for elk and antelope appears to have been less common. Some burning of meadows was practiced to increase the harvest of seeds (Wallace 1978).

Acorn processing was a time-consuming and important activity centered on individual or groups of oak trees that could yield hundreds of pounds of acorns. Tule roots were also harvested and ground into meal. The Yokuts lived in permanent villages on mounds along the river. Structures with round to oval, hard-packed dirt floors sunk 2 feet below ground surface have been documented in Merced and Fresno counties. These have been interpreted as single family dwellings constructed with light wooden poles joined at the top and covered with tule mats. Sweathouses and ceremonial assembly chambers have also been documented in Northern Valley Yokuts territory (Wallace 1978).

Technological skills included basket making and production of ground stone items like mortars and pestles used in acorn processing. Lithic technology consisted of projectile points, knives, scrapers, and expedient tools like hammer stones and choppers. Lithic materials used for these items included chert, jasper, chalcedony, and obsidian. Funerary customs included flexed inhumation burial or cremation; the latter used for tribesmen who died away from home or for shamans or high-status individuals (Wallace 1978).

The Northern Valley Yokuts first encountered Spanish exploratory missions in the early 1800s. The biggest impact to Yokuts culture came with the start of the mission system in the first quarter of the 19th century when large numbers of Yokuts peoples were taken to the San José, Santa Clara, Soledad, San Juan Bautista, and San Antonio missions. At approximately 40 miles southwest of Los Banos, San Juan Bautista is the closest mission to the area. The succeeding period is characterized by Neophytes running away from the harsh mission system and being pursued by punitive expeditions. Bands of ex-mission Indians allied with unconverted groups began to raid mission territories, stealing herds and horses for meat. These raids continued into the Mexican Period, which was marked by a drastic decline of the native population particularly from a malaria epidemic in 1833 (Wallace 1978).

The American Period after 1848 marked a further decline in the native population in Northern Yokuts territory. The native groups were first subjected to gold prospectors passing through their territory bringing with them a new wave of diseases. Finally, these loose groups were pushed aside by settlers who decided to farm in the Central Valley (Wallace 1978).

History

The first significant European settlement of California began during the Spanish Period (1769 to 1821) when 21 missions and 4 presidios were established between San Diego and Sonoma. Although located primarily along the coast, the missions dominated the majority of the California region during this period. The purpose of the missions and presidios was to establish Spanish economic, military, political, and religious control over the Alta California territory. This included the forced conversion of the Native population to Spanish colonial society and Catholicism, which often consisted of subjugating Indians into a life of servitude to Spanish citizens (Castillo 1978; Cleland 1941). The nearest mission to Los Banos was San Juan Bautista, approximately 40 miles to the southwest.

The Mexican Period (1821 to 1848) began with the success of the Mexican Revolution in 1821, but changes to the mission system were slow to follow. When secularization of the missions occurred in the 1830s, the vast land holdings of the missions in California were divided into large land grants called *ranchos*. The Mexican government granted ranchos throughout California to Spanish and Hispanic soldiers and settlers (Castillo 1978).

In 1848, the Treaty of Guadalupe Hidalgo ended the Mexican-American War and marked the beginning of the American Period (1848 to present). The discovery of gold the same year initiated the 1849 California Gold Rush, bringing thousands of miners and settlers to California.

The first European incursions into the San Joaquin Valley were the result of punitive expeditions to recover stolen horses and to seek retribution on Native American individuals who had raided European settlements. The first Spanish expedition to reach Merced was led by Lieutenant Gabriel Moraga in 1806 with a force of 30 men. These expeditions continued through the Mexican Period by which time neophytes and unconverted natives had formed loose tribelets and improved their raiding techniques (Outcalt 1925).

The first Americans in the region were made up of teams of trappers led in 1827 by Jedediah Smith and followed by a party led by Ewing Young in 1829. The Hudson Bay Company also sent a number of trapping expeditions, including one led by Peter Ogden, to California during this period that were successful in procuring beaver furs and antelope skins. In 1844, General John C. Fremont crossed into the Central Valley and returned the following year with Kit Carson and Joseph Walker.

During this period of Mexican rule in California, the governor could authorize large land grants to citizens for farming and cattle grazing. At the start of the American Period in 1848, American settlers started to arrive in the valley looking for farmland. Land was available for as little as 0.50 to \$1.50 an acre (Merced Chamber of Commerce 2006). The Gold Rush era resulted in increased population and settlements in the San Joaquin Valley since the region was a natural transportation corridor that provided goods for miners. The 1850s was a period of abundant wheat harvests and the spread of open cattle grazing in the valley. Notable among these cattlemen were Henry Miller and Charles Lux, whose ranch covered more than one million acres in the Los Banos area in the 1860s. The coexistence of farmland and open grazing led to conflicts between farmers and ranchers when cattle would stray onto cultivated fields. In 1870, the Trespass Law or *No Fence Law* was applied to the part of Merced County east of the San Joaquin River, which prevented the trespassing of animals on private property and so ended unrestricted cattle ranging (Outcalt 1925). Four years later a fence law was adopted forcing ranchers to enclose their fields to prevent further conflicts (City of Merced 2001).

When California was divided into 27 counties in 1850, Los Banos fell under Mariposa County which was then further divided, in 1855, into 10 other counties including Merced County. The construction of the Southern Pacific Railroad through the Valley in 1872 (Mullaly and Petty 2002) led to the growth of Merced (located on the railroad route) which superseded the town of Snelling (not on the railroad route) as the county seat in 1872 (City of Merced 2001).

The Los Banos area was colonized by many Spanish and Portuguese explorers, immigrants, and missionaries. Spanish missionary Padre Felipe Arroyo de la Cuesta would make trips from Mission San

Juan Bautista to the Yokuts territory. It was during one of these trips that the Padre discovered pools of water between the rocks in a creek bed that flowed down into the San Joaquin Valley. He called the area *Los Banos*, which meant *The Baths* for these pools. Reports of these baths eventually led to the local ranchers naming the creek *El Arroyo de Los Banos del Padre Arroyo*. This name was eventually simplified to *Los Banos Creek* (Outcalt 1925; Gudde 1969).

In the 1850s, Uriah Wood settled in the area that was to become Los Banos. Wood was originally from New York but came to California from Illinois. By 1859 Wood had a two-room cottage and worked in various occupations but was often paid in cattle. He exchanged and sold cattle and land and eventually accumulated over 5,000 acres with all the real estate incorporated under The Uriah Wood Company (Sawyer 1922). Wood received the majority of the land officially in 1868 through 11 state volume patents issued under the Land Act of 1820 (BLM 2022). Wood remained in the area with his four sons and his wife Phoebe L. Smith, until the family moved to San Jose in 1885 (Sawyer 1922).

Pioneers W.J. Stockton and Charles W. Smith came to Los Banos in 1872 and 1874 respectively and wrote extensively about the early days of the town, then known as Los Banos Village. Stockton came to Los Banos to build a house, and at the time there were few small buildings and a grocery store that doubled as post office. By 1881 the town had gained a hotel, blacksmith shop, a barn, and two smaller buildings. However, the town center moved a few miles west to the location of where the railroad came through in the later 1880s, and the original location came to be referred to as *Old Los Banos*. Los Banos was one of only two towns on the west side of the Sierra Nevada in the lower central valley during this time – the other being Hill's Ferry. Other nearby towns such as Dogtown began to crop up after 1874 when an irrigation canal was complete and brought sufficient water to the area. The majority of the surrounding lands were used as stock ranches for cattle and sheep (Outcalt 1925).

Henry Miller, a prominent California rancher and agriculture baron, also settled in the area in the 1860s. Ranching and farming became the main industry in the Los Banos area, facilitated by irrigation systems using water from the local rivers and creeks and called for by the success of the wheat exported from the area to places as far off as England. By 1871, Henry Miller formed the San Joaquin and Kings River Canal and Irrigation Company to continue to get water to support his cattle empire. Miller was one of ten men who bought the water rights from a canal that siphoned water from the junction of the San Joaquin River and Fresno Slough (Outcalt 1925). He began introducing agricultural crops such as cotton, rice, and alfalfa to the area (City of Los Banos 2021).

Miller started an annual May Day celebration in 1877 to celebrate the completion of another canal, which also happened to occur on Miller's Birthday. The celebration became an established custom in Los Banos, on which day they celebrated Miller himself as much as the May Day holiday. Miller emigrated to New York from Germany in 1827 and ran a successful butcher business there until he was said to have made \$30,000 by the age of 18. He was said to have returned to Germany but later fell ill and lost money in business dealings when he emigrated again to Panama. He came to San Francisco in 1850 and started working his way again as a butcher and began building his cattle empire shortly after. His work building canals accredited him with helping expand the wealth and influence of Los Banos as a city and all its citizens. He was said to have been gracious with his wealth, never calling in a debt on anyone who could not pay it, and settling outstanding mortgage and other bills for pennies on the dollar (Outcalt 1925). This

allowed the town and its residents to thrive and prosper, and Los Banos continued to thrive as an agricultural center through the twenty first century and remains an agricultural center to this day due in large part to Miller.

RESULTS

Laws and Regulations

This section presents federal, state, and local laws and regulations pertaining to cultural resources and Native Americans. The following terms are re-occurring and referenced throughout this section:

- *Cultural resource* is the term used to describe several different types of properties: pre-contact (prehistoric) and historic archaeological sites, buildings, objects, structures, and districts or any other physical evidence associated with human activity considered important to a culture or a community for scientific, traditional, or religious reasons.
- *Historic Property*: Federal regulations (36 CFR 800) define a historic property as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP). This term includes artifacts, records, and remains that are related to and located within such properties. The term also includes properties of traditional religious and cultural importance to Native American tribes or Native Hawaiian organizations and that meet NRHP criteria.
- *Historical Resource*: The California Environmental Quality Act (CEQA) Guidelines Section 15064.5(a) define a historical resource as a resource listed in the California Register of Historical Resources (CRHR) or determined to be eligible for listing in the CRHR by the State Historical Resources Commission, a resource included in a local register of Historical Resources, or identified as significant in a Historical Resource survey meeting the requirements of PRC Section 5024.1(g), or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.
- *Unique Archaeological Resource*: CEQA defines this term as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
 - Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
 - Has a special and particular quality such as being the oldest of its type or the best available example of its type.
 - Is directly associated with a scientifically recognized important prehistoric or historic event or person.

- *Tribal Cultural Resource*: CEQA defines Tribal Cultural resources 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 included or determined to be eligible for inclusion in the CRHR; and/or included in a local register of historical resources; and/or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant.

These resource types will be further discussed in terms of the specific laws that define them in this section.

Federal Regulations

National Historic Preservation Act

The National Historic Preservation Act defines the responsibilities of federal agencies to protect and preserve Historic Properties. Sections 106 and 110 include specific provisions for the identification and evaluation of these properties for inclusion in the NRHP, such as consulting with interested parties that often include local Native American tribes.

Section 106 requires federal agencies, or those they fund or permit, to consider the effects of any of their undertakings (e.g., projects, activities, or programs) on properties that may be eligible for listing or that are listed in the NRHP (i.e., Historic Properties). Regulations implementing Section 106 (36 CFR 800) lay out procedures for federal agencies to meet their Section 106 responsibilities. Although compliance with Section 106 is the responsibility of the lead federal agency, the work necessary to comply may be undertaken by others.

To determine whether an undertaking could affect Historic Properties, cultural resources, including archaeological, historical, and architectural properties, must be inventoried and evaluated for listing in the NRHP.

The Section 106 process generally follows the basic steps listed below, although all steps may not be necessary in each case.

- Once an undertaking is established, initiate consultation with the appropriate parties and plan to involve the public.
- Identify Historic Properties and determine whether your undertaking has potential to affect them.
- Assess effects of the undertaking on Historic Properties to determine if effects are adverse.
- Consult with the State Historic Preservation Officer (SHPO) regarding the identification of Historic Properties, any effects the undertaking may have on Historic Properties, and whether these effects will be adverse.
- Notify all consulting parties (e.g., Native American or Native Hawaiian tribes and members of the public) of the determinations regarding potential adverse effects to Historic Properties. Any disagreements should be resolved through consultation.

- Consult on ways to modify the undertaking to avoid, minimize, or resolve adverse effects on Historic Properties.
- If needed, come to an agreement on measures and steps to resolve adverse effects through the adoption of either a Memorandum of Agreement (MOA) or, for larger or phased undertakings, a Programmatic Agreement (PA). These are agreement documents that outline the agreed-upon measures to resolve adverse effects.
- Proceed in accordance with the MOA or PA, if executed.

If all parties agree that there are no Historic Properties identified, or that the undertaking will not have an adverse effect on Historic Properties, an MOA or PA may not be necessary. Regardless, each step of this process should be documented for proof of compliance with the Section 106 process.

Federal Historic Significance Criteria

For federal projects, cultural resource significance is evaluated in terms of eligibility for listing in the NRHP. Structures, sites, buildings, districts, and objects more than 50 years of age can be listed in the NRHP as significant Historic Properties; however, properties less than 50 years of age that are of exceptional importance or are contributors to a historic district can also be included in the NRHP. The NRHP is administered by the NPS and includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or traditional cultural significance at the national, state, or local level.

Criteria for listing in the NRHP are outlined in 36 CFR 60.4 and are rooted in the notion that 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 integrity of location, design, setting, materials, workmanship, feeling, and association, and that:

- A. are associated with events that have contributed to the broad pattern of our history;
- B. are associated with the lives of people significant in our past;
- C. embody the distinct characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. have yielded, or are likely to yield, information important in prehistory or history (36 CFR 60.4).

Through amendments to the NRHP in 1992 and their implementing regulations, federal responsibilities for consultations with interested parties, and especially with Indigenous tribes, during the Section 106 process were expanded. The result has been a more focused effort by federal agencies to involve interested parties in identifying Historic Properties of cultural significance and, if warranted, in considering effects that may result from a federal undertaking.

Traditional Cultural Properties (TCPs) are often identified as resources during these consultation efforts. TCPs are tangible cultural properties that have historical and ongoing significance to living communities,

as evidenced in their traditional cultural practices, values, beliefs, and identity. A TCP must still meet one of the four criteria outlined in 36 CFR Part 60.4, described previously, and must retain integrity. A TCP is simply a different way of grouping or looking at historic resources, emphasizing a place's value and significance to a living community.

As such, the NRHP guidelines describe the types of cultural significance for which properties may be eligible for inclusion in the NRHP. A property with traditional cultural significance will be found eligible for the NRHP because it is associated with cultural practices or beliefs of a living community that are:

- A. rooted in that community's history, and
- B. important in maintaining the continuity of the cultural identity of the community.

This type of significance is grounded in the cultural patterns of thought and behavior of a living community and refers specifically to the association between their cultural traditions and a historic property.

State Regulations

California Environmental Quality Act

CEQA was passed in 1970 to institute a statewide policy of environmental protection. It requires that public agencies that finance or approve public or private projects must consider the impacts of their actions on the environment, of which, Historical Resources, Unique Archaeological Resources, and Tribal Cultural Resources are a part. A project that may cause a substantial adverse change in the significance of a Historical Resource is a project that may have a significant effect on the environment (PRC 21084.1). Section 21083.2 requires agencies to determine whether proposed projects would have effects on Unique Archaeological Resources, and Section 21074(a)(1) concerns effects to Tribal Cultural Resources.

CEQA requires that if a project would result in significant impacts on cultural resources that are important or significant, alternative plans or measures must be considered to lessen or mitigate such impacts. Prior to the development of mitigation measures, the importance of cultural resources must be determined. The steps that are generally taken in a cultural resources investigation for CEQA compliance are as follows:

- identify cultural resources in a project area;
- if cultural resources exist in the footprint of a project, evaluate the significance of resources;
- if significant resources are determined to exist, evaluate the potential impacts of a project on these resources; and
- develop and implement measures to mitigate the impacts of the project only on *significant* resources, namely Historical Resources, Unique Archaeological Resources, and Tribal Cultural Resources.

Historical Resource is a term with a defined statutory meaning (PRC Section 21084.1). Under CEQA Guidelines Section 15064.5(a), Historical Resources include the following:

- A resource listed, or determined to be eligible for listing, in the CRHR by the State Historical Resources Commission (PRC Section 5024.1).
- A resource included in a local register of Historical Resources, as defined in PRC Section 5020.1(k), or identified as significant in a Historical Resource survey meeting the requirements of PRC Section 5024.1(g), will be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource will be considered by the lead agency to be *historically significant* if the resource meets the criteria for listing in the CRHR (PRC Section 5024.1), including the following:
 1. is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
 2. is associated with the lives of persons important in our past;
 3. embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
 4. has yielded, or may be likely to yield, information important in prehistory or history.

The fact that a resource is not listed or determined to be eligible for listing in the CRHR, not included in a local register of Historical Resources (pursuant to PRC Section 5020.1(k)), or identified in a Historical Resources survey (meeting the criteria in PRC Section 5024.1(g)) does not preclude a lead agency from determining that the resource may be a Historical Resource, as defined in PRC Section 5020.1(j) or 5024.1.

Historical Resources are usually 45 years or older and must meet at least one of the criteria for listing in the CRHR described previously, in addition to maintaining a sufficient level of integrity.

In addition, CEQA requires lead agencies to determine if a proposed project would have a significant effect on Unique Archaeological Resources. If an archaeological site does not meet the CEQA Guidelines criteria for a Historical Resource, then the site may meet the threshold of PRC Section 21083.2 regarding Unique Archaeological Resources.

The CEQA Guidelines note that if a resource is neither a Unique Archaeological Resource nor a Historical Resource, the effects of the project on that resource shall not be considered a significant effect on the environment (14 California Code of Regulations Section 15064[c][4]). Considerations under CEQA for Tribal Cultural Resources are discussed below.

California Health and Safety Code Section 7050.5(b) and CEQA Section 15064.5

Section 7050.5(b) of the California Health and Safety Code specifies protocol when human remains are discovered during activities involving ground disturbance. If human remains are discovered or identified in any location other than a dedicated cemetery, there should be no further disturbance or excavation nearby until the county coroner has determined the area is not a crime scene that warrants further investigation into the cause of death and made recommendations to the persons responsible for the work in the manner provided in Section 5097.98 of the PRC. This section provides guidance for proceeding when human remains associated with Native American burials and associated items are encountered.

CEQA Guidelines Section 15064.5(e) requires that excavation activities stop whenever human remains are uncovered during a project or activity, and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are Native American, the Native American Heritage Commission (NAHC) must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native American descendants, if any, as identified by the NAHC. Under certain circumstances, the lead agency (or applicant), is required to develop an agreement with the Native American descendants for the treatment and disposition of the remains.

In addition to the mitigation provisions pertaining to accidental discovery of human remains, Section 15064.5(f) of the CEQA Guidelines also requires that a lead agency make provisions for the accidental discovery of historical or archaeological resources, generally. These provisions should include an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be a Historical Resource or Unique Archaeological Resource, avoidance measures should be implemented, or appropriate mitigation should be available.

Public Resources Code Section 5097.9

PRC Section 5097.9 states that no public agency or private party on public property shall interfere with the free expression or exercise of Native American Religion. The code further states that:

...nor shall any such agency or party cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, except on a clear and convincing showing that the public interest and necessity so require.

County and city lands are exempt from this provision, except for parklands larger than 100 acres.

Government Code 65352.3-5 (Senate Bill 18), Local Government – Tribal Consultation

California Government Code Section 65352.3-5, formerly known as Senate Bill (SB) 18, states that prior to the adoption or amendment of a city or county's general plan, or specific plans, the city or county shall consult with California Native American tribes that are on the contact list maintained by the NAHC. The intent of this legislation is to preserve or mitigate impacts on places, features and objects, as defined in PRC 5097.9 and PRC 5097.993, that are located within the city or county's jurisdiction. The bill also states that the city or county shall protect the confidentiality of information concerning the specific identity, location, character and use of those places, features and objects identified by Native American

consultation. Government Code 65362.3-5 applies to all general and specific plans and amendments proposed after March 1, 2005.

Assembly Bill 52

Effective July 1, 2015, Assembly Bill (AB) 52 amended CEQA to require that: (1) a lead agency provide notice to those California Native American tribes that requested notice of projects proposed by the lead agency; and (2) the lead agency consult with any tribe that responded to the project notice within 30 days of receipt with a request for consultation. Topics that may be addressed during consultation include Tribal Cultural Resources, the potential significance of project impacts, the type of environmental document that should be prepared, and possible mitigation measures and project alternatives.

A California Native American tribe is defined as "...a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of the Statutes of 2004." This includes both federally and non-federally recognized tribes.

Section 21074(a) of the PRC defines Tribal Cultural Resources for the purpose of CEQA as:

- (1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
 - (A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
 - (B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
- (2) 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. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

Because criteria A and B also meet the definition of a Historical Resource under CEQA, a Tribal Cultural Resource may also require additional consideration as a Historical Resource. Tribal Cultural Resources may or may not exhibit archaeological, cultural, or physical indicators.

Recognizing that California tribes are experts in their tribal cultural resources and heritage, AB 52 requires that CEQA lead agencies provide tribes that request notification an opportunity to consult at the commencement of the CEQA process to identify Tribal Cultural Resources. Furthermore, because a significant effect on a Tribal Cultural Resource is considered a significant impact on the environment under CEQA, consultation is used to develop appropriate avoidance, impact minimization, and mitigation measures.

Assembly Bill 168

AB 168 was signed in 2020 and extends the responsibility of a development proponent to consult with Native American tribes to streamlined ministerial approvals for affordable multifamily housing developments under SB 35. A development with streamlined ministerial approval under SB 35 is not subject to CEQA, allowing for such developments to occur without going through a CEQA review or screening process to determine if they would affect Tribal Cultural Resources.

AB 168 requires a development proponent to submit notice of its intent to apply for streamlined approval to the local government prior to the actual application submittal. The local government is then required to provide formal notice to each California Native American tribe that is culturally affiliated with the geographic area of the proposed development and to engage in a *scoping consultation* regarding the potential effects the proposed development could have on a potential Tribal Cultural Resource (California Code Section 65913.4(b)).

The scoping consultation must commence within 30 days after the proponent submits a notice of intent to apply for ministerial approval and concluded before the proponent can submit the application.

This bill deems a project ineligible for the streamlined, ministerial approval process and require it be subject to CEQA if:

- (A) the site of the proposed development is a Tribal Cultural Resource that is on a national, State, tribal, or local historic register list;
- (B) the local government and the California Native American tribe do not agree that no potential Tribal Cultural Resource would be affected by the proposed development; or
- (C) the local government and California Native American tribe find that a potential Tribal Cultural Resource could be affected by the proposed development and the parties do not document an enforceable agreement regarding the methods, measures, and conditions for treatment of those tribal cultural resources, as provided.

Local Regulations

The Los Banos 2030 General Plan has a guiding policy for consideration of cultural and archaeological resources in Los Banos General Plan Area, which comes with a set of implementing actions. These are as follows:

- Guiding Policy POSR-G-12: Identify and preserve the archaeological and historic resources that are found within the Los Banos Planning Area.
- Implementing Action POSR-I-37: Require that new development analyze and avoid any potential impacts to archaeological, paleontological, and designated historic resources by:
 - Requiring a record search at the Central California Information Center located at California State University Stanislaus and other appropriate historical repositories for development proposed in areas that are considered archaeologically sensitive;

- Studying the potential effects of development and construction (as required by CEQA);
 - Requiring pre-construction field surveys (where appropriate) and monitoring during any ground disturbance for all development in areas of historical and archaeological sensitivity; and
 - Implementing appropriate measures or project alternatives to avoid identified significant impacts to historical resources. Where such impacts are unavoidable, document the structure(s) in accordance with the National Park Service’s Historic American Building Survey/Historic American Engineering Record (HABS/HAER). Such affects would still be considered significant.
- Implementation Action POSR-I-38: Retain a qualified architectural historian to undertake an inventory of historic resources to determine sites or buildings of federal, State, or local historic significance.
 - Implementation Action POSR-I-39: Promote the registration of historic sites, buildings, and structures in the National Register of Historic Places, and inclusion in the California Inventory of Historic Resources.
 - Implementation Action POSR-I-40: Update the City’s building regulations to implement the State Historic Building Code for alterations to designated historic properties.
 - Implementation Action POSR-I-41: Require applicants of major development projects to consult with Native American representatives regarding cultural resources to identify locations of importance to Native Americans, including archeological sites and traditional cultural properties.

Records Search and Literature Review

The CCIC returned results of the Records Search on January 21, 2022. The records search consisted of a review of previous research and literature, records on file with the CCIC for previously recorded resources, and historical aerial photographs and maps of the vicinity. According to the records search data, approximately 35 percent of the Los Banos General Plan Area has been studied for cultural resources. This information is important because the sensitivity assessment is largely based on the amount and types of cultural resources that were previously identified in past studies; therefore, the accuracy of the sensitivity assessment increases with the coverage of previous cultural surveys within the Los Banos General Plan Area.

Known Cultural Resources

Information from the CCIC Records search provided the basis for the general cultural resources sensitivity assessment of the Los Banos General Plan Area. The CHRIS records search identified a total of 77 cultural resources within the Los Banos General Plan Area. These included pre-contact and historic-era archaeological resources, built environment resources, and resources that include both archaeological and built environment components.

Archaeological Resources

Of the 16 archaeological sites previously recorded in the Los Banos General Plan Area, 11 sites are either pre-contact archaeological resources or include a pre-contact archaeological component. There are five sites that are solely historic period, two of which also have a built environment component. According to the OHP, none of the archaeological sites are listed on or have been formally recommended eligible for listing on the NRHP. The most current Archaeological Determinations of Eligibility listing dates to 2012.

Pre-Contact Archaeological Resources

Previous studies in the general region provide reasonable expectations for the range of archaeological property types likely to occur in Los Banos General Plan Area. Pre-contact site types include habitation sites, limited occupation sites, lithic reduction stations, and burial locations. Isolated artifacts are where pre-contact artifacts are found alone, outside of a larger site. Sites may fall into more than one category. For example, habitation sites may be associated burial locations. Therefore, sites may be classified as more than one site type.

Habitation sites are locations of long-term occupation. These sites were typically located near ponds, streams, and springs surrounding Mud Slough in the eastern portion of the City. The parts of the Los Banos General Plan Area that lie closest to Los Banos Creek have largely not been previously studied. Habitation sites are characterized by midden deposits, a variety of artifacts (e.g., flaked-stone debitage, bifaces, unifaces, other flaked-stone tools, ground-stone implements and fire-affected rock), house pits, and sometimes include burials.

Lithic scatters are collections of flaked- or ground-stone debris, including tools and debitage that relate to post-quarry reduction and tool manufacturing efforts. They are perceived primarily as daily or overnight task-oriented camps where a limited range of activities was conducted.

Isolated artifacts are the most abundant pre-contact resource type found in the Los Banos General Plan Area. Five of the pre-contact resources recorded were isolated groundstone or lithic artifacts that ECORP previously identified, albeit in the eastern portion of the Plan Area. In the western portion of the Plan Area closest to Los Banos Creek, previous studies identified only historic-period ranch complexes. This indicates that although there is a pre-contact presence throughout the Los Banos General Plan Area, subsequent disturbance from years of colonization and development has displaced the remnants of these sites and removed them from their original depositional context in the east, or has removed them altogether in the west.

Other site types found in the area include lithic scatters and habitation sites. Two simple lithic scatters are located near Mud Slough; a habitation site that includes lithic scatter components was discovered near the southern portion of the marshy area near Mud Slough, and two large habitation sites that include house pits and burials were discovered south of Mud Slough, in the southeastern portion of the Plan Area.

The overall pre-contact archaeological sensitivity of the Los Banos General Plan Area is generally considered high, particularly in the eastern half in areas near water sources such as ponds and marshes.

This pattern is expected to be similar in areas that have not been subject to previous study. In particular, the area around and to the south of Mud Slough is rich in archaeological resources. Pre-contact archaeological sites are often located along riverbanks in the San Joaquin Valley, although they usually are found on natural rises that protected the inhabitants from frequent floods. Sites along the San Joaquin River and Los Banos Creek in Merced County do exist, and the possibility remains that additional pre-contact deposits may be buried in similar locations, in natural buried contexts (such as under alluvial deposits), as well as cultural buried contexts (such as below constructed levees or mixed in as a portion of levee fill material).

Historic-Period Archaeological Resources

Historic site types include old transportation corridors and alignments, remnants of activities associated with historic homesteading, ranching and agriculture, mining, and commerce. The overall historic archaeological sensitivity of the Los Banos General Plan Area is generally considered moderately high in those areas where historic records indicate transportation routes, agricultural settlements, and mining occurred.

Built Environment

Historic cultural resources generally include buildings, roads, trails, bridges, canals, and railroads usually associated with the time period beginning with the first EuroAmerican contact. Because settlement of the Los Banos General Plan Area dates to the 1880, after the railroad spurred the relocation of the City from its original site, the City is rich in historic cultural resources. In general, concentrations of historic resources in the City are expected to occur adjacent to transportation corridors (e.g., historic highways, railroads, navigable waterways), on historic ranches, in areas of historic rock, soil, mineral and timber extraction, and within historic neighborhoods and business districts.

Historic Properties in State Database and the Built Environment Resources Directory

The Historic Property Data File Historic Resources Inventory and the Built Environment Resource Directory, maintained by the State Office of Historic Preservation, identifies recorded properties and whether those properties are considered eligible or ineligible for listing in the NRHP. The listing for Merced County included three resources within the Los Banos General Plan Area:

- The Canal Farm Inn;
- Los Banos the settlement; and
- Los Banos Creek (the site of the original town in the southwestern portion of the Los Banos General Plan Area).

As noted previously, properties listed or found eligible for listing on the NRHP are also automatically eligible for the CRHR.

The Built Environment Resource Directory (BERD) provides information regarding non-archaeological resources in the OHP's Inventory. The listing for Los Banos indicates that 56 built environment resources have been inventoried at some level. Thirty-seven of these 56 resources were also included in the CHRIS

database. Of these 56 resources, five are on or have been determined eligible for listing on the NRHP and are automatically eligible for the CRHR:

- BRIDGE #39-200, The Delta Mendota Canal Bridge;
- The Old Bank Building/Bank of Los Banos Building, 836 6th Street;
- The Church of St. Joseph, 1109 K Street;
- Fegundo's Barn, 20180 South Mercy Springs Road; and
- 65918 State Route 152, 637 State Route 152.

Only the Old Bank Building and the Church of St. Joseph are currently listed. Eligibility status listed in the BERD is current as of 2021.

California State Historical Landmarks

The State of California officially began commemorating sites important to the history of the state in 1932. Originally, the California Historical Landmarks emphasized well-known places and events, including the missions, early settlements, and the Gold Rush. Over the years, the program has been refined to include only those sites that are of statewide historical importance and must be the first, last, only, or most significant of a type in a large geographical area.

The following lists two resources in the Los Banos General Plan Area that the state has designated as California Historical Landmarks:

- Los Banos (Landmark No. 550), Los Banos Park, 803 E Pacheco Blvd, Los Banos; and
- Canal Farm Inn (Landmark No. 548), 1460 E Pacheco Blvd, Los Banos.

CONCLUSIONS AND RECOMMENDATIONS

The Los Banos General Plan Area is a town with a historic past, and there are known historic-period buildings and structures in the City limits. The townsite itself is designated as a California Historic Landmark. Cultural resources sensitivity will be highest in these areas of known and visible resources.

The Los Banos General Plan Area has moderate to high pre-contact archaeological sensitivity along the eastern portion of the Plan Area near and south of Mud Slough and its marshes and tributaries. There is a moderate pre-contact archaeological sensitivity in open space areas near waterways, such as Los Banks Creek, and low pre-contact archaeological sensitivity in areas that are highly developed, contain many buildings and structures, and are along heavily trafficked transportation corridors.

The Los Banos General Plan Area has moderate to high historic-era archaeological sensitivity around the historic downtown center, within the vicinity of the building and structures listed as landmarks or as on or eligible for the National Register, and in older neighborhoods and near historic transportation corridors. There is a moderate historic-era sensitivity in open areas that were historically used as farms and ranches in the western half of the Plan Area. There is low historic-era archaeological sensitivity in the sections of

the City that have been established more recently, such as the developments around the outskirts of the historic downtown and residential areas.

ECORP recommends the City follow established technical procedures for the identification of cultural resources for any future projects within the limits of the Los Banos General Plan Area, to assure that any impacts or affects to Historic Properties or Historical Resources are taken into account in the planning phases of any future project. If you have any questions or would like to discuss these results in further detail, please contact the undersigned at bmarks@ecorpconsulting.com or by phone at 916-782-9100.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Marks", written in a cursive style.

Brian Marks, Ph.D., RPA
Senior Archaeologist

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LIST OF ATTACHMENTS

Attachment A – Southern San Joaquin Valley Information Center Records Search

ATTACHMENT A

Southern San Joaquin Valley Information Center Records Search



CENTRAL CALIFORNIA INFORMATION CENTER

California Historical Resources Information System
Department of Anthropology – California State University, Stanislaus
One University Circle, Turlock, California 95382
(209) 667-3307

Alpine, Calaveras, Mariposa, Merced, San Joaquin, Stanislaus & Tuolumne Counties

Date: 1/21/2022

Records Search File No.: 12054I

Access Agreement: #34

Project: Los Banos General Plan

Theadora Fuerstenberg

ECORP Consulting, Inc.

2525 Warren Drive

Rocklin, CA 95677

916-782-9100

tfuerstenberg@ecorpconsulting.com

Dear Ms. Fuerstenberg:

The Central California Information Center received your record search request for the project area referenced above, located on the Los Banos and Volta 7.5' quadrangled in Merced County. The following reflects the results of the records search for the project study area and radius:

As per data currently available at the CCalC, the locations of resources/reports are provided in the following format: custom GIS maps GIS Data/shape files hand-drawn maps

Summary Data:

Resources within the project area:	58: See Resource Database List attached
Resources within the 1/4-mile radius:	NA
Reports within the project area:	55: See Report Database List attached
Reports within the 1/4-mile radius:	NA

Resource Database Printout (list):

enclosed not requested nothing listed

Resource Database Printout (details):

enclosed not requested nothing listed

Resource Digital Database Records:

enclosed not requested nothing listed

Report Database Printout (list):

enclosed not requested nothing listed

Report Database Printout (details):

enclosed not requested nothing listed

Report Digital Database Records:

enclosed not requested nothing listed

Resource Record Copies:

enclosed not requested nothing listed

Report Copies:

enclosed not requested nothing listed

OHP Historic Properties Directory: New Excel File: Built Environment Resource Directory (BERD)

Dated 11/17/2021

Not all resources listed in the BERD are mapped in GIS, nor do we have records on file for them; if you identify additional resources in the BERD that you may need copies of, contact the IC.

Resources listed with GIS data and records on file:

P-24-000082, 97, 434, 623, 725, 1732, 1831, 2053 through 2067, 2069, 2070, 2076 through 2080, 2094, 2096, 2098 through 2103

Archaeological Determinations of Eligibility: enclosed not requested nothing listed
 enclosed not requested nothing listed

CA Inventory of Historic Resources (1976): enclosed not requested nothing listed
P-24-000640 (CHL 548), P-24-000641 (CHL 550)

Caltrans Bridge Survey: enclosed not requested nothing listed

Ethnographic Information: enclosed not requested nothing listed

Historical Literature: enclosed not requested nothing listed

Historical Maps: enclosed not requested nothing listed

Local Inventories: enclosed not requested nothing listed

GLO and/or Rancho Plat Maps: enclosed not requested nothing listed

Shipwreck Inventory: not available at CCIC; please go to

http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp

Soil Survey Maps: not available at CCIC; please go to

<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. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Note: Billing will be transmitted separately via email by our Financial Services office * (\$1707.55), payable within 60 days of receipt of the invoice.

If you wish to include payment by Credit Card, you must wait to receive the official invoice from Financial Services so that you can reference the CMP # (Invoice Number), and then contact the link below:

<https://commerce.cashnet.com/ANTHROPOLOGY>

Sincerely,

E. A. Greathouse

E. A. Greathouse, Coordinator
Central California Information Center
California Historical Resources Information System

* Invoice Request sent to: ARBilling@csustan.edu, CSU Stanislaus Financial Services

**APPENDIX E:
HAZARDOUS MATERIALS DATA**

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ENVIROSTOR ID	PROJECT NAME	STATUS	PROJECT TYPE	ADDRESS	CITY
24010014	ARCADIAN HIGH SCHOOL	No Further Action	School Investigation	East B Street/Ward Road	Los Banos
60001971	Badger Flat Middle School	No Further Action	School Investigation	SE Corner of Badger Flat Rd. & Prairie Springs Dr.	Los Banos
24010012	ELEMENTARY SCHOOL #2/RANCHWOOD PROPERTY	No Further Action	School Investigation	18761 Willmont Road	Los Banos
60001391	Former Union Pacific Railroad Right-of-way	Refer: Local Agency	Evaluation	Between Second Street and Mercy Springs	Los Banos
24650001	LOS BANOS COMMUNITY SCHOOL	No Action Required	School Investigation	Texas Avenue/H Street	Los Banos
60001504	Los Banos ES #2 Expansion Site	No Action Required	School Investigation	CORNER OF WILLMOTT AVENUE AND LAS PALMAS STREET	Los Banos
60001405	Los Banos Middle School #2	No Further Action	School Investigation	Pioneer Road and W. I Street Alignment	Los Banos
24450001	LOS BANOS MUNICIPAL AIRPORT	Inactive - Needs Evaluation	Evaluation	WEST I & AIRPORT ROAD	Los Banos
60001751	Mercey Springs Elementary School	No Further Action	School Investigation	16570 Mercey Springs Road	Los Banos
24490021	OLD LOS BANOS DUMP	Certified	State Response	INTERSECTION PARKWOOD/RANCHWOOD AVENUES	Los Banos
24990002	PHILLIPS ROAD PROPERTY	Certified	State Response	NR XING OF N PHILLIPS & MERCY SPRINGS RD	Los Banos
24880001	R.M. MIANO ELEMENTARY SCHOOL	No Action Required	School Investigation	East B Street/Santa Rita Street	Los Banos
60000917	Special Education/Child Development Facility	No Further Action	School Investigation	22240 State Highway 152	Los Banos
24460001	TRENT PUMP STATION	Inactive - Needs Evaluation	Voluntary Cleanup	21425 INGOMAR ROAD	Los Banos
24010010	VINEYARD SCHOOL SITE	No Further Action	School Investigation	Overland Road	Los Banos
60002796	Volta Elementary School Expansion	No Action Required	School Investigation	24307 W Ingomar Grade	Los Banos

SITE NAME	GLOBAL ID	SITE_TYPE	STATUS	ADDRESS	CITY	LATITUDE	LONGITUDE
7-ELEVEN STORE # 2243-22736	T0604700063	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	603 PACHECO BLVD	LOS BANOS	37.0568304	-120.8507742
A&A TRANSPORT CO	SL0604751501	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	1955 EAST PACHECO BOULEVARD	LOS BANOS	37.0569642	-120.8249779
ARCO STATION # 256	T0604700049	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	419 PACHECO BLVD	LOS BANOS	37.056637	-120.853458
BEACON STATION #535	T0604700171	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	140 PACHECO BLVD W	LOS BANOS	37.0568983	-120.8557453
BECKER ESTATE, FORMER BECKER OIL TERM., LOS BANOS	SL0604774647	CLEANUP PROGRAM SITE	OPEN - REMEDIATION	1330 PACHECO PASS BLVD. (HIGHWAY 152)	LOS BANOS	37.0570993	-120.8361635
BECKER OIL CO TERMINAL	SL375204612	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED		LOS BANOS	37.06396278	-120.8443004
BERTA, FRANK	T0604700175	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	1809 MONROE CIR	LOS BANOS	37.052164	-120.84696
BILLY WRIGHT LANDFILL	T0604700239	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	17173 BILLY WRIGHT RD	LOS BANOS	37.03932892	-120.9730349
BRESSLER TRUST PROPERTY	T0604700358	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	720 I ST	LOS BANOS	37.06033	-120.845754
BUREAU OF RECLAMATN-LOS BANOS	T0604700165	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	18785 CREEK RD	LOS BANOS	37.0163681	-120.8910251
BUY N SAVE MARKET	T0604700362	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	225 7TH ST	LOS BANOS	37.0665442	-120.8423143
CALIFORNIA HIGHWAY PATROL-LOS BANOS	T0604739345	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	706 WEST PACHECO BLVD.	LOS BANOS	37.056944	-120.861389
CARLO'S RESTAURANT	T0604700252	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	400 PACHECO BLVD	LOS BANOS	37.0568978	-120.8540619
CENTRAL VALLEY FERTILIZER	SLT557363758	CLEANUP PROGRAM SITE	OPEN - ASSESSMENT & INTERIM REMEDIAL ACTION	7657 WEST AZUSA ROAD	DOS PALOS	37.053198	-120.846793
CHEVRON #9-0769	T0604700012	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	1164 PACHECO BLVD	LOS BANOS	37.0569615	-120.8402069
CHEVRON LOS BANOS PUMP STATION (MIGRANT FARM WORK	SLT5F5681015	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	18926 HENRY MILLER RD.	LOS BANOS	37.0996851	-120.8334577
CHEVRON TRUCK STOP	T10000008280	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	HIGHWAY 152 AND HIGHWAY 33	LOS BANOS	37.05528	-120.74297
CHEVRON, LOS BANOS RAIL CORRIDOR #1	SL0604716351	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	UPRR ROW AND H STREET	LOS BANOS	37.061884	-120.847232
CHEVRON, LOS BANOS RAIL CORRIDOR #4	T10000002720	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	UPRR ROW AND H STREET	LOS BANOS	37.06254025	-120.8478069
CHEVRON, LOS BANOS RAIL CORRIDOR #5	T10000002721	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	UPRR ROW AND H STREET	LOS BANOS	37.05914987	-120.8407259
CHEVRON, LOS BANOS RAIL CORRIDOR #7	T10000002722	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	UPRR ROW AND H STREET	LOS BANOS	37.05795121	-120.8377647
CHEVRON, LOS BANOS RAIL CORRIDOR, #2	T10000002719	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	UPRR ROW AND H STREET	LOS BANOS	37.06757417	-120.8587074
CHEVRON, TAOC 101 H ST. (TIDEWATER), LOS BANOS	SL0604769937	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	101 H STREET	LOS BANOS	37.0650501	-120.8544989
CHEVRON, TAOC 840 H STREET, LOS BANOS	SL0604717352	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	840 H STREET	LOS BANOS	37.0606	-120.8439
CIRCLE K STORE #3614	T0604700254	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	403 MERCY SPRINGS ROAD	LOS BANOS	37.0637687	-120.8352585
CIRCLE K STORE 3614 (CASE 2)	T0604780200	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	403 MERCEY SPRINGS ROAD	LOS BANOS	37.07406907	-120.8354862
CITY OF LOS BANOS - RAILS TO TRAILS PROJECT	T10000002447	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	740 SECOND ST.	LOS BANOS	37.06495452	-120.8517766
COZZI BROTHERS	T0604700238	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	17001 COZZI RD S	DOS PALOS	37.039793	-120.690891
DUTRA'S EXXON	T0604700156	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	850 PACHECO BLVD W	LOS BANOS	37.05734312	-120.8649564
E-Z SERVE STATION #100988	T0604700159	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	820 PACHECO BLVD W	LOS BANOS	37.0568812	-120.8630253
ERRECA, YVONNE	T0604700129	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	544 M ST	LOS BANOS	37.058387	-120.851233
FERRY PARKING LOT	T0604700093	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	600 BLOCK I ST	LOS BANOS	37.0607643	-120.8480513
FORMER TRENT PUMP STATION	SL604792770	CLEANUP PROGRAM SITE	OPEN - SITE ASSESSMENT	21425 INGOMAR ROAD	LOS BANOS	37.0752	-120.8783
HOLT BROTHERS TRACTOR SHOP	T0604700177	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	3440 PACHECO BLVD E	LOS BANOS	37.057342	-120.790649
LARRY'S SHELL SERVICE	T0604700045	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	849 PACHECO BLVD	LOS BANOS	37.05683109	-120.8653017
LIBERTY PACKING COMPANY	SL0604716960	CLEANUP PROGRAM SITE	OPEN - INACTIVE	12045 SOUTH INGOMAR GRADE ROAD	LOS BANOS	37.113333	-120.94389
LIFETIME DOORS, INC.	T0604700066	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	149 G ST W	LOS BANOS	37.0679166	-120.8572054
LISTER AG AVIATION	SLT557423769	CLEANUP PROGRAM SITE	OPEN - INACTIVE	P.O. BOX 31	LOS BANOS	37.082608	-120.833933
LITTLE TUB CAR WASH	T0604700075	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	823 PACHECO BLVD W	LOS BANOS	37.0568439	-120.8631389
LOS BANOS AIRPORT	SLT554403397	CLEANUP PROGRAM SITE	OPEN - INACTIVE	1 MILE WEST OF LOS BANOS	LOS BANOS	37.06252448	-120.8710795
LOS BANOS AIRPORT	SLT5FR174372	CLEANUP PROGRAM SITE	OPEN - INACTIVE	NONE WEST I STREET & HWY 152	LOS BANOS	37.063	-120.8714
LOS BANOS FORD	T0604700142	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	617 PACHECO BLVD W	LOS BANOS	37.056194	-120.860984
LOS BANOS GATEWAY CENTER, LLC - 1111 G STREET SITE	T10000011676	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	1111 G STREET	LOS BANOS	37.05929	-120.83927
LOS BANOS GATEWAY CENTER, LLC - 1159 G STREET SITE	T10000013694	CLEANUP PROGRAM SITE	OPEN - SITE ASSESSMENT	1159 G STREET	LOS BANOS	37.05856	-120.83744
LOS BANOS MAINT YARD (CALTRAN)	T0604700033	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	1359 PACHECO BLVD E	LOS BANOS	37.0569052	-120.8347608
LOS BANOS WILDLIFE AREA	T0604700064	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	18110 HENRY MILLER RD	LOS BANOS	37.0995987	-120.8186782
MENEZES BROTHERS INC.	T0604700235	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	2532 PACHECO BLVD	LOS BANOS	37.0573005	-120.8129168
MERCED CO ROADS YARD	T0604700354	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	20925 PIONEER RD W	LOS BANOS	37.042189	-120.8707555
MERCED CO SPRING FAIR	T0604700222	LUST CLEANUP SITE	OPEN - ELIGIBLE FOR CLOSURE	360 D ST	LOS BANOS	37.06740012	-120.8472515
MEZA BROTHERS, INC.	T0604700240	LUST CLEANUP SITE	OPEN - ELIGIBLE FOR CLOSURE	2657 EAST PACHECO BLVD	LOS BANOS	37.05401264	-120.8094192
NUTTALL PROPERTY	T0604700230	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	45 PACHECO BLVD W	LOS BANOS	37.0568602	-120.8549229
PACHECO OIL	T10000003593	CLEANUP PROGRAM SITE	OPEN - SITE ASSESSMENT	740 SECOND STREET	LOS BANOS	37.06450934	-120.8521843
PACHECO OIL COMPANY	T0604700179	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	740 2ND ST	LOS BANOS	37.0654542	-120.8523656
PACHECO SHELL SERVICE	T0604700229	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	550 PACHECO BLVD E	LOS BANOS	37.0569028	-120.8519177
PACHECO UNOCAL	T0604764706	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	250 WEST PACHECO	LOS BANOS	37.056944	-120.857222
PG & E LOS BANOS SERVICE	T0604700195	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	940 I ST	LOS BANOS	37.0586601	-120.8428345
PG&E/PGT, W. FRESNO CO.	SLT5FT554530	CLEANUP PROGRAM SITE	COMPLETED - CASE CLOSED	ALONG I-5 IN W MERCED COUNTY	LOS BANOS	37.0466	-120.9606
PRIVATE RESIDENCE	T0604700337	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	PRIVATE RESIDENCE	LOS BANOS	37.097544	-120.923869
PUBLIC WORKS YARD	T0604700025	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	1000 G ST	LOS BANOS	37.0603735	-120.8406824
SANTOS TEXACO #2	T0604700349	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	1009 EAST PACHECO BLVD	LOS BANOS	37.0567494	-120.8423809
SHARP VENTURES	T0604700236	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	802 H ST	LOS BANOS	37.0605869	-120.8443134
SHERWOOD HARDWARE, FORMERLY	T0604700167	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	645 7TH ST	LOS BANOS	37.0627373	-120.84476
SHORT STOP MINI MART	T0604700220	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	963 PACHECO BLVD E	LOS BANOS	37.056623	-120.842899
SS #10-GH6	T0604700022	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	24729 MERCY HOT SPRINGS RD	LOS BANOS	37.0614893	-120.8475933
TOSCO - FACILITY #03621	T0604700243	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	1704 PACHECO BLVD E	LOS BANOS	37.05728868	-120.8287316
TOSCO BULK PLANT #0382	T0604700350	LUST CLEANUP SITE	OPEN - SITE ASSESSMENT	101 H STREET W.	LOS BANOS	37.0650501	-120.8550616
U.S. FISH & WILDLIFE SERVICE	T0604700249	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	7985 WOLFSON RD	LOS BANOS	37.0614893	-120.8475933
UNION 76 STATION	T0604707507	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	1063 E. PACHECO BLVD	LOS BANOS	37.056624	-120.840843
UNOCAL SERVICE STATION #5509	T0604700035	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	250 PACHECO BLVD W	LOS BANOS	37.057164	-120.857036
UNOCAL STATION #5302	T0604700032	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	305 MERCY HOT SPRINGS RD	LOS BANOS	37.0696852	-120.8352982
WHITTIER PROPERTY	T0604700244	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	1024 PACHECO BLVD	LOS BANOS	37.057138	-120.842857
WINDECKER INC	T0604700359	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	940 H ST	LOS BANOS	37.0596829	-120.8423546
WOLFSEN FEEDLOT	T0604715480	LUST CLEANUP SITE	COMPLETED - CASE CLOSED	22338 ALVARADO TRAIL	LOS BANOS	37.009167	-120.901111

**APPENDIX C:
NOISE DATA**



TRAFFIC NOISE MODELING

ID	Output						Inputs													Auto Inputs		
	dBA at 50 feet			Distance to CNEL Contour			Roadway	Segment	ADT	Posted Speed Limit	Grade	% Autos	% Med Trucks	% Heavy Trucks	% Daytime	% Evening	% Night	Number of Lanes	Site Condition	Distance to Receiver	Ground Absorption	Lane Distance
	L _{eq-24hr}	L _{dn}	CNEL	70 dBA	65 dBA	60 dBA																
1	73.3	76.1	76.8	142	306	659	SR 152	Badger Flat Road to Ortigalita Rd	41,010	45	0.0%	91.0%	3.5%	5.6%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
2	73.6	76.4	77.1	149	321	692	SR 152	Ortigalita Road to 7th Street	44,090	45	0.0%	91.0%	3.5%	5.6%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
3	73.9	76.7	77.4	156	335	723	SR 152	7th Street to SR 165	47,060	45	0.0%	91.0%	3.5%	5.6%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
4	73.7	76.5	77.2	151	326	702	SR 152	SR 165 to Ward Road	45,030	45	0.0%	91.0%	3.5%	5.6%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
5	72.0	74.8	75.4	115	248	535	SR 152	Ward Road to East City Limit	29,930	45	0.0%	91.0%	3.5%	5.6%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
6	69.1	71.9	72.6	74	160	346	SR 165	Northern City Limit to Overland Av	20,090	35	0.0%	90.9%	1.0%	8.1%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
7	68.1	70.9	71.6	64	138	297	SR 165	Overland Avenue to B Street	16,010	35	0.0%	90.9%	1.0%	8.1%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
8	69.1	71.8	72.5	74	159	342	SR 165	B Street to SR 152	19,770	35	0.0%	90.9%	1.0%	8.1%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
9	66.2	69.0	69.7	48	103	221	SR 165	SR 152 to Pioneer Road	10,300	35	0.0%	90.9%	1.0%	8.1%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
10	61.9	64.7	65.4	25	53	114	Overland Avenue	SR 165 to Place Road (Used ST1)	9,920	35	0.0%	95.3%	4.7%	0.0%	75.0%	15.0%	10.0%	2	Soft	50	0.5	20
11	61.8	64.6	65.3	24	52	113	Ward Road	B Street to SR 152 (ST3)	9,620	35	0.0%	98.1%	1.0%	1.0%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
12	65.5	68.3	69.0	43	92	198	Ward Road	South of SR 152 (ST 7)	3,600	35	0.0%	75.0%	0.0%	25.0%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
13	61.3	64.1	64.7	22	48	104	B Street	SR 165 to Place Road (ST1)	8,590	35	0.0%	95.3%	4.7%	0.0%	75.0%	15.0%	10.0%	2	Soft	50	0.5	20
14	62.6	65.4	66.0	27	59	126	B Street	Place Road to Ward Road (used ST1)	8,300	40	0.0%	95.3%	4.7%	0.0%	75.0%	15.0%	10.0%	2	Soft	50	0.5	20
15	64.8	67.6	68.3	38	83	178	Pioneer Road	West of SR 165 (use Mercy - ST 6)	8,110	45	0.0%	96.9%	0.0%	3.1%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44

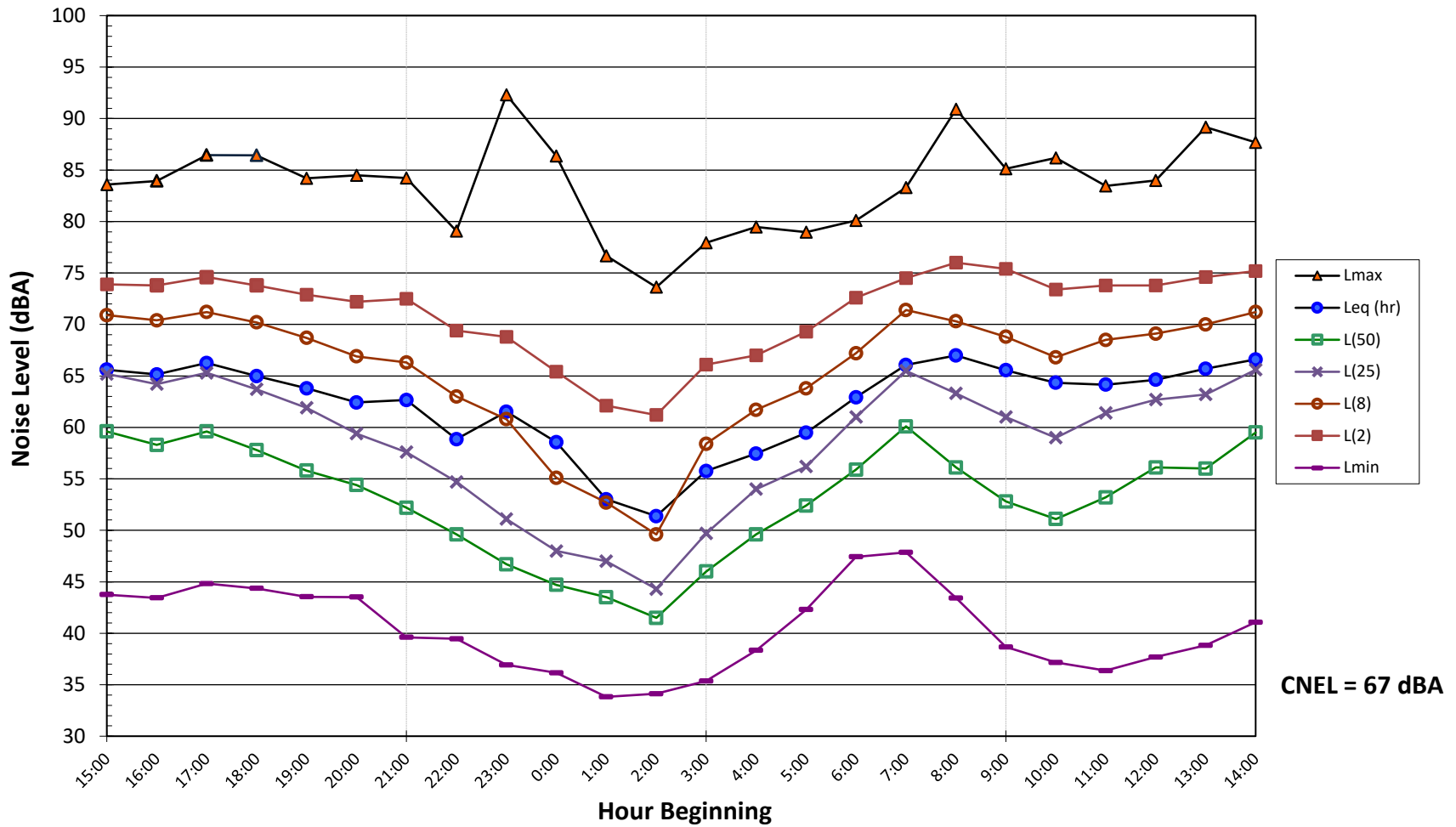
Traffic Noise Calculator: FHWA 77-108

Project Title: Los Banos GP EIR Existing

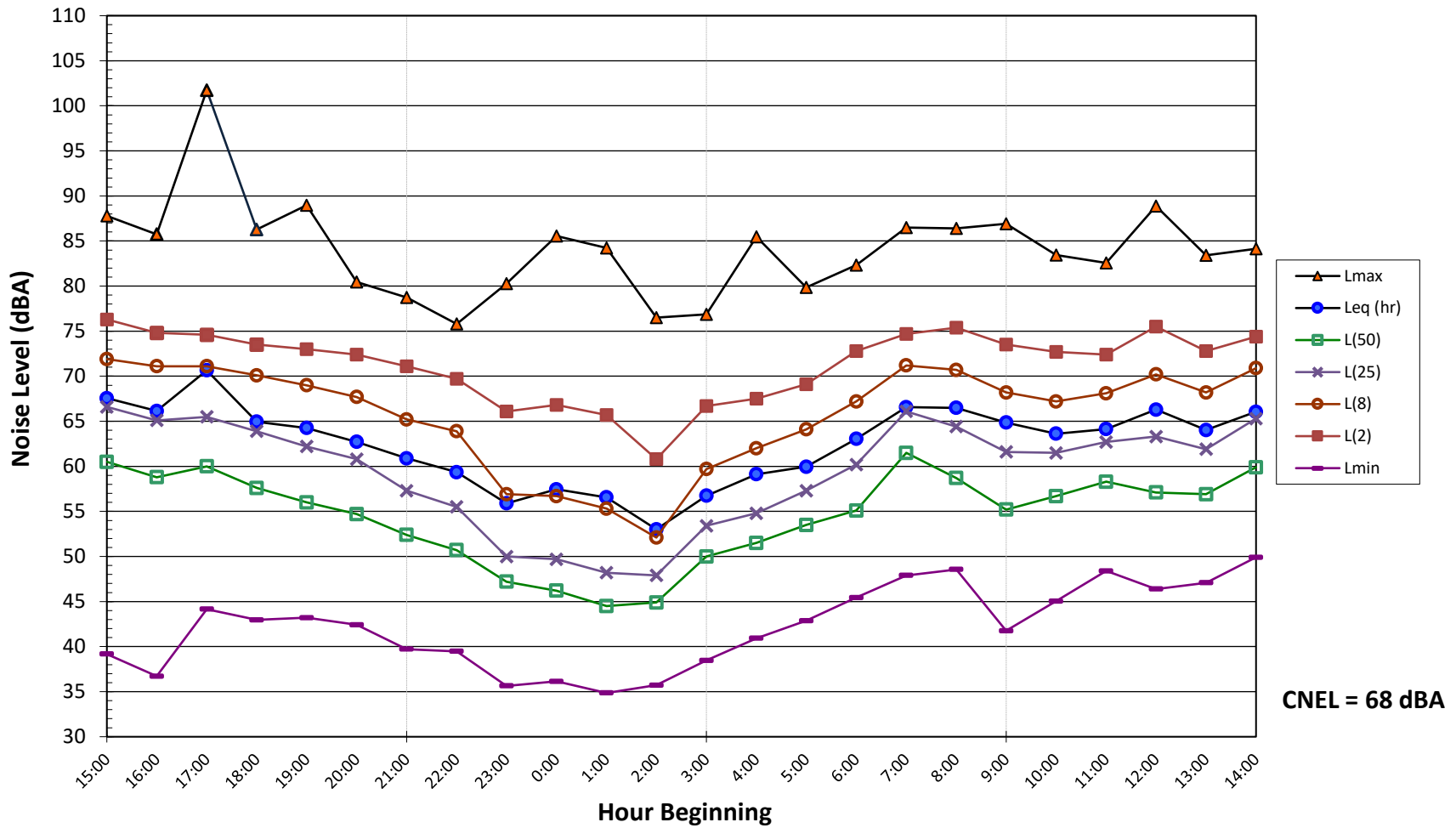
ID	Output						Inputs													Auto Inputs		
	dBA at 50 feet			Distance to CNEL Contour			Roadway	Segment	ADT	Posted Speed Limit	Grade	% Autos	% Med Trucks	% Heavy Trucks	% Daytime	% Evening	% Night	Number of Lanes	Site Condition	Distance to Receiver	Ground Absorption	Lane Distance
	L _{eq-24hr}	L _{dn}	CNEL	70 dBA	65 dBA	60 dBA																
1	70.8	73.6	74.2	96	206	445	SR 152	Badger Flat Road to Ortigalita Rd	22,710	45	0.0%	91.0%	3.5%	5.6%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
2	72.3	75.1	75.7	121	260	560	SR 152	Ortigalita Road to 7th Street	32,130	45	0.0%	91.0%	3.5%	5.6%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
3	72.5	75.3	76.0	126	271	584	SR 152	7th Street to SR 165	34,170	45	0.0%	91.0%	3.5%	5.6%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
4	72.5	75.3	76.0	126	271	584	SR 152	SR 165 to Ward Road	34,170	45	0.0%	91.0%	3.5%	5.6%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
5	70.5	73.3	74.0	92	198	426	SR 152	Ward Road to East City Limit	21,290	45	0.0%	91.0%	3.5%	5.6%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
6	67.8	70.6	71.3	61	132	284	SR 165	Northern City Limit to Overland Av	14,990	35	0.0%	90.9%	1.0%	8.1%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
7	67.5	70.3	71.0	58	125	269	SR 165	Overland Avenue to B Street	13,770	35	0.0%	90.9%	1.0%	8.1%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
8	68.2	71.0	71.7	65	140	301	SR 165	B Street to SR 152	16,320	35	0.0%	90.9%	1.0%	8.1%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
9	65.7	68.5	69.2	44	95	206	SR 165	SR 152 to Pioneer Road	9,220	35	0.0%	90.9%	1.0%	8.1%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
10	61.1	63.8	64.5	22	47	100	Overland Avenue	SR 165 to Place Road (Used ST1)	8,170	35	0.0%	95.3%	4.7%	0.0%	75.0%	15.0%	10.0%	2	Soft	50	0.5	20
11	61.3	64.1	64.8	22	48	104	Ward Road	B Street to SR 152 (ST3)	8,550	35	0.0%	98.1%	1.0%	1.0%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
12	64.5	67.3	68.0	37	79	170	Ward Road	South of SR 152 (ST 7)	2,850	35	0.0%	75.0%	0.0%	25.0%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44
13	61.2	64.0	64.7	22	48	103	B Street	SR 165 to Place Road (ST1)	8,520	35	0.0%	95.3%	4.7%	0.0%	75.0%	15.0%	10.0%	2	Soft	50	0.5	20
14	62.6	65.3	66.0	27	59	126	B Street	Place Road to Ward Road (used ST1)	8,270	40	0.0%	95.3%	4.7%	0.0%	75.0%	15.0%	10.0%	2	Soft	50	0.5	20
15	64.2	67.0	67.7	35	75	162	Pioneer Road	West of SR 165 (use Mercy - ST 6)	7,060	45	0.0%	96.9%	0.0%	3.1%	75.0%	15.0%	10.0%	4	Soft	50	0.5	44

NOISE MONITORING GRAPHS

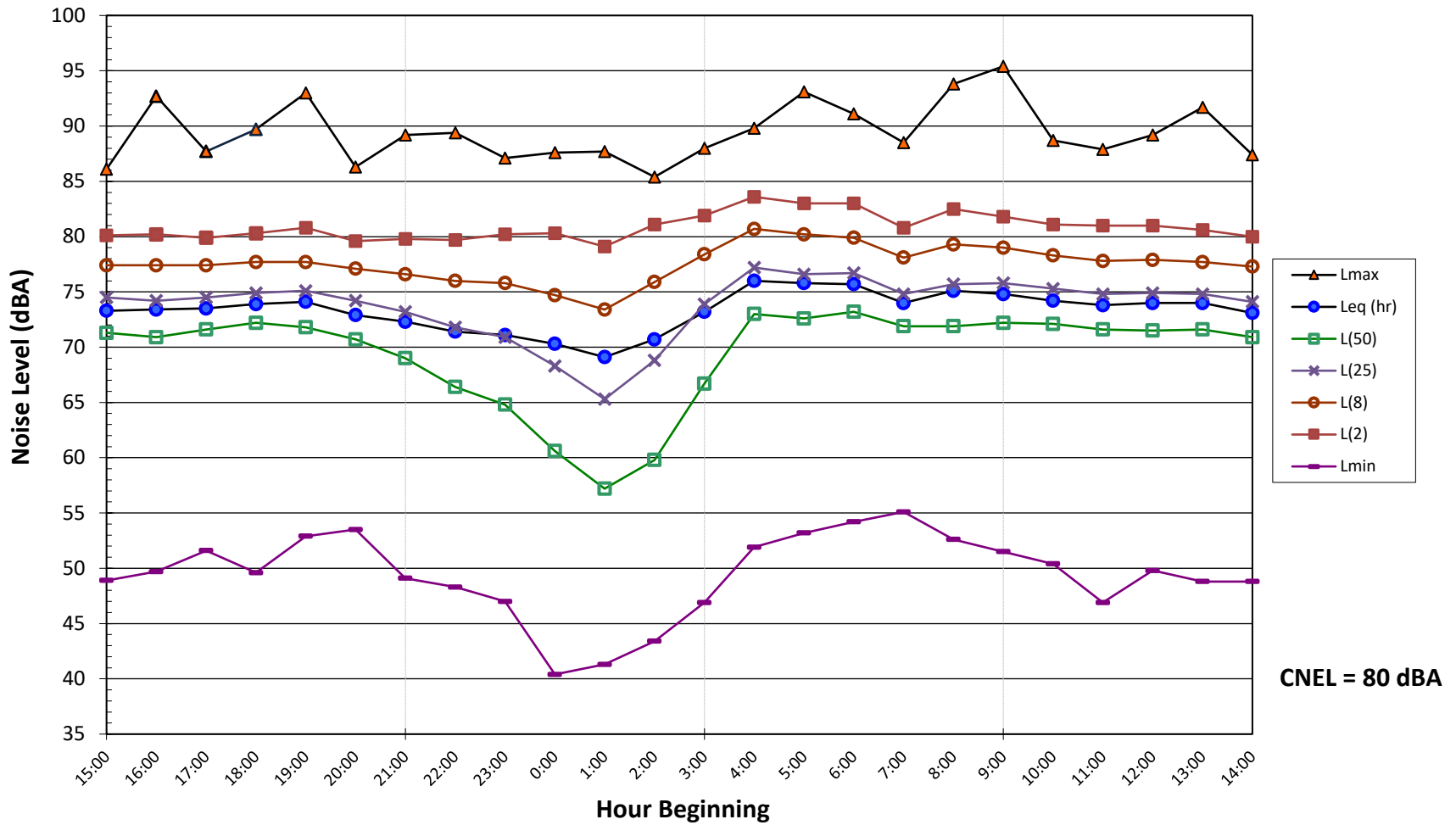
Noise Levels at LT-1
Overland Avenue west of Somerset Avenue, Los Banos, CA
Wednesday, January 19 - Thursday, January 20, 2022



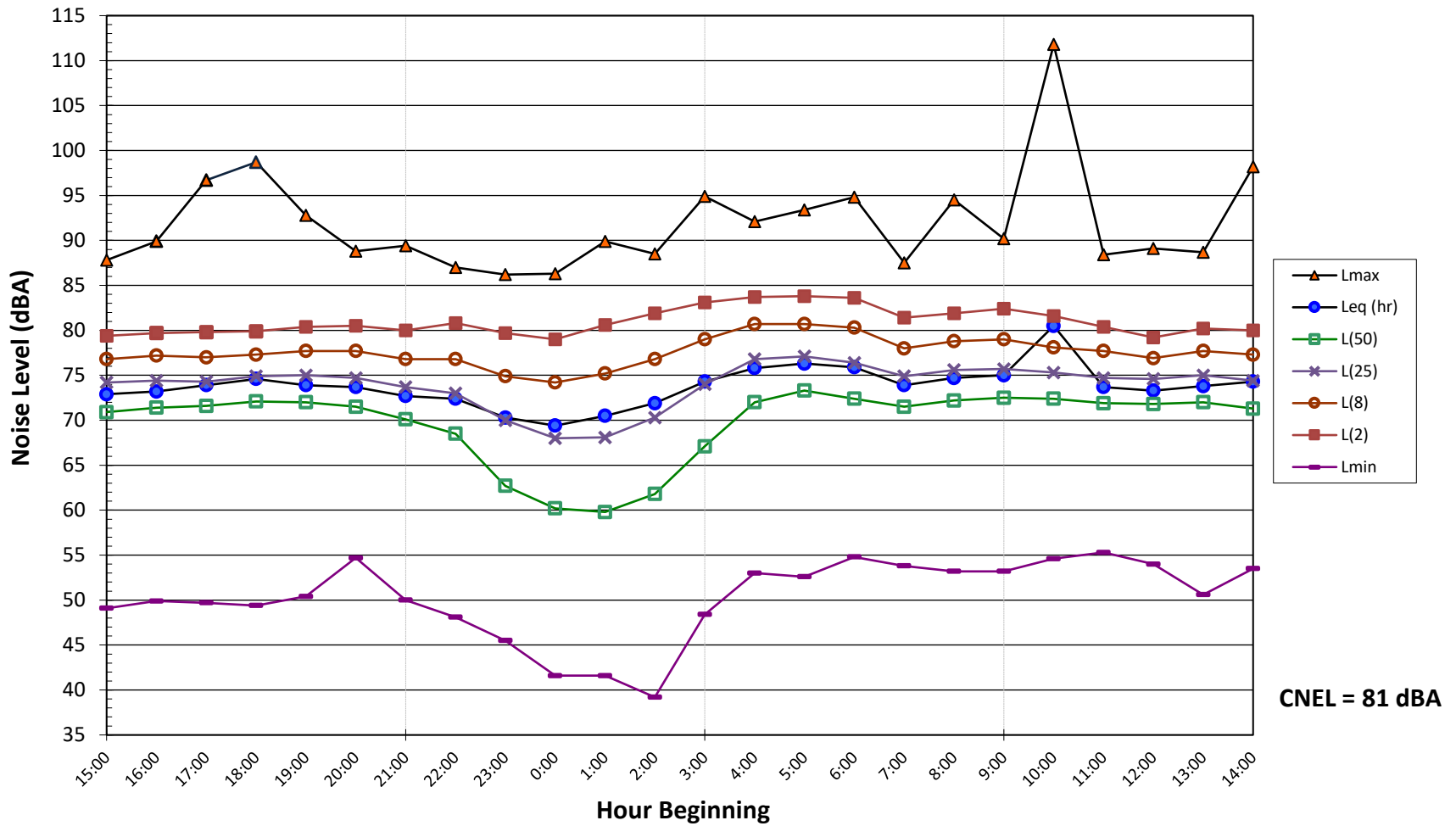
Noise Levels at LT-1
Overland Avenue west of Somerset Avenue, Los Banos, CA
Thursday, January 20 - Friday, January 21, 2022



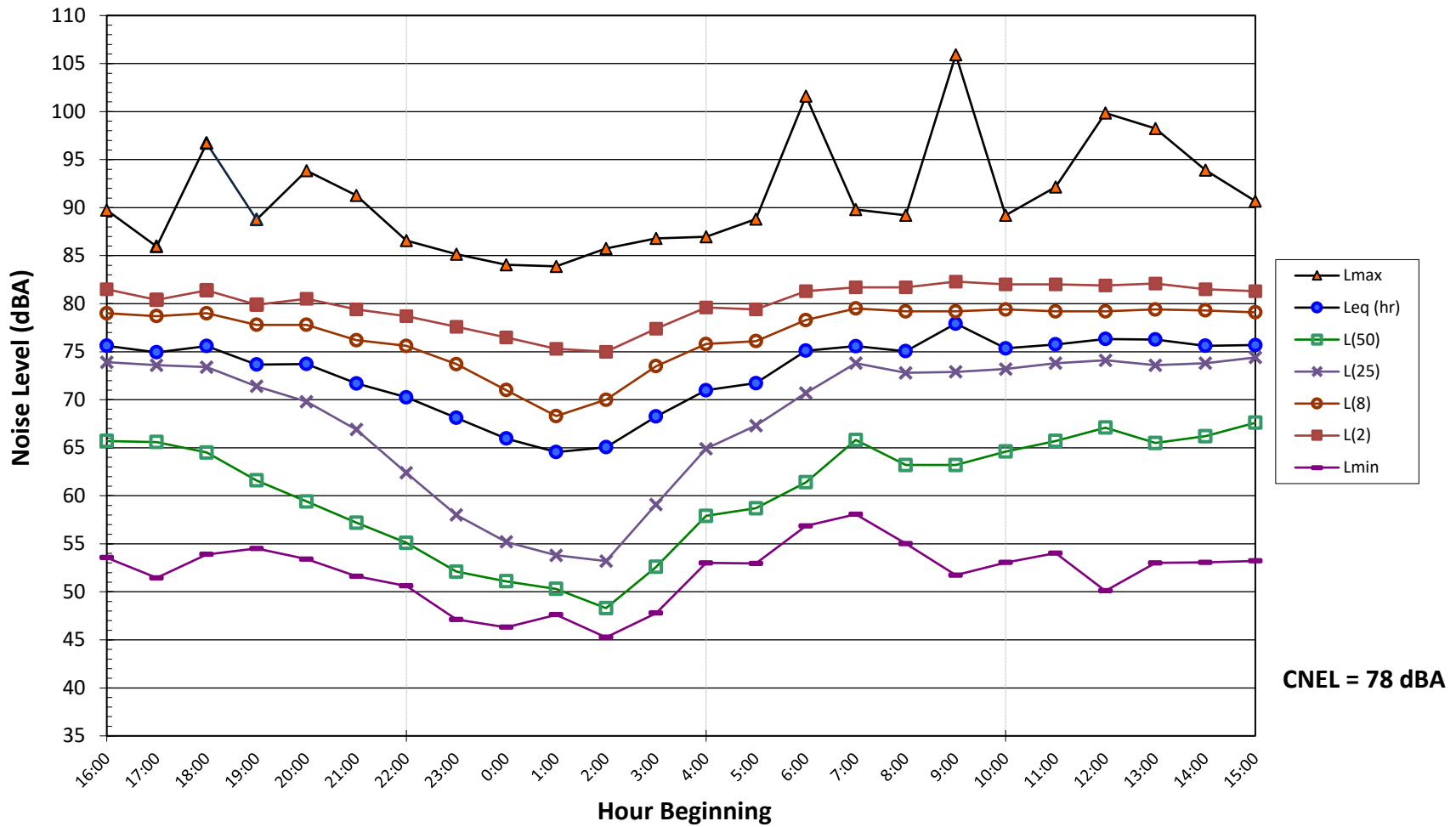
Noise Levels at LT-2
Pacheco Boulevard west of 7th Street, Los Banos, CA
Wednesday, January 19 - Thursday, January 20, 2022



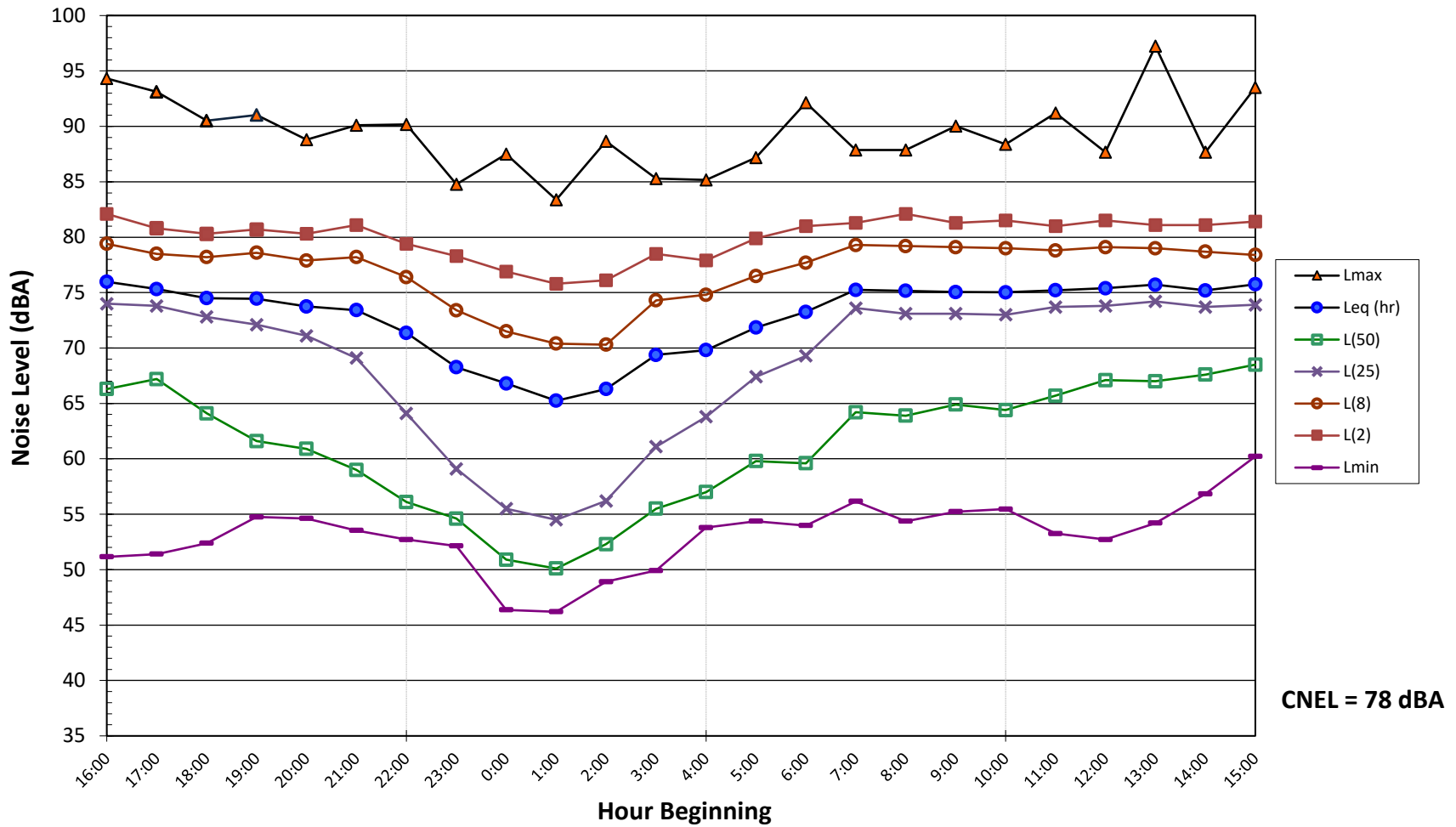
Noise Levels at LT-2
Pacheco Boulevard west of 7th Street, Los Banos, CA
Thursday, January 20 - Friday, January 21, 2022



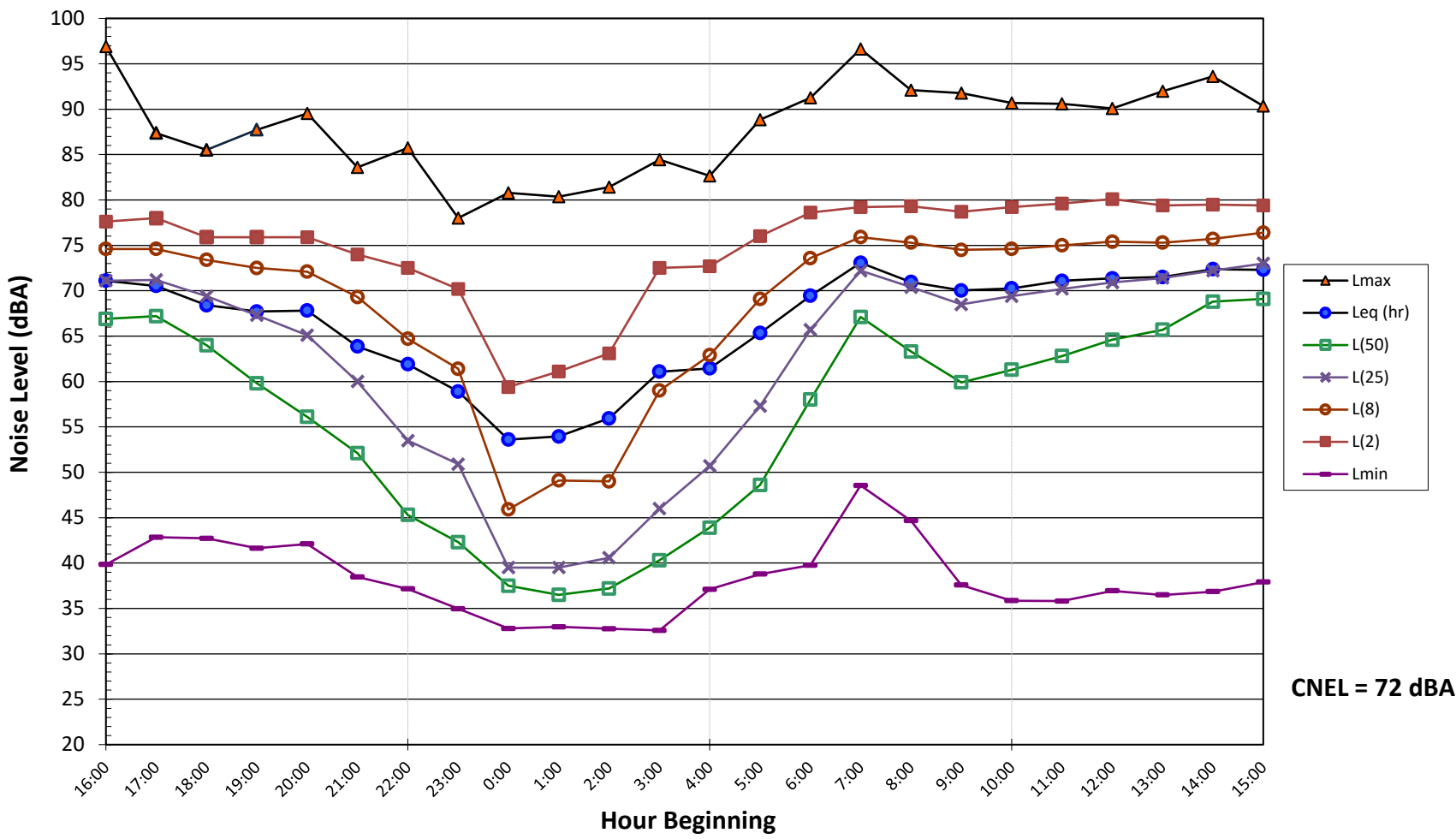
Noise Levels at LT-3
Mercy Springs Rd south of Canal Farm Lane, Los Banos, CA
Wednesday, January 19 - Thursday, January 20, 2022



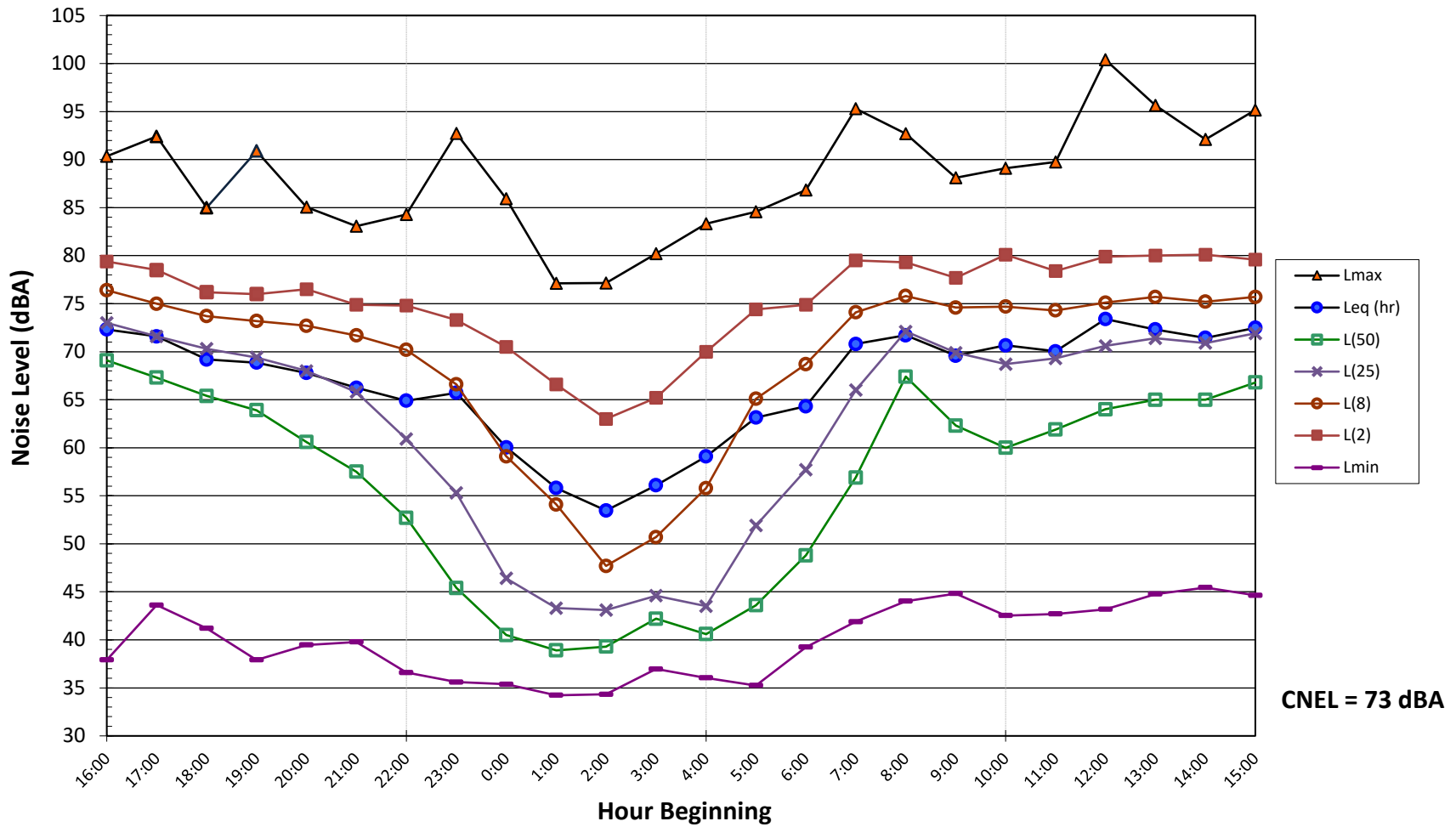
Noise Levels at LT-3
Mercy Springs Rd south of Canal Farm Lane, Los Banos, CA
Thursday, January 20 - Friday, January 21, 2022



Noise Levels at LT-4
Pioneer Road Road west of Black Hills Avenue, Los Banos, CA
Wednesday, January 19 - Thursday, January 20, 2022



Noise Levels at LT-4
Pioneer Road Road west of Black Hills Avenue, Los Banos, CA
Thursday, January 20 - Friday, January 21, 2022



**APPENDIX G:
PUBLIC SERVICES DATA**



Allison Dagg

From: Allison Dagg
Sent: Tuesday, February 1, 2022 6:51 PM
To: mason.hurley@losbanos.org
Cc: Terri McCracken; Stacy Souza
Subject: Los Banos General Plan 2042 EIR - Fire Protection Service Questions
Attachments: 20220201_LosBanosGP2042EIR_FireDepartment.pdf

Dear Chief Hurley,

PlaceWorks is working with the City of Los Banos to prepare an Environmental Impact Report (EIR) for the City's [General Plan 2042](#) (proposed project). The attached letter includes a summary of the proposed project followed by a brief list of questions that I am reaching out to you about that would help us in our analysis of potential impacts to fire protection services. Any assistance you can provide with these questions is greatly appreciated in ensuring we accurately assess environmental impacts.

As noted in the attached letter, we are looking to receive answers to these questions by Friday, February 11, 2022. We would like to set up a phone or video call at your convenience within that timeframe to do so; if possible, please let us know your availability in the next two weeks. If email response is easier, that works too.

Please let me know if there is someone I should reach out to regarding this information instead or if you have any questions. Thank you for your assistance and time.

Sincerely,

ALLISON DAGG
Associate II
she/her



Offices throughout California
cell: 817.371.0099 | adagg@placeworks.com | placeworks.com

2/10/22 Interview with Fire Chief

Attendees: Allison Dagg (PlaceWorks); Stacy Souza Elms (City); Mason Hurley (LBFD)

- 1) Does Los Banos Fire Department (LBFD) have a minimum staffing level at either of its fire stations at any given time? Does the LBFD currently meet that standard?
Currently minimum staffing is 2 personnel at Station 1 and 2 personnel at Station 2 at all times. Currently not always able to meet that requirement. Currently have three shifts (firefighter, engineer, and captain), with three personnel at Station 1; and staffing at Station 2 with captain and engineer. Currently in the hiring process to fill vacancies. Overall, three shifts with funded positions for 16 employees, currently have 13 employees.

Fire Department has a Strategic Plan. Mason will send the MOU and Strategic Plan.
- 2) Are the existing staff and equipment levels at the fire station(s) adequate to meet current demands for fire protection services in LBFD service area? Would implementation of the proposed project impact service levels to drop below the projected future level?
Current staffing levels are deficient. Utilize NFPA 1710 as recommendation – minimum 4 personnel on each engine. This would result in needing 35 people total.
- 3) What are the average response times for fire and emergency services? What is the stated policy for each? Are these times considered acceptable? If not, what is the preferred response time?
Strategic Plan was done in 2019 and includes this info. Average response time is about 5 minutes, which is about the goal they are wanting to reach.
- 4) Are there any existing deficiencies, such as lack of staffing and/or facilities and equipment?
See above.
- 5) Are there any existing plans for expansion or relocation of stations that would serve the project? If so, please describe the expansion or relocation.
There are plans and desires to expand current stations. Station 1 needs modifications to improve facility office space and dorms. Need to build Station 3, and planning for Station 4. Identified locations for both of these stations, including recommendation for new station on southeast part of town. Do not currently have funding or designs though.
- 6) Would the proposed project require the LBFD to hire more staff?
For the time frame, 2042, they would probably need plans for a 5th station. Regarding staffing levels, they would need to make sure they include administrative staff to support.
- 7) Would the LBFD need to construct new facilities or expand existing facilities in order to accommodate the proposed project's demand for fire protection services, based on the projected growth through 2042?
See above.
- 8) Does the LBFD recommend standard criteria for assessing the significance of a proposed project's impacts in an EIR or other environmental impact documentation? If so, what are those criteria?
They use the ISO ratings for staffing/equipment needs. City has relied heavily on 2030 General Plan that talks about the ISO rating and keeping up with that standard, which has a 1.5-mile radius for each station.
- 9) Does the LBFD have identified Developer Impact Fees for new development? If so, please describe the fees.
Stacy sent.

- 10) Please provide recommendations that could reduce the demand for fire protection services created by the proposed project.
Focusing on meeting the requirements of NFPA and CalOSHA for amount of personnel and equipment.
12 times in just the last week where they had incidents with both units operating or overlapping with both stations.

- 11) Please provide any current documents on fire protection services in the city including background reports, number of incidents, policy documents, and facility plans that you think would help with preparing the environmental review analysis for impacts to fire services as a result of the proposed project.
He does have scheduled an appointment next month for upgrades to the ISO. No other documents.
ISO from 2016 report – deals with emergency response and also water supply.

Exhibit A

City of Los Banos										
2021 Adjusted Development Impact Fees										
Development Impact Fees per Unit (Residential)/1,000 Square Feet (Non-Residential)										
	Fire	Police	Parks & Rec.	Water	Sewer	Storm Drain	Traffic	General Govt.	Admin (3%)	Total Fees
Single Family	\$ 1,291.97	\$ 2,417.56	\$ 7,217.76	\$ 6,487.56	\$ 4,977.87	\$ 3,037.87	\$ 1,339.21	\$ 720.95	\$ 824.68	\$ 28,315.42
Multi-family	\$ 1,033.16	\$ 1,933.84	\$ 5,773.79	\$ 5,190.46	\$ 3,982.71	\$ 2,430.91	\$ 927.38	\$ 577.17	\$ 655.23	\$ 22,504.65
Age Restricted	\$ 699.39	\$ 1,308.40	\$ 3,906.71	\$ 3,511.31	\$ 2,694.85	\$ 1,644.23	\$ 723.01	\$ 390.26	\$ 446.75	\$ 15,324.89
Retail	\$ 736.36	\$ 1,377.21	\$ -	\$ 3,696.17	\$ 2,836.57	\$ 1,731.52	\$ 6,670.37	\$ -	\$ 511.45	\$ 17,559.65
Office	\$ 552.53	\$ 1,033.16	\$ -	\$ 2,772.90	\$ 2,126.92	\$ 1,298.13	\$ 1,336.13	\$ -	\$ 273.18	\$ 9,392.94
Institutional	\$ 276.26	\$ 516.58	\$ -	\$ 1,386.45	\$ 1,063.97	\$ 649.06	\$ 1,616.50	\$ -	\$ 165.35	\$ 5,674.18
Industrial	\$ 183.83	\$ 344.05	\$ -	\$ 924.30	\$ 708.63	\$ 432.37	\$ 1,134.84	\$ -	\$ 111.94	\$ 3,839.95

Allison Dagg

From: Allison Dagg
Sent: Tuesday, February 1, 2022 6:48 PM
To: gary.brizzee@losbanos.org
Cc: Terri McCracken; Stacy Souza
Subject: Los Banos General Plan 2042 EIR - Police Service Questions
Attachments: 20220201_LosBanosGP2042EIR_PoliceDepartment.pdf

Dear Chief Brizzee,

PlaceWorks is working with the City of Los Banos to prepare an Environmental Impact Report (EIR) for the City's [General Plan 2042](#) (proposed project). The attached letter includes a summary of the proposed project followed by a brief list of questions that I am reaching out to you about that would help us in our analysis of potential impacts to police services. Any assistance you can provide with these questions is greatly appreciated in ensuring we accurately assess environmental impacts.

As noted in the attached letter, we are looking to receive answers to these questions by Friday, February 11, 2022. We would like to set up a phone or video call at your convenience within that timeframe to do so; if possible, please let us know your availability in the next two weeks. If email response is easier, that works too.

Please let me know if there is someone I should reach out to regarding this information instead or if you have any questions. Thank you for your assistance and time.

Sincerely,

ALLISON DAGG
Associate II
she/her



Offices throughout California
cell: 817.371.0099 | adagg@placeworks.com | placeworks.com

Interview with Police Chief Gary Brizzee, 2/7/22

Attendees: Allison Dagg (PlaceWorks); Gary Brizzee (LBPD); Stacy Souza Elms (City)

1. Is there a standard ratio of officers per number of population that the Los Banos Police Department (LBPD) wishes to maintain? Does the LBPD currently meet that standard?
FBI standard is 1.5 officers (sworn officers) per 1,000 people. LBPD is at about 1.1 with authorized staffing (48 authorized – i.e., what they aim to hire up to, 44 currently on staff).
1 per 1,000 population including non-sworn (i.e., all employees of the police dept, including admin).
2. Are the existing staff levels and equipment at the station(s) adequate to meet current demands for police services in the project area? Would implementation of the proposed project impact service levels such that they drop below the current level?
Generally staffing is inadequate; so, buildout projections of the project would impact this.
3. Does LBPD have an established target response time for responding to calls? If so, is the LBPD currently meeting those response times?
No current established response time target.
4. How many emergency incident calls does the LBPD respond to per year? What is the response goal for an emergency incident?
Gary will share the 2021 numbers. No response goal.
5. Are there any existing deficiencies, such as lack of staffing and/or facilities and equipment?
Existing staff deficiencies. Department that they've been in since 1969, not enough space for staffing currently. In the design phase of building a new police department (will completely move to the new building). Construction set to be done September 2023, move in in October 2023, project completion in November 2023. Will be a brand-new building at 1111 G Street.
6. Are there any existing plans for expansion or relocation of stations that would serve the project? If so, please described the expansion or relocation.
Answer above.
7. Would the proposed project require the LBPD to hire more staff?
More staff would be needed to meet the projected population.
8. Would the LBPD need to construct new facilities or expand existing facilities in order to accommodate the proposed project's demand for police services, based on the projected growth through 2042?
New facility would be intended to take them through 50 years of growth. Animal control facility includes the shelter and office space. Range facility is a shooting range for training. Both of these would need to be physically expanded.
9. Does the LBPD recommend standard criteria for assessing the significance of a proposed project's impacts in an EIR or other environmental impact documentation? If so, what are those criteria?
No standard criteria.
10. Does the LBPD have identified Developer Impact Fees for new development? If so, please describe the fees.
Stacy can send the Developer Impact Fees. They have been doing annual adjustments.

11. Please provide recommendations, if any, that could reduce the demand for police services created by the proposed project.
Recommendations – largest complaint community wide is traffic related. With development of future neighborhoods, to help reduce traffic responses would be an intelligent design to neighborhood development. Things like intelligent policing as a crime deterrent such as surveillance systems, public camera systems.

12. Please provide any current documents on police services in the city including background reports, number of incidents, policy documents, and facility plans that you think would help with preparing the environmental review analysis for impacts to police services as a result of the proposed project.
2021 Annual report should be released sometime this month (?). Gary will provide their Facility Needs Assessment.

Allison Dagg

From: Allison Dagg
Sent: Tuesday, February 1, 2022 6:54 PM
To: mmarshall@losbanosusd.k12.ca.us
Cc: Terri McCracken; Stacy Souza
Subject: Los Banos General Plan 2042 EIR - Public Schools Questions
Attachments: 20220201_LosBanosGP2042EIR_LosBanosUnifiedSchoolDistrict.pdf

Dear Dr. Marshall,

PlaceWorks is working with the City of Los Banos to prepare an Environmental Impact Report (EIR) for the City's [General Plan 2042](#) (proposed project). The attached letter includes a summary of the proposed project followed by a brief list of questions that I am reaching out to you about that would help us in our analysis of potential impacts to school services. Any assistance you can provide with these questions is greatly appreciated in ensuring we accurately assess environmental impacts.

As noted in the attached letter, we are looking to receive answers to these questions by Friday, February 11, 2022. We would like to set up a phone or video call at your convenience within that timeframe to do so; if possible, please let us know your availability in the next two weeks. If email response is easier, that works too.

Please let me know if there is someone I should reach out to regarding this information instead or if you have any questions. Thank you for your assistance and time.

Sincerely,

ALLISON DAGG
Associate II
she/her



Offices throughout California
cell: 817.371.0099 | adagg@placeworks.com | placeworks.com

2/10/22 Zoom Interview with LBUSD Superintendent

Attendees: Allison Dagg, Terri McCracken (PlaceWorks); Stacy Souza Elms (City); Dr. Mark Marshall (LBUSD)

- 1) Does Los Banos USD have school capacity numbers, including past, current, and projected capacity numbers, that can be provided?
Newest school has filled up a lot of space, and other schools have more space. Facilities Study that Dr. Marshall can send.
- 2) Does the school district have a generation rate that it uses for enrollment projections? If so, what is the generation rate?
In Facilities Study.
- 3) Are the existing staff and facility levels adequate to meet current demands for school services in the EIR Study Area? Would implementation of the proposed project impact service levels to drop below the projected future level?
Yes. LB has some of the highest salaries in the State given the cost of living. Issue is going to be the teaching shortage.
- 4) Are there any existing deficiencies, such as lack of staffing and/or facilities?
Current facilities at elementary level are still crowded. District needs about two additional elementary schools. On the horizon after that is middle and high schools.
- 5) Are there any existing plans for expansion or relocation of schools that would serve the project? If so, please described the expansion or relocation.
In talks with a local developer for identifying land for 2 elementary schools.
- 6) Would the proposed project require Los Banos USD to hire more staff?
Proportionate to how many students the City gets, as population increases.
- 7) Would the school district need to construct new facilities or expand existing facilities in order to accommodate the proposed project's demand for school services, based on the projected growth through 2042?
Yes. Needs something by the Walmart and by Turlock; location on the west and north.
- 8) Does the school district recommend standard criteria for assessing the significance of a proposed project's impacts in an EIR or other environmental impact documentation? If so, what are those criteria?
Mitigation agreements with developers. When the City proposes a new subdivision, school looks at whether they have capacity and whether development is paying appropriate share.
- 9) Does the school district have identified Developer Impact Fees for new development? If so, please describe the fees.
Yes. School requests separate mitigation fee to fill in the gap between State required and what will actually help. Dr. Marshall can send the developer impact fees for the schools, and Stacy will send an example letter regarding this from a past project.
- 10) Please provide recommendations, if any, that could reduce the demand for school services created by the proposed project.
N/A.
- 11) Does the school district have a Facilities Master Plan that can be provided? Please provide any other current documents on school services in the city including background reports, policy documents, and facility plans that you think would help with preparing the environmental review analysis for impacts to schools as a result of the proposed project.
Dr. Marshall will send their Long-Range Master Plan.

Allison Dagg

From: Allison Dagg
Sent: Tuesday, February 1, 2022 6:52 PM
To: Joe.Heim@losbanos.org
Cc: Terri McCracken; Stacy Souza
Subject: Los Banos General Plan 2042 EIR - Parks & Recreation Questions
Attachments: 20220201_LosBanosGP2042EIR_Parks&Recreation.pdf

Dear Mr. Heim,

PlaceWorks is working with the City of Los Banos to prepare an Environmental Impact Report (EIR) for the City's [General Plan 2042](#) (proposed project). The attached letter includes a summary of the proposed project followed by a brief list of questions that I am reaching out to you about that would help us in our analysis of potential impacts to parks and recreation services. Any assistance you can provide with these questions is greatly appreciated in ensuring we accurately assess environmental impacts.

As noted in the attached letter, we are looking to receive answers to these questions by Friday, February 11, 2022. We would like to set up a phone or video call at your convenience within that timeframe to do so; if possible, please let us know your availability in the next two weeks. If email response is easier, that works too.

Please let me know if there is someone I should reach out to regarding this information instead or if you have any questions. Thank you for your assistance and time.

Sincerely,

ALLISON DAGG
Associate II
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2/10/22 Interview with Joe Heim, Parks & Rec Operations Manager

Attendees: Allison Dagg, Terri McCracken (PlaceWorks); Stacy Souza Elms (City); Joe Heim (Parks)

- 1) Is there a standard service ratio (such as park/recreation acreage per population) that the department wishes to maintain? Does the department currently meet that standard?
Joe has a parks master plan (Feb 2021) that has been recently adopted. Posted online on the parks page. They are currently working on the Forestry Management Plan with an April/May/Summer anticipated adoption date.

GP for 2030 encourages 7 acres per 1,000 people. There are 6.3 acres per 1,000 currently. Want parks to be within ¼ to ½ mile radius.
In order to keep the 6.3 acres per 1,000, by 2035 parks master plan needs to add 98 acres of parkland. Want it geared towards more specialty facilities added for new parks.
LB has a lot of large basin parks. Pacheco Park has more use as a community/destination park. Community parks (destination parks) vs specialty parks.
Meadowlands area on east side of town is an example of too many parks.
- 2) Are there any existing deficiencies, such as lack of staffing and/or facilities and equipment?
Yes – deficiencies in staff. Referenced NRPA 2018 document. 18.5 FTE currently. National average per 10,000 residents is 7.9, meaning they should have 31+
City is lacking specialized facilities (sports fields, splash pads, etc.), not overall acreage, and ADA compliant facilities in some areas. Desire for expanded trails system, and more shade and restrooms.
- 3) Are there any existing plans for expansion or relocation of services that would serve the project? If so, please describe the expansion or relocation.
Parks master plan has this information for future renovation updates and needed facilities.
- 4) Would the proposed project require the need to hire more staff or purchase equipment?
See above.
- 5) Would the department need to construct new facilities or expand existing facilities in order to accommodate the project's demand for parks and recreation services, based on the projected growth over the course of the next 20 years?
As population increases, they will want to maintain the parks space per population.
Parks Master Plan covers about 15 years in the future.
- 6) Does your department recommend standard criteria for assessing the significance of a proposed project's impacts in an EIR or other environmental impact documentation? If so, what are those criteria?
None. Projects would need more facilities and additional staff to accommodate growth.
- 7) Does the department have identified Developer Impact Fees for new development? If so, please describe the fees.
Have the developer impact fees from Stacy.
- 8) Please provide recommendations, if any, that could reduce the demand for parks and recreation services created by the proposed project.
Finding 3rd party operators for specialized sports facilities, which would help the parks department relieve a bit of work for staffing and maintenance.
- 9) Please provide any relevant current documents in the city including background reports, policy documents, and facility plans that you think would help with preparing the environmental review analysis for impacts to parks and recreation services as a result of the proposed project.
Sent responses and several documents.
Send link for Joe to upload documents.

1. Is there a standard service ratio (such as parks/recreation acreage per population) that the department wishes to maintain? Does the department currently meet that standard?

The General Plan 2030 update, developed in 2009, calls for 7 park acres per 1,000 people. The 2020 Parks Master Plan Update provided discussion on this topic. The Plan identified that the current population is 41,898 and current acreage is 264.35 acres. This includes right of ways, medians, and wall planters. This translates to 6.3 acres per 1,000 people. By looking at park acreage only, the acreage drops to 220.1 and the ratio to 5.24 acres per 1,000 people. Below, I provide some discussion on service area analysis which the 2020 Parks Master Plan emphasized is as important a metric to utilize as acreage per 1,000. The service area analysis ensures that 1. Residents are within the .25/.50-mile radius that pocket and neighborhood parks provide and 2. Limit park acreage expansion and thereby stress on limited staffing and resources. As Los Banos expands its focus should be on specialty/community/regional facilities as opposed to neighborhood or pocket parks. Pocket and Neighborhood parks will still be needed as large new subdivisions are developed, particularly on the perimeter of the city. The requirement of basins as part of larger subdivision stormwater collection systems will also inevitably require additional acreage. Presently basins developed as parks make up of 86.57 acres, which amounts to 39% of developed park acreage in Los Banos.

Based on the 2020 Parks Master Plan population forecast, the city will need to add 98 acres of park acreage by 2035. **For this reason, it is recommended to maintain the 6.3 acres per 1,000 people ratio**, as opposed to the 7 acres per 1,000 people. To meet this additional acreage the city should focus on the development of a regional sports complex and the continuation of the trail system. These additions will add significant acreage to the park acreage in Los Banos. A regional sports complex would offset costs of operation by providing revenue to the city, while an expanded trail system would become an attractive community-wide destination for new and current residents. The development of Ag Sports Complex would provide the addition of over 20 acres of park land. Trails are very expensive per square foot operationally and should be developed with a simple and sustainable design.

The 2030 General Plan also provides definitions for park types. These include:

- *Pocket Park: Defined as under an acre and intended to serve an area within a ½ mile radius.*
- *Neighborhood Park: Defined as 2-9 acres in size, serving .5-1.5-mile radius, avoiding any major barriers.*
- *Community Park: A community park, with a minimum of 10 acres in size and is intended to serve the entire community.*
- *Specialized use or Regional Park: A special recreation facility.*

The 2020 Park Master Plan altered these classifications for pragmatic purposes. The following changes were made. There is discussion of the definitions of the classifications on page 9-10 of the Parks Master Plan book.

- **Pocket Park:** The Pocket Park definition remained the same.
- **Neighborhood Park:** The Neighborhood Park classification was altered to focus less on acreage and more on usage. The primary reason being that the 2030 General Plan identified parks such as Gardens V Basin Park or Talbott Basin Park as Community Parks

due to acreage, while their characteristics and usage met Neighborhood Park definitions. Similarly, the 2030 General Plan identified Colorado Ballpark and 7th St. Ballpark as Neighborhood Parks, despite their use being specialized or community in definition.

- Community Park: The 2020 Parks Master Plan defined AG Sports Complex, Colorado Ballpark and Pacheco Park as Community Parks. This is due to their use as destination parks intended for community wide use.
- Specialty Park: The 2020 Parks Master Plan focused the Specialty Park classification on specific use recreation facilities. These would include Veterans Park, Henry Miller Plaza and the Miller and Lux building. These facilities separate themselves from a neighborhood park by memorializing or providing special recreation programming. They vary in size.
- Trails: The 2020 Parks Master Plan added the classification of Trails. This classification could fit in the Specialty Park Classification. The Rail Trail, Canal Trail, Page Extensions Trail, and associated pathways would fit into this category. The 2030 General Plan identified the Canal Trail and the Rail into separate classifications.
- No parks presently meet the definition of Regional Parks. AG Sports Complex is the most likely to develop into a regional facility, with over 20 acres of undeveloped land.
- It should also be noted that the acreage listed in the 2030 General Plan is inaccurate. For example, AG Sports Complex is 8.58 acres, but the undeveloped portion of the park is included to count 29.54 acres listed in the 2030 General Plan skewing the total acreage ratio.

There is a map diagram on page 11 of the 2020 Parks Master Plan that shows the service area analysis with .25, .5- and 1-mile service areas. The analysis shows that Los Banos has done an excellent job providing access to its residents. Neighborhood Parks (.50-mile radius) help to provide coverage for nearly the entire city. It will be important for the city to consider .25 mile and .50-mile service areas when adding new subdivisions and it should be a goal of the City to provide 100% coverage of the City via pocket and neighborhood park access. **One major factor identified in the 2030 General Plan and the 2020 Parks Master Plan is the importance of overlapping service area with major road crossings, notably the two state highways that cross the city.** For example, residents living in the Mission area behind the new Starbucks and Burger King should not be expected to cross Highway 165 to visit Davis Park, despite it being the closet park. Current service notes:

- The Colorado area (one playground at Big Page in the area; no neighborhood/pocket park in the area north of Colorado Ballpark). This could be addressed if development occurs to extend the Rail Trail or create a Trail along the Los Banos Creek.
- The south Oliveira and Gardens area presently provides adequate coverage but continued development in the Southeast will require identification of a future park.

- The addition of parks in the Sunrise Ranch and Shaunessy subdivisions will provide additional coverage to areas on the central/east side of the city.
- The Meadowlands subdivision is an example of too much park development. The area is overlapped by several parks and contains nearly 35 acres of park in one subdivision, it also includes: 5 parks and 7 playgrounds and countless park amenities. These park amenities cause a strain to the Lighting and Landscape budget when identifying assets for capital replacement. It further makes creating parks within the District in the Southpointe and Northpointe developments less practicable.

2. Are there any existing deficiencies, such as lack of staffing and/or facilities and equipment?

The primary deficiencies in parks and recreation are specialty facilities and staffing. Los Banos presently provides sufficient neighborhood park access and standard park amenities. **The city lacks specialty facilities such as: a splash pad, swimming pool, updated action sports park, fitness equipment, regional sports facility, pickleball/tennis courts.** The city would benefit from the addition of artificial soccer and baseball/softball fields to reduce the impact of staffing operations as compared to turf fields. The city recently added a dog park, which fulfilled a large need and there is demand for a second dog park in the future. A marquee playground that is fully ADA compliant is also a need. There is also a desire for an expanded/or connected trail system. There is also demand for additional shade and restrooms. Both park amenities come with significant construction costs and restrooms require significant operational cost.

When adding additional non-specialized/community acreage, it is vital that the acreage is within a Lighting and Landscape District to provide funding. The health of the LLDs is a vital source of funding for staffing and operations of parks in Los Banos. The addition of specialized or community acreage should come with the evaluation of possible revenue possibilities. These include rentable shade facilities and rentable athletic facilities. Facilities that will require a net loss, such as a swimming pool, will need to be offset by other funding sources 1. Limiting the expenses on-site (seasonal use, limiting free or subsidized swim use) 2. Maximizing revenue (rentable birthday party rooms or swim use) and 3. Be offset by revenue generated by other sources (athletic facilities, special funding revenues such as a recreation tax). If an amenity is too dependent on the General Fund, it will be vulnerable to economic downturns and will be most likely to be cut first.

Regarding staffing there is a deficiency in staffing:

City of Los Banos population: 40,000 (rounded down)
 2022 Full-Time Equivalents: 18.5
 9 FT and 2 PT – Parks Maintenance
 2 FT and 11 PT – Recreation
 1 FT Manager – Parks and Recreation

The table below shows that Los Banos is still below national categories by every metric regarding parks and recreation staffing.

National Average FTE per 10,000 Residents	7.9	Per Los Banos Population	31.6
Median Populations 20,000-49,999 FTE per 10,000 Residents	8.9	Per Los Banos Population	35.6
Lowest Quartile Populations 20,000-49,999 per 10,000 Residents	5.3	Per Los Banos Population	21.2

3. Are there any existing plans for expansion or relocation of services that would serve the project? If so, please describe the expansion or relocation.

Yes, the most prominent is the addition of a splash pad and re-development of Pacheco Park. The re-development of Colorado Ballpark is also being looked at. Both projects come with substantial cost and require significant project management. The re-development of Pacheco Park would have the following project goals: incorporate multi-use to accommodate all age groups, project a welcoming and interesting image from Pacheco Blvd, allow access to existing and neighboring facilities, provide a comfortable rest stop for visitors, retain, and reinstate elements of the park’s historical feel and character, consider principles of safety, accessibility, security, and visibility and enable design for events and festivals. A splash pad would be the first of its kind in Los Banos.

The Colorado Ballpark redevelopment project includes the addition of Los Banos’ first pump track and renovation of on-site facilities. Project goals include Rejuvenate the park’s active recreation amenities, create memorable Los Banos Little League experience, provide a modern skate park, re-design tennis courts to include pickleball, create safe and well maintained amenities, consider principles of safety, accessibility, security and visibility and enable design for regional use.

The 2020 Parks Master Plan also provides conceptual designs for a regional complex, AG Sports Complex development and an aquatics center but these are very preliminary designs that I would recommend against using.

4. Would the proposed project require the need to hire more staff or purchase equipment?

Yes. The most imminent of the projects is the addition of the splash pad. This asset will impact staff heavily: The seasonal operation will require daily service, increase overtime expenditures, and require the addition of certified aquatics operation personnel. The addition of a contracted provider or staff member will be required for the splash pad’s operation. Increased use of both Colorado and Pacheco would create an impact on recreation and parks staff in terms of programming and clean-up. Sports field maintenance such as field chalking should be identified as a requirement of the park user. Lighting fees should also be required to offset electrical expenses.

The addition of a swimming pool or regional sports complex should come with an identified plan of impact. To limit impact a swimming pool facility should first seek a third-party operator. If a third-party operator is not available, then recreation programming and maintenance staff will need to be added to current staffing. A regional sports complex would also require the addition of maintenance and recreation programming staff due to the size of operation, however, revenue should offset the

additional expenses. In both cases the expansion of management would be required to oversee the operation.

5. Would the department need to construct new facilities or expand facilities in order to accommodate the projects demand for parks and recreation services, based on the projected growth over the course of the next 20 years?

Yes. Much of the available park acreage is presently tied up by basin acreage or is too near residential homes. For the addition of specialty facilities such as: sports fields, swimming pools, tennis courts and other recreation facilities new acreage will need to be added. Additionally, as noted above, additional acreage will be needed to meet park acreage ratio standards as population increases.

6. Does your department recommend standard criteria for assessing the significance of a proposed project's impacts in an EIR or other environmental impact documentation? If so, what are those criteria?

I think Stacy would be the best resource for this question. I do not believe there is a standard set for a project's impact environmentally. Rather, the City identifies if there are environmental issues on-site and addresses any needs at that time. Since 1988 there has only been one incidence of park development in Los Banos where the city developed new acreage, as opposed to a developer. That location is the .99-acre Dog Park, developed at AG Sports Complex. The city has initiated projects on already developed park land such as the Cresthills Arbor, Colorado Skate Park, 7th St. Restroom and Oliveira Soccer fields renovation. The City has also adopted or lease park property such as the HG Fawcett Canal Trail or the Rail Trail. Further, the City lacks any natural or wetland park acreage, though the development of a future trail along the Los Banos Creek corridor may change that.

7. Does the department have identified Developer Impact Fees for new development? If so, please describe the fees.

This question would be best answered by Stacy. There is a Development Impact Fee, but it is handled through the Community and Economic Development Department. The fee is critical to future capital funding for parks in Los Banos. There are essentially four funding sources for Los Banos Parks: 1. General Fund 2. Measure H 3. Park Development Fund 4. Lighting and Landscape Districts.

8. Please provide recommendations, if any, that could reduce the demand for parks and recreation services created by the proposed project.

As previously discussed, finding third-party operators is an ideal path to limiting expenses for items such as a pool. One of the best ways to reduce the impact of additional facilities is to generate revenue, which is why a regional sports complex makes the most sense as a long-term goal for the parks and recreation division. Los Banos has over 300 days of sun and is within 4 hours of at least 6 international airports and centrally located by the i-5 corridor.

In the case of a splash pad, it has been my suggestion that shade structures be rentable with non-exclusive use of the splash pad. This way the community can enjoy the splash pad at no cost, but birthday parties will be able to rent facilities in 4–8-hour time blocks and have an area to set up party supplies. This would generate \$8-12,000 per year and help offset chemical costs. It would not fully offset the cost of a splash pad.

- 9. Please provide any relevant current documents in the city including background reports, policy documents, and facility plans that you think would help with preparing the environmental review analysis for impacts to parks and recreation services as a result of the proposed project.**

The 2020 Parks Master Plan (Executive summary), (Page 5-32 shows a series of service area analyses), (Page 6-2 and 6-3 provides park acreage and park classification discussion), (Page 8-2-8-9 discusses development guidelines).

The 2018 Bicycle/Pedestrian Plan (Page 9 Discusses key destinations, but utilizes 2030 General Plan Regional Facilities including Talbott and Gardens V due to acreage purposes. AG Sports Complex, Colorado Ballpark and Pacheco Park would be ideal locations to connect trail access to however, general connectivity would be the most important element. School access, as identified in the plan would also provide ideal connections), (Page 32-34 provides tables on proposed projects, including sidewalk widening projects), (Page 39 provides a proposed facility map).

The National Recreation and Park Association is an excellent source of parks references. The NRPA recommends one park per every 2,181 residents and 9.9 acres of parkland per 1,000 residents.

The Park List. Provides lists of amenities and acreage.

Urban Forest Management Draft Documents: I've attached some documents in draft form from our Urban Forest Management Plan creation. You'll see that for example the tree canopy covers 14% of the City.

Pacheco Park Concept: Submitted as part of the Statewide Park Program grant.

Colorado Ballpark Concept: Submitted as part of the Rural Rec and Tourism Grant.

(Parks Only, not including right of ways, medians, wall planters):

Park List:

7th St. Ballpark	5.92
AG Sports Complex	8.58
Airport Park	0.35
Big Page Park	1.23
Catholic Park	0.26
Citrus I Park	0.3
Citrus II Basin Park	2.4
City Park	1.03
College Greens Park	5.1
Colorado Ballpark	9.33
Community Center	4.31
Cresthills Park	4.21
Davis Park	0.7
Flagpole Green Space	0.62
Gardens I Park	0.75
Gardens III Park	0.86
Gardens V Basin Park	15.87
Henry Miller Plaza	2.63
HG Fawcett Canal Trail	19
Jo Lin Basin Park	4.16
Lindemann Trail	4.5
Little Page Park	0.18
Meadowlands Basin Park	24.4
Meadowlans Courtyard	1.01
Meadowlands I Park	0.61
Meadowlands II Park	4.38
Meadowlands III Park	3.44
Miller and Lux Building	0.15
Oliveira Park & Courtyard	8.72
Neighborhood Park	0.54
Orchard Terrace Park	1.17
Pacheco Park	6.02
Page Extension Trail	0.84
Presidential Park	0.43
Rail Trail	6.91
Rail Trail Extensions	6.66

Rancho Dos Amigos Park	0.62
Ranchwood Park	4.55
Regency Lot D Park	4.98
Regency Tot Lot Park	0.47
Skylark Park & Expansion	7.42
Elena Talbott Basin Park	9.19
Verona Basin Park	6.75
Veterans Memorial Park	2.16
Village Park	0.55
Vineyard Basin A Park	6.27
Vineyard Basin B Park	8.95
Vineyard Basin C Park	8.58
Wolfsen Green Space	2.04

**APPENDIX H:
ENERGY DATA**



Operation-Related Annual Vehicle Fuel/Energy Usage Summary

Existing - Baseline Year 2021

Full VMT Scenario

Year	Gas			Diesel			CNG			Electricity		
	VMT	Gallons	Miles/Gal	VMT	Gallons	Miles/Gal	VMT	Gallons	Miles/Gal	VMT	kWh	Miles/kWh
Existing Baseline	415,458,921	18,388,098	22.59	97,925,363	14,663,818	6.68	650,744	101,678	6.40	5,271,848	1,840,162	2.86

Proposed Project (GP 2042)

Full VMT Scenario

Year	Gas			Diesel			CNG			Electricity		
	VMT	Gallons	Miles/Gal	VMT	Gallons	Miles/Gal	VMT	Gallons	Miles/Gal	VMT	kWh	Miles/kWh
Proposed Project	547,772,702	16,805,262	32.60	121,727,859	15,564,874	7.82	844,712	114,457	7.38	83,574,510	20,978,942	3.98

Net Change

Full VMT Scenario

Year	Gas			Diesel			CNG			Electricity		
	VMT	Gallons	Miles/Gal	VMT	Gallons	Miles/Gal	VMT	Gallons	Miles/Gal	VMT	kWh	Miles/kWh
From Existing Baseline	132,313,781	-1,582,836	10.00	23,802,496	901,056	1.14	193,968	12,779	0.98	78,302,662	19,138,780	1.12

Notes

* VMT based on VMT data provided by Kittleson and Associates.

** Fuel consumption rates based on data obtained from EMFAC2021 Web Database, Version 1.0.1. <https://arb.ca.gov/emfac/emissions-inventory/517d3e0c599c7b26ab4e9feca9c2424afa4526d9>

***VMT per year based on a conversion of VMT x 347 days per year to account for less travel on weekend, consistent with CARB statewide GHG emissions inventory methodology. California Air Resources Board. 2008, October. Climate Change Proposed Scoping Plan: A Framework for Change.

Existing Baseline Year 2021: Full VMT

Vehicle type	Fleet percent	VMT
LDA	44.09%	228,960,028
LDT1	3.43%	17,786,996
LDT2	14.92%	77,454,833
MDV	16.67%	86,593,102
LHD1	3.39%	17,593,536
LHD2	0.83%	4,310,411
MHD	1.29%	6,685,776
HHD	14.61%	75,872,621
OBUS	0.06%	322,674
UBUS	0.10%	512,007
MCY	0.26%	1,374,840
SBUS	0.15%	783,198
MH	0.07%	379,559
All Other Buses	0.02%	78,114
Motor Coach	0.04%	221,612
PTO	0.07%	377,568
	100%	519,306,876

Vehicle type	Gas percent	Diesel percent	CNG percent	Electricity percent
LDA	97.59%	0.27%	0.00%	2.14%
LDT1	99.93%	0.03%	0.00%	0.04%
LDT2	99.58%	0.22%	0.00%	0.20%
MDV	98.05%	1.71%	0.00%	0.24%
LHD1	44.82%	55.18%	0.00%	0.00%
LHD2	23.90%	76.10%	0.00%	0.00%
MHD	15.44%	83.77%	0.79%	0.00%
HHD	0.02%	99.36%	0.62%	0.00%
OBUS	51.84%	48.13%	0.02%	0.00%
UBUS	41.88%	50.90%	7.22%	0.00%
MCY	100.00%	0.00%	0.00%	0.00%
SBUS	27.73%	60.55%	11.72%	0.00%
MH	72.18%	27.82%	0.00%	0.00%
All Other Buses	0.00%	99.81%	0.19%	0.00%
Motor Coach	0.00%	100.00%	0.00%	0.00%
PTO	0.00%	100.00%	0.00%	0.00%

<< Equal to T6 (<https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>)

<< Equal to T7 (<https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>)

<< OBUS (<https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>)

Vehicle type	Gasoline			Diesel			CNG			Electricity		
	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	m/kWh	kWh
LDA	223,437,820	28.15	7,938,454	620,313	43.76	14,175	0	0	0	4,901,896	2.85	1,719,177
LDT1	17,775,009	22.90	776,119	5,349	25.22	212	0	0	0	6,638	2.72	2,440
LDT2	77,128,720	21.85	3,530,668	169,684	32.11	5,284	0	0	0	156,429	3.06	51,052
MDV	84,906,387	18.12	4,685,063	1,479,830	24.57	60,226	0	0	0	206,885	3.07	67,493
LHD1	7,886,233	8.78	898,086	9,707,303	15.76	615,981	0	0	0	0	0.00	0
LHD2	1,030,267	7.93	129,908	3,280,144	12.86	255,014	0	0	0	0	0.00	0
MHD	1,032,107	4.52	228,328	5,600,756	8.59	651,661	52,913	0	0	0	0.00	0
HHD	14,609	2.71	5,390	75,389,133	5.89	12,808,747	468,878	4.95	94,650	0	0.00	0
OBUS	167,285	4.64	36,030	155,310	6.34	24,509	78	0	0	0	0.00	0
UBUS	214,447	5.16	41,584	260,595	9.53	27,355	36,965	5.28	7,007	0	0.00	0
MCY	1,374,840	40.31	34,108	0	0.00	0	0	0	0	0	0.00	0
SBUS	217,220	9.81	22,136	474,220	8.01	59,179	91,758	0	0	0	0.00	0
MH	273,977	4.40	62,223	105,582	9.41	11,219	0	0	0	0	0.00	0
All Other Buses	0	0	0	77,964	8.70	8,965	151	7	21	0	0.00	0
Motor Coach	0	0	0	221,612	5.51	40,245	0	0	0	0	0.00	0
PTO	0	0	0	377,568	4.66	81,047	0	0	0	0	0.00	0
	415,458,921		18,388,098	97,925,363		14,663,818	650,744		101,678	5,271,848		1,840,162

Proposed Project Year 2042 (GP 2042 Update): Full VMT

Vehicle type	Fleet percent	VMT
LDA	47.84%	359,873,289
LDT1	2.11%	15,909,939
LDT2	18.23%	137,159,992
MDV	11.30%	84,998,456
LHD1	1.89%	14,252,333
LHD2	0.47%	3,517,778
MHD	1.36%	10,236,796
HHD	16.20%	121,873,630
OBUS	0.03%	232,644
UBUS	0.09%	702,873
MCY	0.20%	1,519,936
SBUS	0.11%	793,849
MH	0.04%	274,270
All Other Buses	0.01%	107,234
Motor Coach	0.03%	258,584
PTO	0.07%	550,045
	100%	752,261,647

Vehicle type	Gas percent	Diesel percent	CNG percent	Electricity percent
LDA	87.07%	0.05%	0.00%	12.87%
LDT1	96.08%	0.00%	0.00%	3.92%
LDT2	95.63%	0.36%	0.00%	4.01%
MDV	93.63%	1.07%	0.00%	5.30%
LHD1	36.50%	26.51%	0.00%	36.98%
LHD2	15.94%	49.54%	0.00%	34.52%
MHD	6.30%	54.12%	0.91%	38.67%
HHD	0.00%	88.51%	0.52%	12.32%
OBUS	24.89%	59.84%	1.29%	18.61%
UBUS	7.68%	0.20%	0.80%	91.32%
MCY	100.00%	0.00%	0.00%	0.00%
SBUS	19.72%	36.33%	12.58%	31.38%
MH	63.50%	36.50%	0.00%	0.00%
All Other Buses	0.00%	92.79%	7.21%	0.00%
Motor Coach	0.00%	100.00%	0.00%	0.00%
PTO	0.00%	58.32%	0.00%	41.68%

<< Equal to T6 (<https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>)
 << Equal to T7 (<https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>)
 << OBUS (<https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>)

Vehicle type	VMT	Gasoline		Diesel		CNG		Electricity					
		mpg	Gallons	mpg	Gallons	mpg	Gallons	m/kWh	kWh				
LDA	313,358,510	37.73	8,304,888	58.69	3,234	0	0	0	46,324,956	2.70	17,170,609		
LDT1	15,286,412	32.28	473,548	32.08	5	0	0	0	623,359	2.78	224,453		
LDT2	131,169,697	31.42	4,174,867	43.15	11,326	0	0	0	5,501,511	2.81	1,954,704		
MDV	79,584,702	25.64	3,104,255	32.03	28,500	0	0	0	4,501,008	2.76	1,629,176		
LHD1	5,202,806	11.11	468,247	16.42	230,177	0	0	0	5,270,640	1.53	0		
LHD2	560,662	9.84	56,985	13.99	124,585	0	0	0	1,214,257	1.56	0		
MHD	645,219	5.46	118,192	9.85	562,256	93,173	0	0	3,958,326	0.92	0		
HHD	2,169	4.71	461	7.47	14,434,071	635,364	5.63	112,791	15,016,909	0.55	0		
OBUS	57,916	5.42	10,683	7.30	19,056	3,004	0	0	43,300	0.00	0		
UBUS	53,990	10.21	5,288	10.50	133	5,613	7.23	776	641,877	0.57	0		
MCY	1,519,936	44.75	33,965	0.00	0	0	0	0	0	0.00	0		
SBUS	156,530	10.85	14,428	8.88	32,473	99,830	0	0	249,103	0.95	0		
MH	174,152	4.41	39,454	9.33	10,732	0	0	0	0	0.00	0		
All Other Buses	0	0	0	9.90	10,048	7,728	9	890	0	0.00	0		
Motor Coach	0	0	0	6.30	41,013	0	0	0	0	0.00	0		
PTO	0	0	0	5.60	57,262	0	0	0	229,264	0.48	0		
	547,772,702		16,805,262		15,564,874		844,712		114,457		83,574,510		20,978,942

EMFAC Fuel Usage: Year 2021

Vehicle type	GAS			DSL			NG			ELEC		
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	kWh/day	Miles/kWh
All other buses	0	0	0.00	1,276	147	8.70	2	0	7.09	0	0	0.00
LDA	3,656,284	129,903	28.15	10,151	232	43.76	0	0	0.00	80,213	28,132	2.85
LDT1	290,866	12,700	22.90	88	3	25.22	0	0	0.00	109	40	2.72
LDT2	1,262,116	57,775	21.85	2,777	86	32.11	0	0	0.00	2,560	835	3.06
LHD1	129,048	14,696	8.78	158,848	10,080	15.76	0	0	0.00	0	0	0.00
LHD2	16,859	2,126	7.93	53,676	4,173	12.86	0	0	0.00	0	0	0.00
MCY	22,498	558	40.31	0	0	0.00	0	0	0.00	0	0	0.00
MDV	1,389,388	76,665	18.12	24,216	986	24.57	0	0	0.00	3,385	1,104	3.07
MH	4,483	1,018	4.40	1,728	184	9.41	0	0	0.00	0	0	0.00
Motor coach	0	0	0.00	3,626	659	5.51	0	0	0.00	0	0	0.00
OBUS	5,280	1,137	4.64	0	0	0.00	0	0	0.00	0	0	0.00
PTO	0	0	0.00	6,178	1,326	4.66	0	0	0.00	0	0	0.00
SBUS	3,555	362	9.81	7,760	968	8.01	1,502	263	5.71	0	0	0.00
T6	16,889	3,736	4.52	91,649	10,664	8.59	866	127	6.81	0	0	0.00
T7	239	88	2.71	1,233,650	209,599	5.89	7,673	1,549	4.95	0	0	0.00
UBUS	3,509	680	5.16	4,264	448	9.53	605	115	5.28	0	0	0.00
Total	6,801,014	301,446	22.56	1,599,886	239,554	6.68	10,647	2,054	5.18	86,267	30,112	2.86

Source: EMFAC2021 (v1.0.1) Emissions Inventory

Region Type: Sub-Area

Region: Merced (SJV)

Calendar Year: 2021

Season: Annual

Vehicle Classification: EMFAC202x Categories

Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Fuel Consumption	Energy Consumption
Merced (SJV)	2021	All Other Buses	Aggregate	Aggregate	Diesel	24.843356	1275.778915	1275.778915	0	221.1059	0.146693234	0
Merced (SJV)	2021	All Other Buses	Aggregate	Aggregate	Natural Gas	0.033916793	2.465462361	2.465462361	0	0.301859	0.000347513	0
Merced (SJV)	2021	LDA	Aggregate	Aggregate	Gasoline	89020.22052	3617669.098	3617669.098	0	409554.2	128.5917064	0
Merced (SJV)	2021	LDA	Aggregate	Aggregate	Diesel	290.6556495	10150.64972	10150.64972	0	1260.929	0.231963238	0
Merced (SJV)	2021	LDA	Aggregate	Aggregate	Electricity	1086.278518	46463.00455	0	46463	5509.508	0	17938.55456
Merced (SJV)	2021	LDA	Aggregate	Aggregate	Plug-in Hybrid	1420.22954	72365.00659	38614.55049	33750.46	5872.649	1.311285212	10193.64367
Merced (SJV)	2021	LDT1	Aggregate	Aggregate	Gasoline	9562.613477	290841.2558	290841.2558	0	40095.01	12.69938196	0
Merced (SJV)	2021	LDT1	Aggregate	Aggregate	Diesel	6.856632564	87.53410103	87.53410103	0	20.53521	0.003470697	0
Merced (SJV)	2021	LDT1	Aggregate	Aggregate	Electricity	2.429115386	84.72853282	0	84.72853	11.53589	0	32.71220669
Merced (SJV)	2021	LDT1	Aggregate	Aggregate	Plug-in Hybrid	1.024003696	48.68387934	24.78815617	23.89572	4.234255	0.000850164	7.217220604
Merced (SJV)	2021	LDT2	Aggregate	Aggregate	Gasoline	34474.75155	1260163.131	1260163.131	0	157567.4	57.70781093	0
Merced (SJV)	2021	LDT2	Aggregate	Aggregate	Diesel	72.38542226	2776.665144	2776.665144	0	336.7244	0.08646117	0
Merced (SJV)	2021	LDT2	Aggregate	Aggregate	Electricity	20.3873443	740.993777	0	740.9938	105.5409	0	286.0847555
Merced (SJV)	2021	LDT2	Aggregate	Aggregate	Plug-in Hybrid	81.09861596	3771.778846	1953.001995	1818.777	335.3428	0.067209599	549.3248172
Merced (SJV)	2021	LHD1	Aggregate	Aggregate	Gasoline	3980.110918	129048.454	129048.454	0	59297.72	14.69606656	0
Merced (SJV)	2021	LHD1	Aggregate	Aggregate	Diesel	4578.634196	158848.0131	158848.0131	0	57593.46	10.07975936	0
Merced (SJV)	2021	LHD2	Aggregate	Aggregate	Gasoline	509.9247346	16859.04756	16859.04756	0	7597.119	2.125782158	0
Merced (SJV)	2021	LHD2	Aggregate	Aggregate	Diesel	1474.144433	53675.50344	53675.50344	0	18542.88	4.172981255	0
Merced (SJV)	2021	MCY	Aggregate	Aggregate	Gasoline	4273.505054	22497.56166	22497.56166	0	8547.01	0.5581332	0
Merced (SJV)	2021	MDV	Aggregate	Aggregate	Gasoline	40077.08317	1386612.668	1386612.668	0	179840.9	76.56906946	0
Merced (SJV)	2021	MDV	Aggregate	Aggregate	Diesel	588.6324728	24215.59248	24215.59248	0	2792.471	0.985524059	0
Merced (SJV)	2021	MDV	Aggregate	Aggregate	Electricity	27.55629973	974.8733608	0	974.8734	141.3837	0	376.3815779
Merced (SJV)	2021	MDV	Aggregate	Aggregate	Plug-in Hybrid	106.802793	5185.915981	2775.368567	2410.547	441.6295	0.096189468	728.0571655
Merced (SJV)	2021	MH	Aggregate	Aggregate	Gasoline	548.7348574	4483.297125	4483.297125	0	54.89544	1.018194394	0
Merced (SJV)	2021	MH	Aggregate	Aggregate	Diesel	205.9924383	1727.719224	1727.719224	0	20.59924	0.183592667	0
Merced (SJV)	2021	Motor Coach	Aggregate	Aggregate	Diesel	25.31545655	3626.4066	3626.4066	0	581.7492	0.658553565	0
Merced (SJV)	2021	OBUS	Aggregate	Aggregate	Gasoline	71.7602642	5280.160486	5280.160486	0	1435.779	1.137251017	0
Merced (SJV)	2021	PTO	Aggregate	Aggregate	Diesel	0	6178.427921	6178.427921	0	0	1.326229815	0
Merced (SJV)	2021	SBUS	Aggregate	Aggregate	Gasoline	41.88453205	3554.531635	3554.531635	0	167.5381	0.362235209	0
Merced (SJV)	2021	SBUS	Aggregate	Aggregate	Diesel	349.5173905	7760.024568	7760.024568	0	5061.012	0.968393448	0
Merced (SJV)	2021	SBUS	Aggregate	Aggregate	Natural Gas	57.36577957	1501.510679	1501.510679	0	830.6565	0.263168172	0
Merced (SJV)	2021	T6 CAIRP Class 4	Aggregate	Aggregate	Diesel	5.039904478	335.012125	335.012125	0	115.817	0.038238765	0
Merced (SJV)	2021	T6 CAIRP Class 5	Aggregate	Aggregate	Diesel	6.808751732	459.5763923	459.5763923	0	156.4651	0.052227962	0
Merced (SJV)	2021	T6 CAIRP Class 6	Aggregate	Aggregate	Diesel	19.66193909	1200.886262	1200.886262	0	451.8314	0.135727486	0
Merced (SJV)	2021	T6 CAIRP Class 7	Aggregate	Aggregate	Diesel	36.21331988	7532.565626	7532.565626	0	832.1821	0.791395442	0
Merced (SJV)	2021	T6 Instate Delivery Class 4	Aggregate	Aggregate	Diesel	41.76172924	1346.668504	1346.668504	0	595.9399	0.168868957	0
Merced (SJV)	2021	T6 Instate Delivery Class 5	Aggregate	Aggregate	Diesel	26.69582669	928.4785513	928.4785513	0	380.9494	0.114788482	0
Merced (SJV)	2021	T6 Instate Delivery Class 6	Aggregate	Aggregate	Diesel	83.40336331	2755.35324	2755.35324	0	1190.166	0.341215557	0
Merced (SJV)	2021	T6 Instate Delivery Class 7	Aggregate	Aggregate	Diesel	23.25182437	1241.465653	1241.465653	0	331.8035	0.147320767	0
Merced (SJV)	2021	T6 Instate Delivery Class 7	Aggregate	Aggregate	Natural Gas	0.049697046	2.692334615	2.692334615	0	0.709177	0.000410042	0
Merced (SJV)	2021	T6 Instate Other Class 4	Aggregate	Aggregate	Diesel	243.9759241	9622.515636	9622.515636	0	2820.362	1.139040871	0
Merced (SJV)	2021	T6 Instate Other Class 5	Aggregate	Aggregate	Diesel	354.9962843	15583.3472	15583.3472	0	4103.757	1.831268857	0
Merced (SJV)	2021	T6 Instate Other Class 6	Aggregate	Aggregate	Diesel	308.2706489	12187.10786	12187.10786	0	3563.609	1.43329443	0
Merced (SJV)	2021	T6 Instate Other Class 7	Aggregate	Aggregate	Diesel	210.57566	9033.649065	9033.649065	0	2434.255	1.038434719	0
Merced (SJV)	2021	T6 Instate Other Class 7	Aggregate	Aggregate	Natural Gas	1.762349603	105.6234564	105.6234564	0	20.37276	0.014160386	0
Merced (SJV)	2021	T6 Instate Tractor Class 6	Aggregate	Aggregate	Diesel	10.37861518	482.9844061	482.9844061	0	119.9768	0.055318219	0
Merced (SJV)	2021	T6 Instate Tractor Class 7	Aggregate	Aggregate	Diesel	201.2869245	11431.5127	11431.5127	0	2326.877	1.251874625	0
Merced (SJV)	2021	T6 Instate Tractor Class 7	Aggregate	Aggregate	Natural Gas	0.415778398	31.57650133	31.57650133	0	4.806398	0.0041527	0
Merced (SJV)	2021	T6 OOS Class 4	Aggregate	Aggregate	Diesel	2.938048628	193.8901466	193.8901466	0	67.51636	0.02212496	0
Merced (SJV)	2021	T6 OOS Class 5	Aggregate	Aggregate	Diesel	3.954997092	265.9824151	265.9824151	0	90.88583	0.030227336	0
Merced (SJV)	2021	T6 OOS Class 6	Aggregate	Aggregate	Diesel	11.45281302	695.0196605	695.0196605	0	263.1856	0.078556044	0
Merced (SJV)	2021	T6 OOS Class 7	Aggregate	Aggregate	Diesel	20.36979223	5053.657181	5053.657181	0	468.0978	0.529517628	0
Merced (SJV)	2021	T6 Public Class 4	Aggregate	Aggregate	Diesel	25.52787086	843.7275292	843.7275292	0	130.958	0.112934234	0
Merced (SJV)	2021	T6 Public Class 4	Aggregate	Aggregate	Natural Gas	0.561394007	23.93278542	23.93278542	0	2.879951	0.003633507	0
Merced (SJV)	2021	T6 Public Class 5	Aggregate	Aggregate	Diesel	38.18256988	1379.911862	1379.911862	0	195.8766	0.185218862	0
Merced (SJV)	2021	T6 Public Class 5	Aggregate	Aggregate	Natural Gas	3.359410908	142.0713042	142.0713042	0	17.23378	0.02168007	0
Merced (SJV)	2021	T6 Public Class 6	Aggregate	Aggregate	Diesel	66.7382733	2272.746808	2272.746808	0	342.3673	0.305893259	0
Merced (SJV)	2021	T6 Public Class 6	Aggregate	Aggregate	Natural Gas	3.472164658	145.2845096	145.2845096	0	17.8122	0.022096941	0
Merced (SJV)	2021	T6 Public Class 7	Aggregate	Aggregate	Diesel	102.8612063	4490.738439	4490.738439	0	527.678	0.592476314	0
Merced (SJV)	2021	T6 Public Class 7	Aggregate	Aggregate	Natural Gas	7.140458388	407.9291379	407.9291379	0	36.63055	0.060048248	0
Merced (SJV)	2021	T6 Utility Class 5	Aggregate	Aggregate	Diesel	38.94162202	1593.36929	1593.36929	0	498.4528	0.184495459	0
Merced (SJV)	2021	T6 Utility Class 5	Aggregate	Aggregate	Natural Gas	0.10252862	4.107657048	4.107657048	0	1.312366	0.0005698	0
Merced (SJV)	2021	T6 Utility Class 6	Aggregate	Aggregate	Diesel	7.471284984	300.4059654	300.4059654	0	95.63245	0.03497028	0
Merced (SJV)	2021	T6 Utility Class 6	Aggregate	Aggregate	Natural Gas	0.037604018	1.484840427	1.484840427	0	0.481331	0.000206839	0
Merced (SJV)	2021	T6 Utility Class 7	Aggregate	Aggregate	Diesel	8.553027172	418.8712949	418.8712949	0	109.4787	0.048194221	0
Merced (SJV)	2021	T6 Utility Class 7	Aggregate	Aggregate	Natural Gas	0.025579143	1.159097115	1.159097115	0	0.327413	0.000159243	0
Merced (SJV)	2021	T6T5	Aggregate	Aggregate	Gasoline	268.8873448						

Merced (SJV)	2021 T7 POLA Class 8	Aggregate	Aggregate	Diesel	157.3008357	20603.7206	20603.7206	0	2573.442	3.621720385	0
Merced (SJV)	2021 T7 POLA Class 8	Aggregate	Aggregate	Natural Gas	1.474195629	193.4176437	193.4176437	0	24.11784	0.039939427	0
Merced (SJV)	2021 T7 Public Class 8	Aggregate	Aggregate	Diesel	240.1023625	10093.347	10093.347	0	1231.725	1.99616104	0
Merced (SJV)	2021 T7 Public Class 8	Aggregate	Aggregate	Natural Gas	12.84131193	657.2385098	657.2385098	0	65.87593	0.146949675	0
Merced (SJV)	2021 T7 Single Concrete/Transit I	Aggregate	Aggregate	Diesel	60.17924732	4089.224222	4089.224222	0	566.8885	0.706460521	0
Merced (SJV)	2021 T7 Single Concrete/Transit I	Aggregate	Aggregate	Natural Gas	1.741866893	118.8406917	118.8406917	0	16.40839	0.021695326	0
Merced (SJV)	2021 T7 Single Dump Class 8	Aggregate	Aggregate	Diesel	99.10258177	6114.942432	6114.942432	0	933.5463	1.060885014	0
Merced (SJV)	2021 T7 Single Dump Class 8	Aggregate	Aggregate	Natural Gas	3.12206616	200.2729012	200.2729012	0	29.40986	0.037708729	0
Merced (SJV)	2021 T7 Single Other Class 8	Aggregate	Aggregate	Diesel	378.343914	19786.82536	19786.82536	0	3564	3.368660582	0
Merced (SJV)	2021 T7 Single Other Class 8	Aggregate	Aggregate	Natural Gas	14.11477625	805.692371	805.692371	0	132.9612	0.158465693	0
Merced (SJV)	2021 T7 SWCV Class 8	Aggregate	Aggregate	Diesel	59.91386305	3883.340351	3883.340351	0	275.6038	1.573379524	0
Merced (SJV)	2021 T7 SWCV Class 8	Aggregate	Aggregate	Natural Gas	24.5062646	1584.808906	1584.808906	0	112.7288	0.37038981	0
Merced (SJV)	2021 T7 Tractor Class 8	Aggregate	Aggregate	Diesel	2792.016589	237105.7177	237105.7177	0	40568	39.43156069	0
Merced (SJV)	2021 T7 Tractor Class 8	Aggregate	Aggregate	Natural Gas	47.22474328	4112.344686	4112.344686	0	686.1755	0.773679388	0
Merced (SJV)	2021 T7 Utility Class 8	Aggregate	Aggregate	Diesel	26.03168034	1261.387554	1261.387554	0	333.2055	0.223048497	0
Merced (SJV)	2021 T7IS	Aggregate	Aggregate	Gasoline	9.09198606	239.0576539	239.0576539	0	181.9125	0.088202041	0
Merced (SJV)	2021 UBUS	Aggregate	Aggregate	Gasoline	33.21303422	3509.158298	3509.158298	0	132.8521	0.680473341	0
Merced (SJV)	2021 UBUS	Aggregate	Aggregate	Diesel	28.91680558	4264.31718	4264.31718	0	115.6672	0.447628071	0
Merced (SJV)	2021 UBUS	Aggregate	Aggregate	Natural Gas	5.237976438	604.8874504	604.8874504	0	20.95191	0.114664402	0

EMFAC Fuel Usage: Year 2042

Vehicle type	GAS			DSL			NG			ELEC		
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	kWh/day	Miles/kWh
All other buses	0	0	0.00	1,558	157	9.90	121	14	8.68	0	0	0.00
LDA	4,907,422	130,061	37.73	2,973	51	58.69	0	0	0.00	725,482	268,904	2.70
LDT1	239,396	7,416	32.28	3	0	32.08	0	0	0.00	9,762	3,515	2.78
LDT2	2,054,213	65,381	31.42	7,655	177	43.15	0	0	0.00	86,158	30,612	2.81
LHD1	81,480	7,333	11.11	59,180	3,605	16.42	0	0	0.00	82,542	53,807	1.53
LHD2	8,780	892	9.84	27,294	1,951	13.99	0	0	0.00	19,016	12,173	1.56
MCY	23,803	532	44.75	0	0	0.00	0	0	0.00	0	0	0.00
MDV	1,246,354	48,615	25.64	14,294	446	32.03	0	0	0.00	70,489	25,514	2.76
MH	2,727	618	4.41	1,568	168	9.33	0	0	0.00	0	0	0.00
Motor coach	0	0	0.00	4,050	642	6.30	0	0	0.00	0	0	0.00
OBUS	1,899	350	5.42	0	0	0.00	0	0	0.00	1,744	1,935	0.90
PTO	0	0	0.00	5,024	897	5.60	0	0	0.00	3,590	7,438	0.48
SBUS	2,451	226	10.85	4,516	509	8.88	1,563	262	5.96	3,901	4,110	0.95
T6	10,105	1,851	5.46	86,762	8,805	9.85	1,459	204	7.14	61,990	67,616	0.92
T7	34	7	4.71	1,689,268	226,048	7.47	9,950	1,766	5.63	209,377	382,741	0.55
UBUS	846	83	10.21	22	2	10.50	88	12	7.23	10,052	17,524	0.57
Total	8,579,510	263,366	32.58	1,904,167	243,459	7.82	13,182	2,259	5.84	1,284,105	875,888	1.47

Source: EMFAC2021 (v1.0.1) Emissions Inventory

Region Type: Sub-Area

Region: Merced (SJV)

Calendar Year: 2042

Season: Annual

Vehicle Classification: EMFAC202x Categories

Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Total VMT	CVMT	EVMT	Trips	Fuel Consumption	Energy Consumption
Merced (SJV)	2042	All Other Buses	Aggregate	Aggregate	Diesel	29,555519	1558.334075	1558.334075	0	263.0441	0.157358151	0
Merced (SJV)	2042	All Other Buses	Aggregate	Aggregate	Natural Gas	2.0390181	121.0256738	121.0256738	0	18.14726	0.013944311	0
Merced (SJV)	2042	LDA	Aggregate	Aggregate	Gasoline	96630.908	4814339.611	4814339.611	0	444106	126.8638883	0
Merced (SJV)	2042	LDA	Aggregate	Aggregate	Diesel	69.058283	2972.756271	2972.756271	0	301.0963	0.050652763	0
Merced (SJV)	2042	LDA	Aggregate	Aggregate	Electricity	12555.696	592329.1407	0	592329.1	58839.47	0	228687.9359
Merced (SJV)	2042	LDA	Aggregate	Aggregate	Plug-in Hybrid	4492.0871	226235.4113	93082.11544	133153.3	18574.78	3.196692214	40216.26396
Merced (SJV)	2042	LDT1	Aggregate	Aggregate	Gasoline	5595.4102	237317.1138	237317.1138	0	24904.44	7.344162274	0
Merced (SJV)	2042	LDT1	Aggregate	Aggregate	Diesel	0.0566533	2.634058126	2.634058126	0	0.264223	8.21051E-05	0
Merced (SJV)	2042	LDT1	Aggregate	Aggregate	Electricity	136.34573	6741.132033	0	6741.132	649.0276	0	2602.633341
Merced (SJV)	2042	LDT1	Aggregate	Aggregate	Plug-in Hybrid	105.66865	5100.317442	2079.190027	3021.127	436.9399	0.071941958	912.4705233
Merced (SJV)	2042	LDT2	Aggregate	Aggregate	Gasoline	45165.151	2032335.566	2032335.566	0	207055.1	64.62178188	0
Merced (SJV)	2042	LDT2	Aggregate	Aggregate	Diesel	166.28945	7654.717044	7654.717044	0	771.6336	0.177377462	0
Merced (SJV)	2042	LDT2	Aggregate	Aggregate	Electricity	1617.376	54607.34972	0	54607.35	7664.906	0	21082.94398
Merced (SJV)	2042	LDT2	Aggregate	Aggregate	Plug-in Hybrid	1140.4914	53427.40317	21877.09817	31550.3	4715.932	0.759667357	9529.132459
Merced (SJV)	2042	LHD1	Aggregate	Aggregate	Gasoline	2021.726	81479.71384	81479.71384	0	30120.7	7.333092197	0
Merced (SJV)	2042	LHD1	Aggregate	Aggregate	Diesel	1645.5168	59180.12584	59180.12584	0	20698.53	3.604741645	0
Merced (SJV)	2042	LHD1	Aggregate	Aggregate	Electricity	1488.8581	82542.04593	0	82542.05	20933.14	0	53807.39608
Merced (SJV)	2042	LHD2	Aggregate	Aggregate	Gasoline	223.18579	8780.378562	8780.378562	0	3325.136	0.892432231	0
Merced (SJV)	2042	LHD2	Aggregate	Aggregate	Diesel	776.60832	27294.42676	27294.42676	0	9768.756	1.951093138	0
Merced (SJV)	2042	LHD2	Aggregate	Aggregate	Electricity	352.72111	19016.14467	0	19016.14	4669.619	0	12173.07055
Merced (SJV)	2042	MCY	Aggregate	Aggregate	Gasoline	3791.4372	23803.30704	23803.30704	0	7582.874	0.531917992	0
Merced (SJV)	2042	MDV	Aggregate	Aggregate	Gasoline	28364.515	1232276.782	1232276.782	0	126865.9	48.12091159	0
Merced (SJV)	2042	MDV	Aggregate	Aggregate	Diesel	341.98841	14294.27091	14294.27091	0	1511.412	0.446334604	0
Merced (SJV)	2042	MDV	Aggregate	Aggregate	Electricity	1505.4891	50257.49802	0	50257.5	7106.867	0	19403.54221
Merced (SJV)	2042	MDV	Aggregate	Aggregate	Plug-in Hybrid	730.15191	34308.9686	14077.42204	20231.55	3019.178	0.493975961	6110.530058
Merced (SJV)	2042	MH	Aggregate	Aggregate	Gasoline	216.76079	2727.343277	2727.343277	0	21.68475	0.617879495	0
Merced (SJV)	2042	MH	Aggregate	Aggregate	Diesel	144.34898	1567.925214	1567.925214	0	14.4349	0.168064103	0
Merced (SJV)	2042	Motor Coach	Aggregate	Aggregate	Diesel	31.985727	4049.605517	4049.605517	0	735.032	0.642297676	0
Merced (SJV)	2042	OBUS	Aggregate	Aggregate	Gasoline	31.652142	1898.96473	1898.96473	0	633.296	0.350273593	0
Merced (SJV)	2042	OBUS	Aggregate	Aggregate	Electricity	12.638274	1744.403562	0	1744.404	252.8666	0	1935.039289
Merced (SJV)	2042	PTO	Aggregate	Aggregate	Diesel	0	5023.657761	5023.657761	0	0	0.896771556	0
Merced (SJV)	2042	PTO	Aggregate	Aggregate	Electricity	0	3590.444242	0	3590.444	0	0	7437.672632
Merced (SJV)	2042	SBUS	Aggregate	Aggregate	Gasoline	24.06597	2451.370445	2451.370445	0	96.26388	0.225955645	0
Merced (SJV)	2042	SBUS	Aggregate	Aggregate	Diesel	218.50244	4516.326833	4516.326833	0	3163.915	0.508554348	0
Merced (SJV)	2042	SBUS	Aggregate	Aggregate	Electricity	131.36318	3901.139506	0	3901.14	1827.639	0	4109.677221
Merced (SJV)	2042	SBUS	Aggregate	Aggregate	Natural Gas	77.058536	1563.408884	1563.408884	0	1115.808	0.26214556	0
Merced (SJV)	2042	T6 CAIRP Class 4	Aggregate	Aggregate	Diesel	3.30493	231.8915222	231.8915222	0	75.94729	0.023490175	0
Merced (SJV)	2042	T6 CAIRP Class 4	Aggregate	Aggregate	Electricity	3.6757864	287.3417869	0	287.3418	84.46957	0	312.1346489
Merced (SJV)	2042	T6 CAIRP Class 5	Aggregate	Aggregate	Diesel	4.0782997	319.2067314	319.2067314	0	93.71933	0.032334737	0
Merced (SJV)	2042	T6 CAIRP Class 5	Aggregate	Aggregate	Electricity	4.4990949	393.0879981	0	393.088	103.3892	0	427.0050158
Merced (SJV)	2042	T6 CAIRP Class 6	Aggregate	Aggregate	Diesel	18.2904	825.9585567	825.9585567	0	420.3134	0.083833844	0
Merced (SJV)	2042	T6 CAIRP Class 6	Aggregate	Aggregate	Electricity	20.678874	1035.28795	0	1035.288	475.2005	0	1124.616243
Merced (SJV)	2042	T6 CAIRP Class 7	Aggregate	Aggregate	Diesel	44.335501	8967.720735	8967.720735	0	1018.83	0.796775494	0
Merced (SJV)	2042	T6 CAIRP Class 7	Aggregate	Aggregate	Electricity	12.718954	2706.958132	0	2706.958	292.2816	0	2940.524018
Merced (SJV)	2042	T6 Instate Delivery Class 4	Aggregate	Aggregate	Diesel	35.827798	1114.034811	1114.034811	0	511.2627	0.122588319	0
Merced (SJV)	2042	T6 Instate Delivery Class 4	Aggregate	Aggregate	Electricity	28.492555	973.1587304	0	973.1587	406.5888	0	1039.605112
Merced (SJV)	2042	T6 Instate Delivery Class 5	Aggregate	Aggregate	Diesel	23.372241	762.5056405	762.5056405	0	333.5219	0.083713163	0
Merced (SJV)	2042	T6 Instate Delivery Class 5	Aggregate	Aggregate	Electricity	18.671892	676.537769	0	676.5378	266.4479	0	722.7311448
Merced (SJV)	2042	T6 Instate Delivery Class 6	Aggregate	Aggregate	Diesel	73.079139	2275.981439	2275.981439	0	1042.839	0.250447657	0
Merced (SJV)	2042	T6 Instate Delivery Class 6	Aggregate	Aggregate	Electricity	58.413841	1994.524235	0	1994.524	833.5655	0	2130.708513
Merced (SJV)	2042	T6 Instate Delivery Class 7	Aggregate	Aggregate	Diesel	24.818838	1253.505547	1253.505547	0	354.1648	0.137144655	0
Merced (SJV)	2042	T6 Instate Delivery Class 7	Aggregate	Aggregate	Electricity	12.022387	652.5601002	0	652.5601	171.5595	0	697.1163028
Merced (SJV)	2042	T6 Instate Delivery Class 7	Aggregate	Aggregate	Natural Gas	0.4271875	22.24745211	22.24745211	0	6.095965	0.003144165	0
Merced (SJV)	2042	T6 Instate Other Class 4	Aggregate	Aggregate	Diesel	200.12946	7707.877194	7707.877194	0	2313.497	0.815162573	0
Merced (SJV)	2042	T6 Instate Other Class 4	Aggregate	Aggregate	Electricity	159.30364	7206.00282	0	7206.003	1841.55	0	7638.947299
Merced (SJV)	2042	T6 Instate Other Class 5	Aggregate	Aggregate	Diesel	324.91007	12481.16479	12481.16479	0	3755.96	1.32037777	0
Merced (SJV)	2042	T6 Instate Other Class 5	Aggregate	Aggregate	Electricity	257.6265	11671.37278	0	11671.37	2978.162	0	12372.60154
Merced (SJV)	2042	T6 Instate Other Class 6	Aggregate	Aggregate	Diesel	254.2618	9771.58173	9771.58173	0	2939.266	1.032436274	0
Merced (SJV)	2042	T6 Instate Other Class 6	Aggregate	Aggregate	Electricity	201.49828	9117.144593	0	9117.145	2329.32	0	9664.912547
Merced (SJV)	2042	T6 Instate Other Class 7	Aggregate	Aggregate	Diesel	219.93891	8501.744327	8501.744327	0	2542.494	0.910653356	0
Merced (SJV)	2042	T6 Instate Other Class 7	Aggregate	Aggregate	Electricity	94.049104	5481.305311	0	5481.305	1087.208	0	5810.62809
Merced (SJV)	2042	T6 Instate Other Class 7	Aggregate	Aggregate	Natural Gas	4.4097385	181.8547333	181.8547333	0	50.97658	0.023536861	0
Merced (SJV)	2042	T6 Instate Tractor Class 6	Aggregate	Aggregate	Diesel	8.6088473	375.0077869	375.0077869	0	99.51827	0.039274231	0
Merced (SJV)	2042	T6 Instate Tractor Class 6	Aggregate	Aggregate	Electricity	6.7312612	373.5668846	0	373.5669	77.81338	0	396.0111889
Merced (SJV)	2042	T6 Instate Tractor Class 7	Aggregate	Aggregate	Diesel	261.11788	14441.79125	14441.79125	0	3018.523	1.403806234	0
Merced (SJV)	2042	T6 Instate Tractor Class 7	Aggregate	Aggregate	Electricity	44.172698	3026.020652	0	3026.021	510.6364	0	3207.827261
Merced (SJV)	2042	T6 Instate Tractor Class 7	Aggregate	Aggregate	Natural Gas	5.1889961	298.7621817	298.7621817	0	59.9848	0.036454463	0
Merced (SJV)	2042											

Merced (SJV)	2042 T6 Public Class 4	Aggregate	Aggregate	Electricity	11.827818	481.0298747	0	481.0299	60.67671	0	568.0484471
Merced (SJV)	2042 T6 Public Class 4	Aggregate	Aggregate	Natural Gas	2.1716648	76.2620342	76.2620342	0	11.14064	0.011345178	0
Merced (SJV)	2042 T6 Public Class 5	Aggregate	Aggregate	Diesel	29.758431	1024.50992	1024.50992	0	152.6608	0.11997805	0
Merced (SJV)	2042 T6 Public Class 5	Aggregate	Aggregate	Electricity	20.354664	826.309589	0	826.3096	104.4194	0	975.7894542
Merced (SJV)	2042 T6 Public Class 5	Aggregate	Aggregate	Natural Gas	4.3511766	148.7646967	148.7646967	0	22.32154	0.022397303	0
Merced (SJV)	2042 T6 Public Class 6	Aggregate	Aggregate	Diesel	47.61289	1638.108843	1638.108843	0	244.2541	0.190719801	0
Merced (SJV)	2042 T6 Public Class 6	Aggregate	Aggregate	Electricity	32.534978	1313.367256	0	1313.367	166.9044	0	1550.956125
Merced (SJV)	2042 T6 Public Class 6	Aggregate	Aggregate	Natural Gas	6.5194481	225.3377698	225.3377698	0	33.44477	0.033725748	0
Merced (SJV)	2042 T6 Public Class 7	Aggregate	Aggregate	Diesel	84.49939	3528.084077	3528.084077	0	433.4819	0.401115176	0
Merced (SJV)	2042 T6 Public Class 7	Aggregate	Aggregate	Electricity	47.600424	2404.877429	0	2404.877	244.1902	0	2839.921097
Merced (SJV)	2042 T6 Public Class 7	Aggregate	Aggregate	Natural Gas	12.075014	502.9167152	502.9167152	0	61.94482	0.073346179	0
Merced (SJV)	2042 T6 Utility Class 5	Aggregate	Aggregate	Diesel	23.392386	924.0898806	924.0898806	0	299.4225	0.096243683	0
Merced (SJV)	2042 T6 Utility Class 5	Aggregate	Aggregate	Electricity	28.138459	1172.594393	0	1172.594	360.1723	0	1313.380048
Merced (SJV)	2042 T6 Utility Class 5	Aggregate	Aggregate	Natural Gas	0.0527272	2.083796662	2.083796662	0	0.674908	0.000266535	0
Merced (SJV)	2042 T6 Utility Class 6	Aggregate	Aggregate	Diesel	4.4260145	174.7671195	174.7671195	0	56.65299	0.018202659	0
Merced (SJV)	2042 T6 Utility Class 6	Aggregate	Aggregate	Electricity	5.3144962	221.4631524	0	221.4632	68.02555	0	248.0527688
Merced (SJV)	2042 T6 Utility Class 6	Aggregate	Aggregate	Natural Gas	0.0099875	0.394408555	0.394408555	0	0.12784	5.0455E-05	0
Merced (SJV)	2042 T6 Utility Class 7	Aggregate	Aggregate	Diesel	4.8947686	236.8645135	236.8645135	0	62.65304	0.024519319	0
Merced (SJV)	2042 T6 Utility Class 7	Aggregate	Aggregate	Electricity	5.899117	314.4376878	0	314.4377	75.5087	0	352.1901419
Merced (SJV)	2042 T6 Utility Class 7	Aggregate	Aggregate	Natural Gas	0.0110434	0.534478788	0.534478788	0	0.141355	6.72703E-05	0
Merced (SJV)	2042 T6TS	Aggregate	Aggregate	Gasoline	108.17009	10104.60389	10104.60389	0	2164.267	1.850979233	0
Merced (SJV)	2042 T6TS	Aggregate	Aggregate	Electricity	70.618641	9661.305864	0	9661.306	1412.938	0	11282.37488
Merced (SJV)	2042 T7 CAIRP Class 8	Aggregate	Aggregate	Diesel	2023.2005	419509.6454	419509.6454	0	46493.15	56.92734708	0
Merced (SJV)	2042 T7 CAIRP Class 8	Aggregate	Aggregate	Electricity	541.00612	117075.5646	0	117075.6	12432.32	0	213771.3264
Merced (SJV)	2042 T7 NNOOS Class 8	Aggregate	Aggregate	Diesel	2217.9602	634409.1471	634409.1471	0	50968.72	81.8914799	0
Merced (SJV)	2042 T7 NOOS Class 8	Aggregate	Aggregate	Diesel	956.63355	230469.5741	230469.5741	0	21983.44	30.07943716	0
Merced (SJV)	2042 T7 Other Port Class 8	Aggregate	Aggregate	Diesel	33.013054	8135.967357	8135.967357	0	540.0936	1.120984536	0
Merced (SJV)	2042 T7 Other Port Class 8	Aggregate	Aggregate	Electricity	7.2924907	2011.054006	0	2011.054	119.3051	0	3660.052402
Merced (SJV)	2042 T7 POAK Class 8	Aggregate	Aggregate	Diesel	162.60458	18879.13922	18879.13922	0	2660.211	2.648372582	0
Merced (SJV)	2042 T7 POAK Class 8	Aggregate	Aggregate	Electricity	35.406021	4059.459035	0	4059.459	579.2425	0	7388.082444
Merced (SJV)	2042 T7 POLA Class 8	Aggregate	Aggregate	Diesel	163.318	31124.33371	31124.33371	0	2671.882	4.418408169	0
Merced (SJV)	2042 T7 POLA Class 8	Aggregate	Aggregate	Electricity	25.657391	4820.156785	0	4820.157	419.7549	0	8772.527426
Merced (SJV)	2042 T7 POLA Class 8	Aggregate	Aggregate	Natural Gas	0.7346211	139.9257643	139.9257643	0	12.0184	0.022059666	0
Merced (SJV)	2042 T7 Public Class 8	Aggregate	Aggregate	Diesel	198.88297	8004.297996	8004.297996	0	1020.27	1.340750051	0
Merced (SJV)	2042 T7 Public Class 8	Aggregate	Aggregate	Electricity	103.00532	5147.90697	0	5147.907	528.4173	0	10103.19245
Merced (SJV)	2042 T7 Public Class 8	Aggregate	Aggregate	Natural Gas	23.916799	971.9335073	971.9335073	0	122.6932	0.199038815	0
Merced (SJV)	2042 T7 Single Concrete/Transit	Aggregate	Aggregate	Diesel	32.216926	2070.430173	2070.430173	0	303.4834	0.308602234	0
Merced (SJV)	2042 T7 Single Concrete/Transit	Aggregate	Aggregate	Electricity	34.386118	2517.271114	0	2517.271	323.9172	0	4589.373337
Merced (SJV)	2042 T7 Single Concrete/Transit	Aggregate	Aggregate	Natural Gas	1.1656531	75.18878641	75.18878641	0	10.98045	0.012090473	0
Merced (SJV)	2042 T7 Single Dump Class 8	Aggregate	Aggregate	Diesel	83.201355	4005.998822	4005.998822	0	783.7568	0.63027279	0
Merced (SJV)	2042 T7 Single Dump Class 8	Aggregate	Aggregate	Electricity	42.039713	2850.216722	0	2850.217	396.0141	0	5196.384512
Merced (SJV)	2042 T7 Single Dump Class 8	Aggregate	Aggregate	Natural Gas	2.8969183	141.574532	141.574532	0	27.28897	0.024235784	0
Merced (SJV)	2042 T7 Single Other Class 8	Aggregate	Aggregate	Diesel	305.4666	18330.01378	18330.01378	0	2877.495	2.846234075	0
Merced (SJV)	2042 T7 Single Other Class 8	Aggregate	Aggregate	Electricity	144.96219	12714.70704	0	12714.71	1365.544	0	23180.8712
Merced (SJV)	2042 T7 Single Other Class 8	Aggregate	Aggregate	Natural Gas	11.325395	676.9385419	676.9385419	0	106.6852	0.115009788	0
Merced (SJV)	2042 T7 SWCV Class 8	Aggregate	Aggregate	Diesel	24.827731	1612.211022	1612.211022	0	114.2076	0.557569872	0
Merced (SJV)	2042 T7 SWCV Class 8	Aggregate	Aggregate	Electricity	39.532003	2550.632928	0	2550.633	181.8472	0	4745.581894
Merced (SJV)	2042 T7 SWCV Class 8	Aggregate	Aggregate	Natural Gas	46.646512	3021.220321	3021.220321	0	214.574	0.552627413	0
Merced (SJV)	2042 T7 Tractor Class 8	Aggregate	Aggregate	Diesel	4928.4777	311728.2354	311728.2354	0	71610.78	43.12364734	0
Merced (SJV)	2042 T7 Tractor Class 8	Aggregate	Aggregate	Electricity	757.21413	54931.66215	0	54931.66	11002.32	0	100014.6156
Merced (SJV)	2042 T7 Tractor Class 8	Aggregate	Aggregate	Natural Gas	78.101118	4923.47594	4923.47594	0	1134.809	0.841321915	0
Merced (SJV)	2042 T7 Utility Class 8	Aggregate	Aggregate	Diesel	23.978544	989.3988558	989.3988558	0	306.9254	0.154927953	0
Merced (SJV)	2042 T7 Utility Class 8	Aggregate	Aggregate	Electricity	13.323518	667.8143682	0	667.8144	170.541	0	1257.359746
Merced (SJV)	2042 T7IS	Aggregate	Aggregate	Gasoline	0.1414044	33.96869269	33.96869269	0	2.829219	0.007214082	0
Merced (SJV)	2042 T7IS	Aggregate	Aggregate	Electricity	0.0891109	30.44441288	0	30.44441	1.782931	0	61.1763649
Merced (SJV)	2042 UBUS	Aggregate	Aggregate	Gasoline	9.5452314	845.5181852	845.5181852	0	38.18093	0.082809972	0
Merced (SJV)	2042 UBUS	Aggregate	Aggregate	Diesel	0.1530543	21.81986824	21.81986824	0	0.612217	0.002078249	0
Merced (SJV)	2042 UBUS	Aggregate	Aggregate	Electricity	78.193081	10052.26725	0	10052.27	312.7723	0	17523.55576
Merced (SJV)	2042 UBUS	Aggregate	Aggregate	Natural Gas	0.6165903	87.90289776	87.90289776	0	2.466361	0.012149908	0

**APPENDIX I:
WATER SUPPLY ASSESSMENT**



June 2022

Water Supply Assessment Los Banos General Plan 2042

for City of Los Banos

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1. Introduction

1.1 INTRODUCTION

In 2001, Senate Bill 610 (SB 610) amended California law to improve the connection between land use decisions made by cities and counties and water supply availability. Pursuant to SB 610, a Water Supply Assessment (WSA) is now required for projects that are subject to the California Environmental Quality Act (CEQA) and meet certain size thresholds. The City believes that SB 610 does not specifically apply to a comprehensive general plan update, but rather it applies to categories of projects that meet the criteria for preparation of a WSA and that are subsequently developed as part of the general plan. For example, Water Code Section 10912 defines a project as any of the following:

- A proposed residential development of more than 500 dwelling units
- A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space
- A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space
- A proposed hotel or motel, or both, having more than 500 rooms
- A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor space
- A mixed-use project that includes one or more of the projects specified above
- A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.

Therefore, any project developed under the General Plan 2042 that meets these criteria would have to prepare an individual WSA. However, the City has voluntarily chosen to prepare this WSA to support the Los Banos General Plan 2042. The City recognizes that water supply and demand is an important issue both for the population within the city limits and for the adjacent areas within Merced County.

As part of a WSA, the water purveyor for a proposed project must evaluate whether water supplies are sufficient to meet the demand of the proposed project over the next 20 years, in addition to the water purveyor's existing and planned future uses. As the water purveyor for the area evaluated in the General Plan 2042, the City has elected to prepare a WSA as a tool to assist in long-term planning decisions. This WSA describes the City's current water demand, projected water demand (including that associated with the General Plan 2042), and

water supply sources. The WSA also provides a comparison of the City’s expected water supply and demand through the year 2042, including the demand of the project. Information from the City’s 2020 Urban Water Management Plan (UWMP) is incorporated into this WSA and is supplemented by findings from the studies listed below:

- City of Los Banos, 2021. *Urban Water Management Plan (UWMP) 2020 Update for the City of Los Banos*. Prepared by Provost & Pritchard Consulting Group.
- Nolte Associates, Inc., 2009. *Merced County General Plan Update, Qualitative Comparison of Water Supply and Demands in Merced County, Technical Memorandum*.
- San Luis & Delta-Mendota Water Authority, 2019. *2019 Westside-San Joaquin Integrated Regional Water Management Plan*. Prepared by Woodard & Curran.
- San Joaquin River Exchange Contractors, 2019. *Groundwater Sustainability Plan for the San Joaquin River Exchange Contractors GSP Group in the Delta-Mendota Subbasin*.

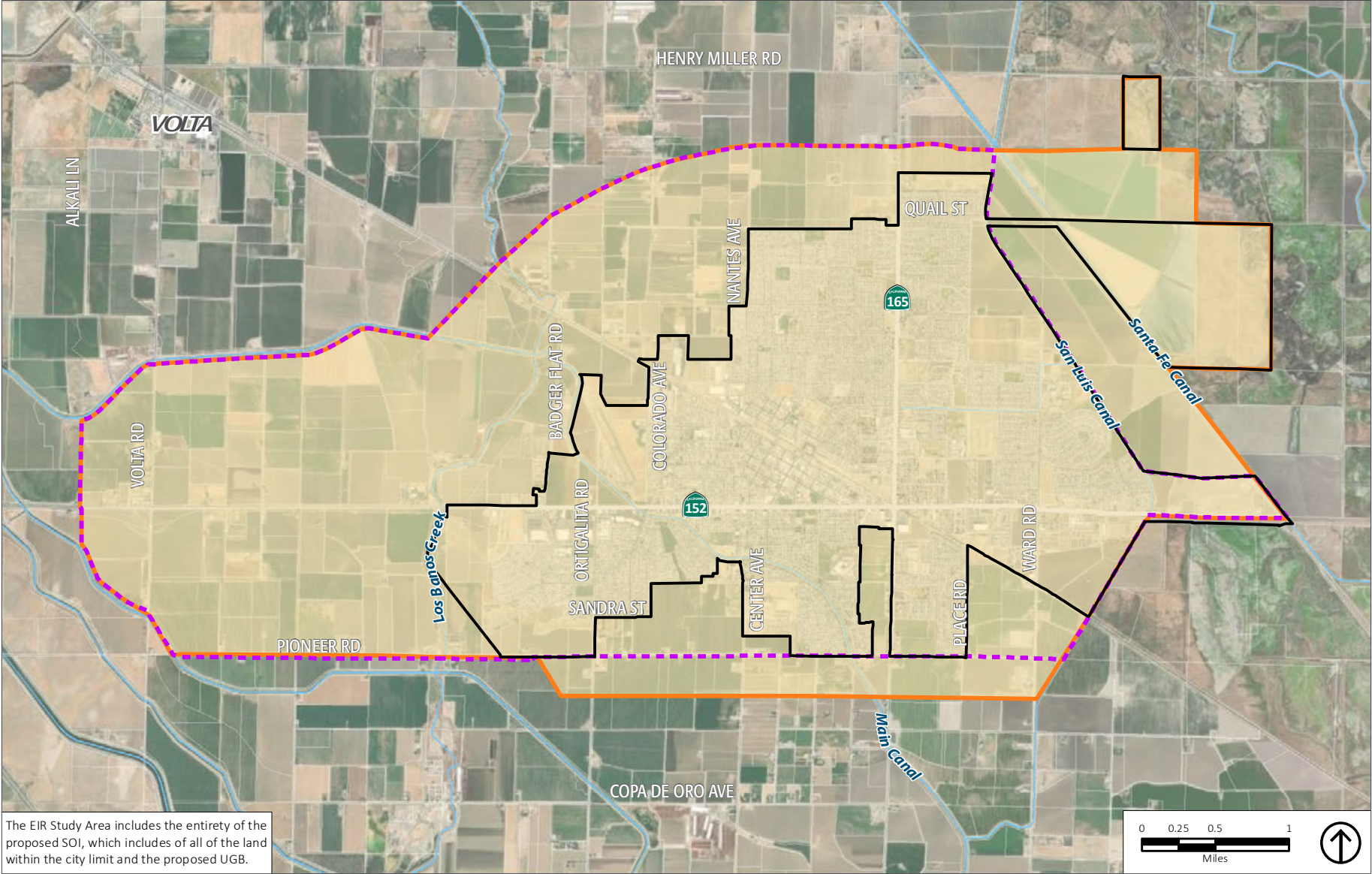
1.2 PROJECT DESCRIPTION

The City’s General Plan is being updated in accordance with California State law, which requires each city and county to adopt a general plan for *the physical development of the county or city, and any land outside its boundaries which bear relation to its planning over a long-term horizon*.¹ The General Plan functions as the City’s primary land use regulatory tool for future change in Los Banos. The primary purpose of the proposed project is to plan for the growth and conservation of Los Banos over a 20-year time horizon. The project objectives include providing for balanced and sustainable growth, creating new jobs to develop the local economy, integrating neighborhoods with a mix of residential types and schools, stores, and parks, and creating a network of parks and open space.

The city is in the western part of Merced County and the northern portion of the San Joaquin Valley. It is the second-largest city in Merced County. State and federal wildlife areas and refuges and agricultural land uses are prevalent in the surrounding area. Los Banos is a city whose economy and land uses have grown from an agricultural center to a mixture of agriculture, retail, commercial, and residential neighborhoods.

The EIR Study Area, which is the basis for the WSA, includes all land within the city limit and the proposed Urban Growth Boundary and Sphere of Influence, as shown in Figure 1, *EIR Study Area*. This is the same area that was evaluated in the City’s 2020 UWMP. The proposed land use map is shown as Figure 2, *General Plan 2042 Land Use Map*.

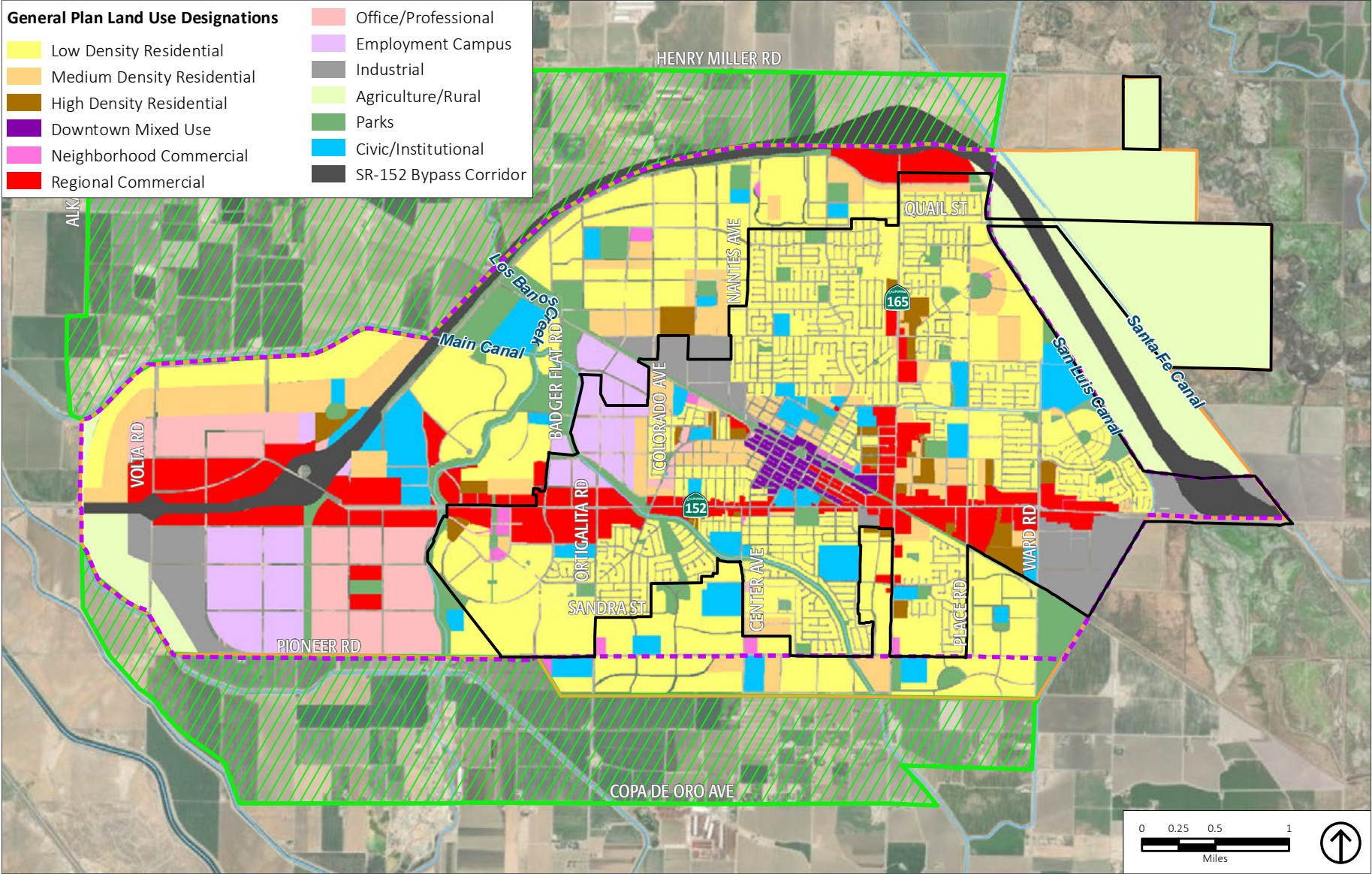
¹ Government Code Section 65300.



Source: California Department of Conservation, 2016; ESRI, 2018; Merced County, 2018; PlaceWorks, 2022.

- City Limit
- Proposed Urban Growth Boundary (UGB)
- Proposed Sphere of Influence (SOI)
- EIR Study Area

Figure 1
EIR Study Area



Source: Merced County, 2019; PlaceWorks, 2022.

City Limit
 Proposed Urban Growth Boundary (UGB)
 Proposed Sphere of Influence (SOI)
 Proposed Area of Interest (AOI)

Figure 2

General Plan 2042 Land Use Map

The EIR analyzes the potential for growth to 2042, which represents a 20-year buildout horizon. The projections represent the City’s estimation of “reasonably foreseeable” development that could occur over the next 20 years. The proposed buildout projections are provided in Table 1, *Proposed Buildout Projections in the EIR Study Area*.

Table 1 Proposed 2042 Buildout Projections in the EIR Study Area

Category	Existing Conditions (2021)	Projected Growth 2022-2042	Buildout Estimates - 2042
Housing Units	12,800	8,900	21,700
Population	42,900	19,600	72,500
Jobs	7,000	29,600	12,000

Sources: City of Los Banos, 2022; Merced County Association of Governments, 2018; State of California, Department of Finance, 2021; Center for Business and Policy Research at the University of Pacific, 2016; PlaceWorks, 2022.

1.3 CITY’S CURRENT WATER SUPPLY AND DISTRIBUTION INFRASTRUCTURE

The City of Los Banos extracts its water supply from 13 active groundwater wells with a total pumping capacity of 14,875 gallons per minute (gpm). The water distribution system consists of pipelines ranging from four to 30 inches in diameter, an elevated storage tank with a capacity of 100,000 gallons, and a 5-million-gallon surface mounted storage tank equipped with four booster pumps with a total pumping capacity of 10,500 gpm. The City has plans to construct additional wells in the future (2024) as demands continue to increase.²

The City prepared a Water Master Plan (WMP) covering water infrastructure (as distinct from water supply) in 2008, which was subsequently updated in March 2010. The WMP evaluated the distribution system and recommended improvements to correct existing deficiencies and to serve future customers. The area of evaluation and proposed land uses in the WMP are essentially the same as those shown in Figures 1 and 2. The WMP assumed an even larger population increase than projected for the General Plan 2042 (90,400 people by 2030).³ Therefore, the proposed buildout for the General Plan 2042 has been evaluated in terms of the water distribution infrastructure.

² City of Los Banos, 2021. *Urban Water Management Plan 2020 Update for the City of Los Banos*. Prepared by Provost & Pritchard Consulting Group

³ Carollo Engineers, 2010. *Final Report, Master Plan for Water Distribution System, City of Los Banos*. Dated September 2008, and updated March 2010.

2. Water Supply Assessment

2.1 WATER PURVEYOR

The City of Los Banos provides water service to residents, businesses, and other users within its service area. Water is provided by the City’s Public Works Department to approximately 11,864 residential accounts, 594 commercial accounts, 594 irrigation accounts, and 96 multi-family accounts. The City provided a total of 8,309 acre-feet of water to its customers in 2020.⁴ There are some small areas outside of the city limits that receive water from the City’s water system, including a small farmworker housing project to the north along State Highway 165. However, these deliveries are minor and account for less than one percent of the water demand.

It is required that every urban water supplier assess the reliability to provide water service to its customers under normal, single dry, and multiple dry years. As discussed in the City’s Urban Water Management Plan (UWMP), the City is capable of meeting the water demands of its customers in normal, single dry, and multiple dry years between 2025 and 2045.

2.2 COMPONENTS OF A WATER SUPPLY ASSESSMENT

The basic requirement is that a WSA must “include a discussion with regard to whether the public water system’s total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the water system’s existing and planned future uses, including agricultural and manufacturing uses.” If the water demand for a proposed project is accounted for in an adopted UWMP, the WSA preparer may incorporate that information into the WSA.

Although the City’s 2020 UWMP does account for future growth within the City limits and its sphere of influence, the General Plan 2042 buildout projections exceed the UWMP future growth rates by about 12,500 people. Therefore, the water demand projections for the project have been updated as follows:

- Land use changes envisioned in the General Plan 2042 serve as the basis for water demand projections for the project.
- Estimates of population growth developed by the City, the Merced County Association of Governments, and the State of California, Department of Finance are the basis for water demand projections within the City’s service area.

A comparison of updated water demand projections as compared to previous water demand projections provided in the 2020 UWMP are provided in Section 2.3, *Water Demand Analysis*.

⁴ City of Los Banos, 2021. *Urban Water Management Plan 2020 Update for the City of Los Banos*. Prepared by Provost & Pritchard Consulting Group.

The WSA also requires additional analysis if any portion of the water purveyor's water supplies include groundwater. A description of any groundwater basin or basins from which the proposed project will be supplied in addition to a detailed description and analysis of the amount and location of groundwater pumped by the public water system for the past five years should be provided. The WSA should also include an analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. Since the City relies entirely on groundwater for its water supply and the Delta-Mendota groundwater subbasin is in critical overdraft, this issue is discussed in detail in Section 2.5, *Groundwater Analysis*.

Upon adoption, the WSA is incorporated into the CEQA document being prepared for the project, and the lead agency must determine, based on the entire record, whether projected water supplies will be sufficient to satisfy demands for the project, in addition to existing and future uses.⁵

2.3 WATER DEMAND ANALYSIS

This section evaluates whether the proposed project was included in the projection of future water demands for the City of Los Banos as described in the 2020 UWMP. As per Section 10910 (c) (2) of the California Water Code:

“if the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).”

2.3.1 City of Los Banos Water Demands

The primary source of water for the proposed project would be groundwater extracted by the City to provide service to its customers. This section analyzes the water demands of existing and planned future City customers.

The City's 2020 UWMP included projections of water demand and supply for its entire service area, including the area proposed for redevelopment as part of the General Plan 2042. Although the water demand projections were developed through the year 2045, the population growth estimates were less than what is envisioned for the General Plan 2042. The future water use projections were based on 165 gallons/day/person, based on an assumption that land use would not vary in density or water use per acre.⁶ Also, water savings resulting from compliance with the CalGreen Building Code and the City's Water Efficient Landscape Ordinance (WELO) for new construction were not accounted for in the future projections. The current and projected water demands from the City's 2020 UWMP are provided in Table 2, *2020 UWMP Current and Projected Water Demands for the City of Los Banos*.

⁵ California Water Code Section 10910 (b) and (c).

⁶ City of Los Banos, 2021. *Urban Water Management Plan 2020 Update for the City of Los Banos*. Prepared by Provost & Pritchard Consulting Group.

Table 2 2020 UWMP Current and Projected Water Demands for the City of Los Banos (AFY)

Use Type	2020	2025	2030	2035	2040	2045
Single Family	4,797	4,816	5,188	5,589	6,021	6,486
Multi-Family	355	356	384	414	446	480
Commercial	1,107	1,111	1,197	1,290	1,389	1,497
Landscape	584	586	632	680	733	790
Losses	1,465	1,471	1,584	1,707	1,839	1,981
Total	8,309	8,340	8,985	9,679	10,427	11,233

AFY = Acre-feet/year

Source: City of Los Banos 2020 UWMP, 2021.

2.3.2 Proposed Project Water Demand

Population-based water demand projections generally do not account for changes in land uses, which can have large variations in water demand. The buildout projections in the General Plan 2042 provide new information about residential and commercial development potential over the next 20 years that was not factored into the City’s 2020 UWMP. Given this new information and the projected increase in population with implementation of the General Plan 2042, this WSA provides new water demand projections based upon land use changes identified in the General Plan 2042.

The buildout of General Plan 2042 will result in new buildings and residences that fully comply with the more stringent requirements of the California Green Building Code, California Plumbing Code, and the City’s WELO. Only three percent of the current residences were built after 2010, when the CalGreen Building Code was first implemented and the installation of water conserving plumbing fixtures and fittings was mandated. It is conservatively estimated that the new construction of both residences and commercial land uses following adoption of General Plan 2042 will achieve a reduction in water usage rates of 20 percent.

For example, old toilets often exceed two gallons per flush. Later toilets use 1.6 gallons per flush and the latest 2019 code requirement is 1.28 gallons/flush, which is a reduction of 36 percent.⁷ In residential units, new dishwashers will be installed, which use about three gallons per load, as compared to older conventional machines, which use approximately 10 gallons/load. This is equivalent to a reduction in water usage of about 70 percent. Showerheads are restricted to a maximum flow rate of 1.8 gallons per minute (gpm) whereas conventional showerheads have an average flow rate of 2.5 gpm. This results in a reduction of water usage of about 28 percent. Washing machines 20 years or older typically use 40 gallons per load versus new machines which only use 13 gallons per load for a reduction of 67.5 percent.⁸ In addition, the California Department of Water Resources (DWR) estimates that a typical residential landscape will cut water usage by 20 percent and

⁷ CalGreen, 2022. California Green Building Standards Code, Title 24, Part 11 of the California Code of Regulations. Accessed at <https://www.hcd.ca.gov/calgreen-on-March-16>, 2022.

⁸ US Environmental Protection Agency, 2022. Water Efficient Management Guide, Residential Kitchen and Laundry. Accessed at <https://www.epa.gov/sites/default/files/2017-10/documents/ws-commercialbuildings-waterscore-residential-kitchen-laundry-guide.pdf> on May 14, 2022.

commercial landscapes will cut water usage by 35 percent with compliance with the State’s Model WELO, on which the City’s adopted WELO is based.⁹

A water demand factor for the 8,900 new dwelling units was calculated based on the numbers provided in the UWMP for single-family dwellings in 2020. The total water usage in 2020 for single-family residences of 4,797 AFY was divided by the number of service connections (11,864) to get a water use factor of 0.404 AFY per dwelling unit. For this analysis, it was conservatively assumed that all future housing would be single-family residences, which results in a higher water demand than multi-family residences. The commercial land use category was used to determine the water usage with an increase in the number of jobs under the General Plan 2042. The volume of water used in 2020 in the commercial sector was 1,107 AF and there were 7,000 jobs in 2020. Therefore, the water demand factor is 0.158 AFY per employee. This equates to about 141 gallons/day/employee, which is much higher than the Merced County estimate of 40 gallons/day/employee. This is most likely due to the large food processing facilities within the City limits that use large quantities of water. Since all new residential and commercial construction will require compliance with the CalGreen Building Code and MWELo, a 20 percent reduction in water demand as compared to existing conditions was included in the calculations. This analysis also conservatively assumes that water demand for existing uses will remain the same, although it is expected that existing commercial and residential water users will replace old fixtures with newer, more efficient fixtures over time.

Existing landscape accounts used a total of 584 AF in 2020 and the existing acreage of parks in the City is 265 acres. Therefore, the irrigation demand is approximately 2.2 AF/acre. To meet the City’s ratio of 5 acres of parkland per 1,000 residents, the General Plan 2042 would need to add 100 additional acres of parkland. At 2.2 AF/acre, this would be an additional landscape irrigation demand of 220 AF.

Current water losses account for 18 percent of the total water demand. This is relatively high as compared to the average water loss of 10 percent for California water purveyors. Senate Bill 555 passed in 2015 requires the State Water Resources Control Board (SWRCB) to set standards for water loss for urban water suppliers. The Department of Water Resources (DWR) is currently in the process of developing volumetric water loss performance standards. For this analysis, it is assumed that implementation of these regulations by 2028 (or 2031 for water suppliers serving disadvantaged communities), the installation of new water pipelines with implementation of the General Plan 2042, and the replacement of older existing pipelines as part of the City’s capital improvement program would reduce the City’s water losses from 18 percent to 10 percent by the year 2042. The calculated additional water loss at the buildout year 2042 would be 351 AFY.

The projected increase in water demand with implementation of the General Plan 2042 is provided in Table 3, *Water Demand Increase – General Plan 2042*.

⁹ Department of Water Resources (DWR), 2015. Model Water Efficient Landscape Ordinance: 2015 Revision.

Table 3 Water Demand Increase - General Plan 2042

Category	Existing Conditions (AFY) ^a	Increase with GP 2042 (AFY) ^b	Total Water Demand (AFY)
Single Family Residential	5,153	2,876	8,029
Commercial	1,107	633	1,740
Landscape	584	220	804
Water Losses	1,465	351	1,816
Total	8,309	4,080	12,389

AFY = acre feet per year

a. Numbers from 2020 UWMP.

b. Includes reduction of 20 percent for new residential and commercial construction with compliance with CalGreen and MWELo requirements

Source: City of Los Banos UWMP, 2021 and PlaceWorks, 2022.

As shown in Table 3, the incremental water demand associated with buildout of the General Plan 2042 is 4,080 AFY. It is assumed that the development rate will be constant over the 20-year buildout period. Adding the incremental water demand to the existing water demand estimate provides the total water demand for the project at buildout. The existing 2020 water demand of 8,309 AFY from the UWMP plus an additional 4,080 AFY for buildout under the proposed project results in a total water demand of 12,389 AFY in 2042.

2.3.3 Proposed Project with Respect to 2020 Urban Water Management Plan

To evaluate water supply reliability, California statutes require the consideration of water supplies and demands in three types of water conditions: normal, single dry, and multiple dry water years.¹⁰ The 2020 UWMP indicates that the City can meet the water demands of its customers in normal, single dry, and multiple dry years between 2025 and 2045, as shown in Table 4, *2020 UWMP – Normal, Single Dry, and Multiple Dry Year Supply and Demand*.

Table 4 2020 UWMP - Normal, Single Dry, and Multiple Dry Year Supply and Demand (AFY)

	2025	2030	2035	2040	2045	
Normal Year						
Supply Totals	8,340	8,985	9,679	10,427	11,233	
Demand Totals	8,340	8,985	9,679	10,427	11,233	
Difference	0	0	0	0	0	
Single Dry Year						
Supply Totals	8,340	8,985	9,679	10,427	11,233	
Demand Totals	8,340	8,985	9,679	10,427	11,233	
Difference	0	0	0	0	0	
Multiple Dry Year						
First Year	Supply Totals	8,340	8,985	9,679	10,427	11,233
	Demand Totals	8,340	8,985	9,679	10,427	11,233
	Difference	0	0	0	0	0
Second Year	Supply Totals	8,340	8,985	9,679	10,427	11,233
	Demand Totals	8,340	8,985	9,679	10,427	11,233
	Difference	0	0	0	0	0

¹⁰ Department of Water Resources, 2005. *California Water Plan, Bulletin 160-05, Volume III* (“Each district has different assumptions and policies that guide their planning”).

Table 4 2020 UWMP - Normal, Single Dry, and Multiple Dry Year Supply and Demand (AFY)

		2025	2030	2035	2040	2045
Third Year	Supply Totals	8,340	8,985	9,679	10,427	11,233
	Demand Totals	8,340	8,985	9,679	10,427	11,233
	Difference	0	0	0	0	0
Fourth Year	Supply Totals	8,340	8,985	9,679	10,427	11,233
	Demand Totals	8,340	8,985	9,679	10,427	11,233
	Difference	0	0	0	0	0
Fifth Year	Supply Totals	8,340	8,985	9,679	10,427	11,233
	Demand Totals	8,340	8,985	9,679	10,427	11,233
	Difference	0	0	0	0	0

Source: City of Los Banos 2020 UWMP, 2021.

The 2020 UWMP projected water demands are based on a population growth rate of 1.5 percent, for a projected population of 59,970 people in 2042. The UWMP projects a per capita water use of 165 gallons/day. It also assumes that the water demand for the various water use sectors (i.e., single-family, commercial, landscape, and distribution system losses) would increase at the same 1.5 percent rate as the population. This would result in an estimated water demand of 10,427 AFY in 2040 and 11,233 AFY in 2045. This is interpolated to a water demand of 10,832 AFY for the buildout year of 2042.

The General Plan 2042 assumes that most of the future growth would be an increase in the number of residences. Although General Plan 2042 designates land for high-density, medium-density, and low-density residential development, for the purposes of this WSA analysis, it is conservatively assumed that all future residential growth would be in the single-family residential sector. Multi-family residences typically have a lower water demand. There also would be an increase in the number of jobs, which correlates with the commercial land use sector. For comparison purposes, the single-family and multi-family land use sector from the 2020 UWMP were combined. The difference between the projected water demand in the 2020 UWMP and the General Plan 2042 is shown in Table 5, *Comparison of 2020 UWMP Demand and Projected General Plan 2042 Demand at Buildout*. The UWMP projected demands for the years 2040 and 2045 were extrapolated to obtain water demand for the buildout year 2042.

Table 5 Comparison of 2020 UWMP Demand and Projected General Plan 2042 Demand at Buildout ^a

Category	2042 Demand Interpolated from 2020 UWMP (AFY)	Estimated Demand with GPU Buildout - 2042 (AFY)	Difference (AFY)	Percent Difference
Residential	6,717	8,029	1,312	20%
Commercial	1,443	1,740	297	21%
Landscape	762	804	42	6%
Losses	1,910	1,816	--94	-5%
Total	10,832	12,389	1,557	-

Note:

a. Units are in AFY (acre-feet per year)

Source: City of Los Banos UWMP, 2021. PlaceWorks, 2022.

As shown in Table 4, the results indicate that the General Plan 2042 water demand would exceed the demand specified in the 2020 UWMP by 1,557 AFY. Since the 2020 UWMP states that there would be exactly enough water supply to meet the demand in normal, single-dry, and multiple-dry years, the City would need to find a water supply source for the additional 1,557 AFY required with buildout of the General Plan 2042. However, it should be noted that UWMPs tend to overestimate future water demand.¹¹ In addition, there is a long-term trend of declining per capita water demand due to the use of water-efficient devices in the residential and commercial sectors, so that even as populations increase, the total water demand declines.

2.4 WATER SUPPLY

The City of Los Banos obtains its water supply solely from thirteen groundwater wells with a total pumping capacity of 14,875 gallons per minute.¹² The groundwater is extracted from the Delta-Mendota Subbasin, which is part of the larger San Joaquin Valley Basin. The Delta-Mendota Subbasin is in critical overdraft. Management of the aquifer is addressed in the 2019 *Groundwater Sustainability Plan*.¹³ This is discussed in further detail in Section 2.5, *Groundwater Analysis*.

Regarding other water supply sources, the use of recycled water is technically feasible but currently is not economically feasible. To use recycled water for outdoor landscaping and irrigation needs, the City would need to add a tertiary treatment system to the wastewater treatment plant (WWTP) and construct a “purple pipe” water distribution system. However, the City currently provides WWTP effluent for irrigation of approximately 180 acres of pastureland within the City limits and 237 acres of pastureland outside of the City limits, for a total of about 350 acres.¹⁴ According to the City’s Wastewater Master Plan, future expansion of the WWTP would expand the ability to provide effluent for irrigation to about 720 acres.

The City currently is exploring the procurement of surface water supplies. If surface water supplies are obtained, they could only be used for groundwater recharge or for non-potable uses since the City does not have a surface water treatment plant. Projects that the City intends to complete before 2025 include a new groundwater well and booster pump station, a 2.5 million-gallon storage tank, and permanent hexavalent chromium treatment facilities (if needed).

2.5 GROUNDWATER ANALYSIS

Groundwater is currently the sole source of water supply for the City of Los Banos. The Water Code requires that if groundwater is identified as an existing or planned source of water supply, then the following information must be included in the WSA:

¹¹ Pacific Institute, 2020. *An Assessment of Urban Water Demand Forecasts in California*.

¹² City of Los Banos, 2021. *2020 Urban Water Management Plan*.

¹³ San Joaquin River Exchange Contractors GSA, 2019. *Groundwater Sustainability Plan for the San Joaquin River Exchange Contractors GSP Group in the Delta-Mendota Subbasin*.

¹⁴ City of Los Banos, 2021. *2020 Urban Water Management Plan*.

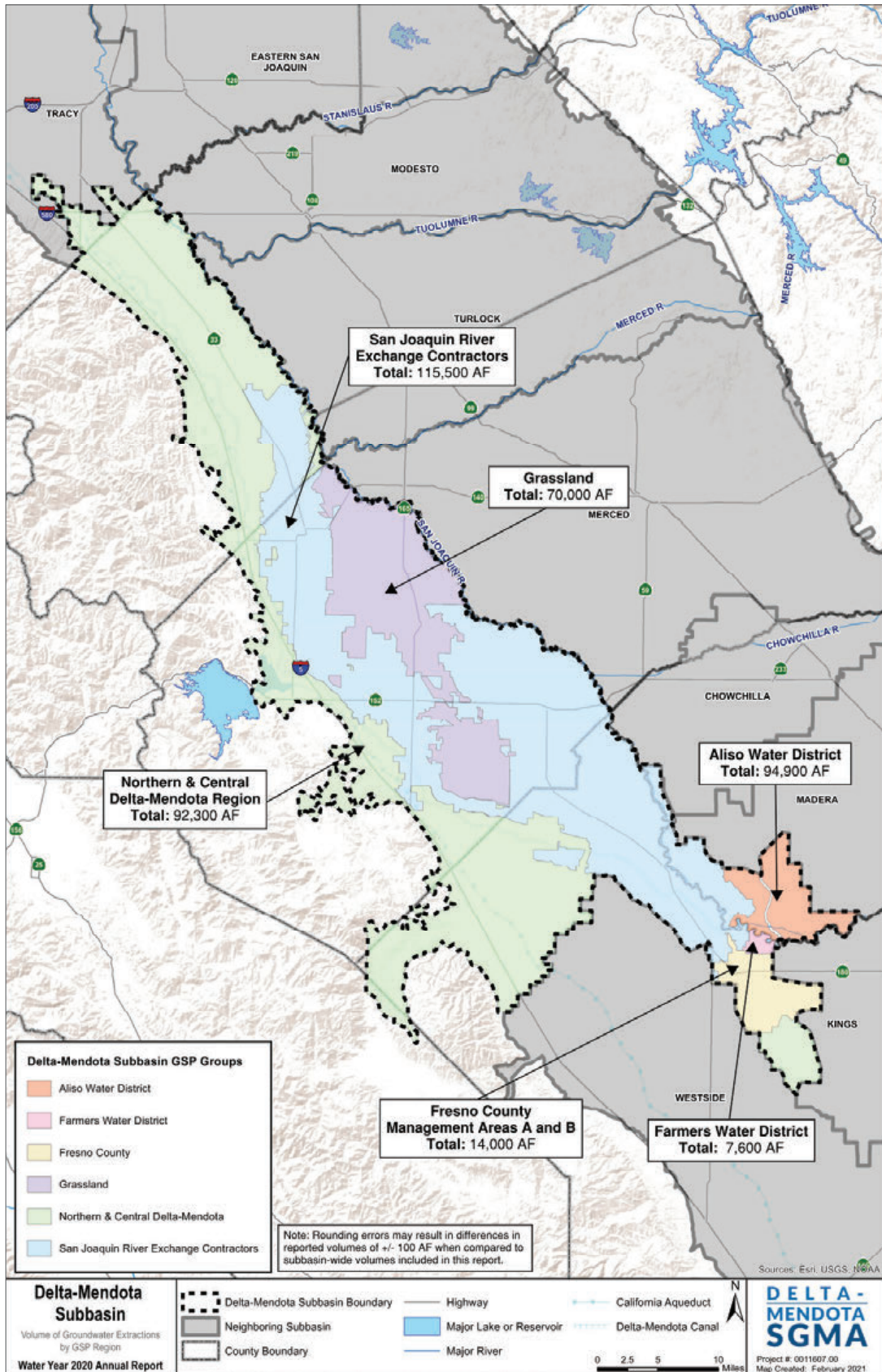
- *A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10720), or any other specific authorization for groundwater management for basins underlying the urban water supplier's service area*
- *A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For a basin that has not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition*
- *A detailed description and analysis of the location, amount, and sufficiency of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

The 2020 UWMP contains a description of the Delta-Mendota Groundwater Subbasin, the groundwater management plan, overdraft conditions, and historic groundwater pumping. The Groundwater Sustainability Plan for the Delta-Mendota Groundwater Subbasin also contains additional information. Data from these sources is summarized herein.

2.5.1 Groundwater Basin Description

The City of Los Banos obtains its groundwater from the Delta-Mendota Groundwater Subbasin, which is part of the larger San Joaquin Valley Groundwater Basin. The Delta-Mendota Subbasin is located along the western edge of the San Joaquin Valley and includes portions of San Joaquin, Stanislaus, Merced, Fresno, and Madera Counties. The subbasin is classified as a high priority basin by the DWR and is not currently adjudicated. Figure 3, *Delta-Mendota Groundwater Subbasin*, shows the location of the subbasin and the amount of groundwater extracted by the six GSP groups in Water Year (WY) 2020.

A Groundwater Sustainability Plan was prepared in 2019 by the San Joaquin River Exchange Contractors (SJREC) GSP Group. The Groundwater Sustainability Agencies (GSAs) that partnered to develop this plan included the cities of Newman, Gustine, Los Banos, Dos Palos, Firebaugh, and Mendota, Turner Island Water District, County of Madera-3, portions of Merced Country - Delta-Mendota, and portions of Fresno County – Management Area B. Detailed information regarding the basin management areas and sustainability goals is provided in the *Delta-Mendota Subbasin (5-022.07) Groundwater Sustainability Plan for San Joaquin River Exchange Contractors GSP Group*, dated December 2019. This WSA focuses on the City's role as a GSA and documents current groundwater pumping rates, potential future pumping rates with buildout of the General Plan, and the steps to meet sustainability goals for the Delta-Mendota Subbasin.



Source: Delta-Mendota Subbasin Water Year 2020 Consolidated Annual Report.



Figure 3
Delta-Mendota Groundwater Subbasin

There are two distinct aquifers within the Delta-Mendota Subbasin: an upper semi-confined aquifer and a lower confined aquifer. These two aquifers are separated by the Corcoran clay layer, which acts as an aquitard. The upper aquifer typically extends from 150 feet to about 350 feet below ground surface (bgs).¹⁵ In the vicinity of Los Banos, the Corcoran clay layer is approximately 100 feet thick, and the lower aquifer extends at least 300 feet below the clay layer. The prevailing groundwater flow is predominantly in a northeasterly direction.

Neither the Delta-Mendota Subbasin nor the San Joaquin Valley Basin have been adjudicated. The Delta-Mendota Subbasin has been identified as in critical overdraft by DWR.¹⁶ An overdraft of 37,000 acre-feet was observed in WY 2013.

The latest annual report for the Delta-Mendota Subbasin is for WY 2020 and is a consolidated report that covers the six Delta-Mendota GSPs.¹⁷ In general, groundwater elevations during WY 2020 were above their respective thresholds and all six GSP regions are on track to meet their interim goals by 2025 for groundwater levels sustainability and change in storage sustainability. Since the end of the most recent drought starting in WY 2017, groundwater elevations had largely recovered to pre-drought levels and are generally similar to or higher than WY 2012 pre-drought levels.¹⁸

Agricultural groundwater pumping is the largest water use sector by volume in the Delta-Mendota Subbasin, representing approximately 88 percent of the total groundwater extracted in WY 2020 at 347,100 AF. The San Joaquin River Exchange Contractors extracted a total of 115,500 AF in WY 2020.¹⁹ Approximately 80 percent of the extracted groundwater was for agricultural uses (92,000 AF), 12 percent was for municipal uses (17,000 AF), and about 6 percent was for industrial uses (6,500 AF). The amount of groundwater extracted by the City of Los Banos in 2020 was 8,309 AF, which is approximately 7 percent of the total amount of groundwater extracted within the San Joaquin River Exchange Contractors GSP area.

2.5.2 Historic Use of Groundwater

The City currently owns and operates 13 groundwater wells and plans to install new wells as demand increases. The amount of groundwater pumped by the City of Los Banos from the Delta-Mendota Subbasin for the past five years is listed below in Table 6, *Historic Groundwater Production*. A map of the location of the groundwater wells is shown on Figure 4, *Los Banos Water System*. Well No. 8 is out of service and has been abandoned due to elevated concentrations of uranium. The total pumping capacity of the well network is 14,875 gallons per minute (gpm).²⁰

¹⁵ Northern and Central Delta-Mendota, 2019. *Final Draft, Groundwater Sustainability Plan*. Prepared by Woodard & Curran, Provost & Pritchard Engineering Group. Dated November 2019.

¹⁶ Department of Water Resources, 2022. *Critically Overdrafted Basins*. Accessed at <https://water.ca.gov/Programs/Groundwater-Management/Bulletin-118/Critically-Overdrafted-Basins-on-May-4>, 2022.

¹⁷ Delta-Mendota SGMA, 2021. *Consolidated WY2020 Annual Report for the Delta-Mendota Subbasin*. Prepared by Woodard & Curran and Provost & Pritchard Consulting Group. Dated March 2021.

¹⁸ Annual reports for WY 2021 and 2022 are not yet available, so the impact of current drought conditions has not yet been documented.

¹⁹ Delta-Mendota SGMA, 2021. *Consolidated WY2020 Annual Report for the Delta-Mendota Subbasin. Appendix C – San Joaquin River Exchange Contractors GSP Region WY2020 Annual Report*.

²⁰ Carollo Engineers, 2010. *City of Los Banos Final Water Distribution System Master Plan*.

Table 6 Historic Groundwater Production

Year	Groundwater produced (AFY)
2016	6,622
2017	6,979
2018	7,659
2019	7,534
2020	8,309
Average	7,420

Source: City of Los Banos 2020 UWMP, 2021.

The pumping of City wells during the last five years was about 5 percent less than average pumping rate for the previous five years (2011-2015). The pumping rate in 2020 is higher than the average which is attributed to a reduction in travel outside of the City limits for work, school, and vacations due to the COVID pandemic.²¹

2.5.3 Projected Use of Groundwater

As shown in Table 3, above, complete buildout of General Plan 2042 would result in an increased water demand of 3,860 AFY for a total water demand of 12,169 AFY. The water demand would be met by pumping groundwater from the Delta-Mendota Subbasin via the City’s well network. A new groundwater well is planned for 2024 and is estimated to yield about 1,500 gpm or about 2,400 AFY. The City currently has no specific groundwater use restrictions under SGMA, but restrictions may be developed and implemented over the next few years. Water demand has not increased significantly over the past ten years even with an increase in population due to the installation of low-flow plumbing fixtures for new construction and the implementation of water conservation efforts.

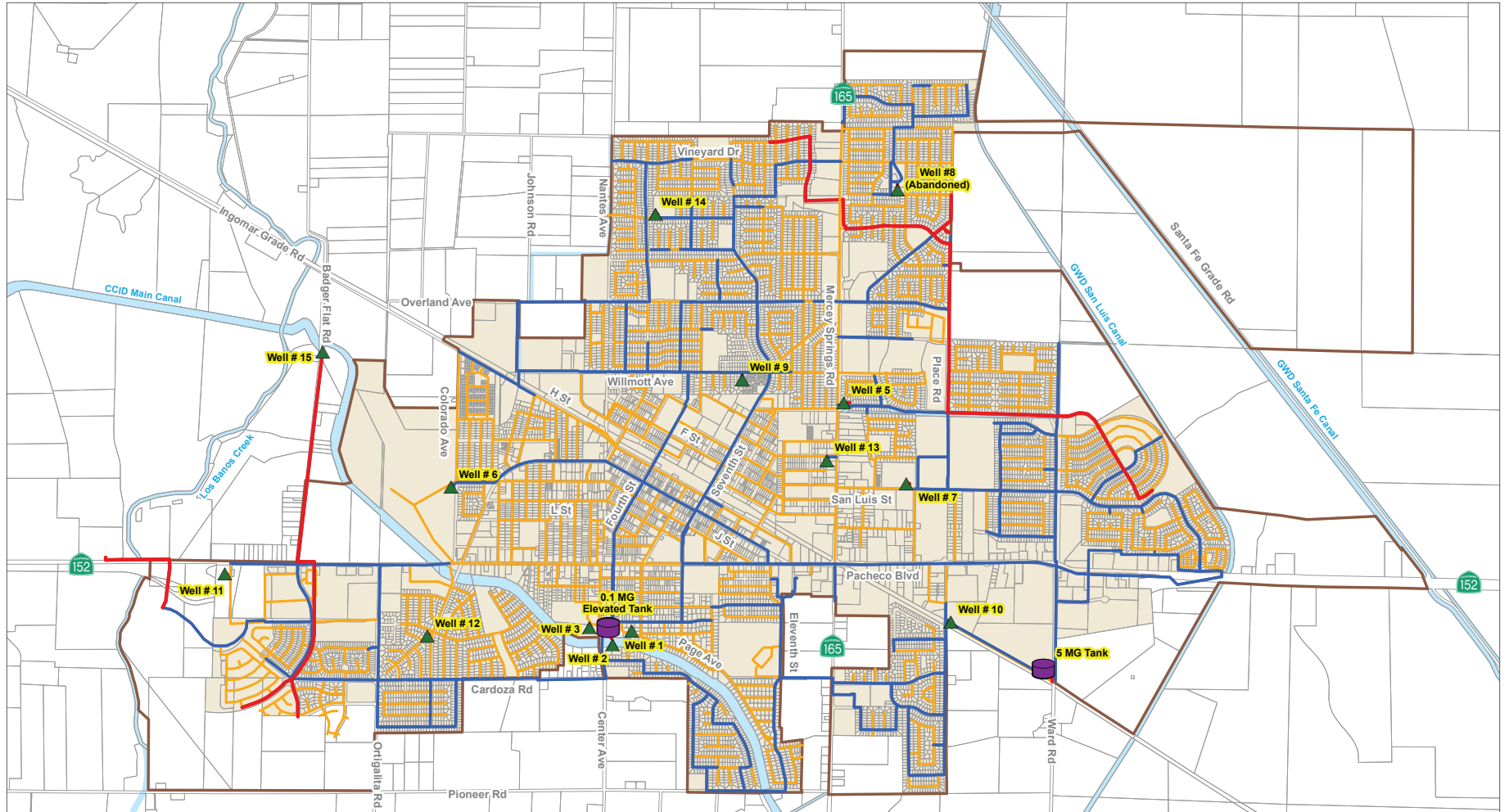
In addition, new development within the EIR Study Area would be annexed into the City and connected to the City’s expanded water distribution system. This would result in a cessation of groundwater pumping from the private wells within the EIR Study Area. Table 7, *Groundwater Pumping Rates from Private Wells Within EIR Study Area*, shows the amount of groundwater extracted by private wells over a five-year period.

Table 7 Groundwater Pumping Rates from Private Wells Within EIR Study Area

Year	Private Wells (AFY)
2012	6,058
2013	2,161
2014	5,971
2015	6,852
2016	2,789
Average	4,766

Source: Appendix S, Table 5, SJREC Groundwater Sustainability Plan, Delta-Mendota Subbasin

²¹ City of Los Banos, 2021. *2020 Urban Water Management Plan*



Source: Master Plan for Water Distribution System, March 2010. Carollo Engineers, 2010.



- | | | |
|---|--------------------------------|--|
| Legend | Water Pipeline Diameter | Current Water Distribution Service Area |
| Existing Water Distribution System | 8" and Smaller | Waterways/Canals |
| ▲ Groundwater Well | 10" - 14" | Parcels |
| ● Storage Tank | 16" and Larger | City Limits |

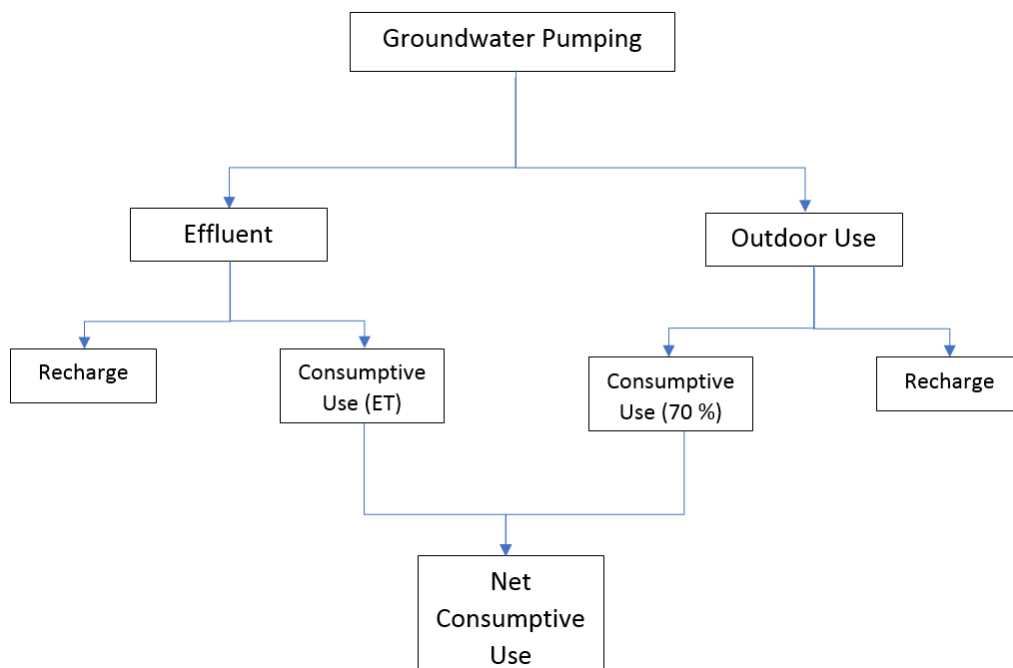
Figure 4
Los Banos Water Distribution System

As seen in Table 10, private wells within the EIR Study Area currently pump an average of 4,766 AFY of groundwater. The buildout of General Plan 2042 on this same land would replace these agricultural uses with urban uses that would generate a net increase in demand of 4,080 AFY. Therefore, if the land on which the private wells are located are converted to non-agricultural use and become connected to the City’s water distribution system, this would result in a reduction in groundwater pumping within the EIR Study Area and an additional recharge of 686 AFY to the Delta-Mendota Subbasin. Groundwater pumping from the private wells at an average of 4,766 AFY would be eliminated but there would be an increase in groundwater pumping from City wells of 4,080 AFY by 2042. This decrease in groundwater consumption from private wells would offset the increase in groundwater pumping to serve new development within the City with buildout of the General Plan 2042 and there would be a net recharge to the Delta-Mendota Subbasin.

2.5.4 Sufficiency of Groundwater from Delta-Mendota Subbasin

According to the 2020 UWMP, the City’s water supply (including conservation measures) will be sufficient to supply all its residential, commercial, and industrial customers through the year 2045 during normal, single dry, and multiple dry years. However, the UWMP assumed that the water supply would meet the demand of 11,233 AFY, whereas buildout of the General Plan 2042 would result in a demand of 12,389 AFY. Although the City’s groundwater production wells have the capability to meet this demand, the Delta-Mendota Subbasin is in critical overdraft and the SGMA states that all GSAs must meet groundwater sustainability by 2040. Therefore, a more detailed analysis is provided to ensure that the City as a GSA will meet this goal.

The methodology used for this analysis is the same as that provided in the SJREC GSP. Each GSA has a groundwater budget that was prepared to ensure that the groundwater sustainability goal is met. The water budget for the City of Los Banos includes the following components:



For groundwater pumped each year, it is assumed that half of the water is effluent and half of the water is outdoor use. The effluent is sent to the wastewater treatment plant (WWTP) and is currently used to irrigate 350 acres of pasture. The consumptive use of the pasture is approximately 3.3 AF/acre. The remainder of the effluent becomes recharge. For outdoor water use, a 70 percent irrigation efficiency is assumed to determine the consumptive use and the remainder is recharge. The current water budget for the City of Los Banos was calculated for WY 2013. The calculations for existing conditions based on the 2020 groundwater pumping rate provided in the UWMP and the buildout conditions (2042) are provided in Table 8, *Groundwater Budget*.

Table 8 Groundwater Budget (AFY)

Date	Pumping Rate	Effluent			Outdoor Use			Net Consumptive Use	Net Recharge
		Effluent	Consumptive Use	Recharge	Outdoor Use	Consumptive Use	Recharge		
2013	8,500	4,300	1,155	3,145	4,300	3,010	1,290	4,165	4,435
2020	8,309	4,155	1,155	3,000	4,155	2,908	1,246	4,063	4,246
2042	12,389	6,195	1,376 ^a	4,818	6,195	4,336	1,858	5,712	6,676

Note:

a. The consumptive use increases in 2042 because the effluent application to pasture is increased to 417 acres, as per the 2020 UWMP.

Source: SJREC, 2019, Groundwater Sustainability Plan; PlaceWorks, 2022

Although the net recharge exceeds the net consumptive use, the 2019 GSP uses a different criterion to determine sustainability. The approximate sustainable yield for the City of Los Banos GSA is 0.40 AF/acre. Since the EIR Study Area encompasses 14,500 acres, this is equivalent to 5,800 AF. The net consumptive use in 2042 is 5,712 AFY. Since the net consumptive use in 2042 is less than the sustainable yield criterion, the water budget for Los Banos meets the sustainability criterion. In addition, there is a reduction in groundwater pumping within the EIR Study area with the conversion of private groundwater wells to the City’s water distribution system. This would result in additional potential for groundwater recharge.

Specific criteria on pumping restrictions have not yet been developed for Los Banos, although it is anticipated that they will be determined over the next few years. They may mandate water conservation in certain years to achieve groundwater sustainability.

Another issue to address is the loss of farmland within the EIR Study Area and the potential impact on groundwater recharge. Complete buildout of the General Plan 2042 would result in a reduction of 5,098 acres of farmland and grazing land to non-agricultural uses. Water is currently supplied to the farmland within the EIR Study Area by CCID, which uses a combination of surface and groundwater sources, and by groundwater pumping from private wells within the area. It is assumed that the average water application rate for crops grown in the area is 3.3 AF/acre and the potential recharge rate is 0.5 AF/acre.²² Although there would be a reduction in water usage with implementation of the General Plan 2042 buildout, there would also be a resultant decrease in potential groundwater recharge from farmland. Table 9, *Conversion of Farmland Impacts on Groundwater*, provides the results of the analysis. Some of the potential recharge from agricultural irrigation may not result in deep percolation to groundwater, because excess applied water is often discharged from surface and/or subsurface agricultural drainage systems, such as tile drainage and irrigation tailwater.

²² Personal communication with Jarrett Martin, General Manager, CCID, on February 11, 2022.

Table 9 Conversion of Farmland Impacts on Groundwater

Parameter	Existing Conditions	GPU Buildout – 2042	Farmland Remaining
Acres of farmland within EIR Study Area	8,633	-5,098	3,535
Water application rate (AF/acre)	3.3	3.3	3.3
Amount of water applied (AF)	28,489	-16,823	11,666
Recharge potential (AF/acre)	0.5	0.5	0.5
Recharge amount (AF)	4,317	-2,548	1,768

Source: Delta-Mendota SGMA Consolidated WY 2020 Annual Report; personal communication – Jarett Martin, 2022; PlaceWorks, 2022.

Since much of the agricultural land within the EIR Study Area is irrigated with canal water from CCID, this water will be unavailable with buildout under the General Plan 2042 because CCID requires deannexation from the irrigation district upon the annexation of land to the City. However, CCID canal water is typically put to beneficial use elsewhere within CCID’s boundaries. Therefore, replenishment of the groundwater aquifer would occur in similar amounts but at different locations within the Delta-Mendota Subbasin.

The SJREC is working toward implementing projects that would increase groundwater recharge by 50,000 AF as described in the following projects:

- The Los Banos Creek Diversion Facility is a joint project with San Luis Water District, Grasslands Water District, and the SJREC. The project consists of diversion structures to help divert flood releases from Los Banos Creek into the Delta-Mendota Canal. The project is designed to increase groundwater recharge and storage capacity within the Los Banos Creek basin. The first phase has been completed and the second phase includes a pipeline to transfer water into Los Banos Creek Detention Dam for additional storage. The project currently provides an additional 7,000 AFY to the member agencies and provides recharge along the creek, flood protection to the City of Los Banos, and water supply for the riparian water users. The project also benefits the City of Los Banos in terms of water quality in the supply wells. The hexavalent chromium concentration dropped significantly in one City supply well near Los Banos Creek in 2017 with implementation of the project.
- The Los Banos Creek Recharge and Recovery Program will use an abandoned gravel pit and an adjacent field along Los Banos Creek between Pioneer Road and Sunset Avenue, southwest of the City of Los Banos as a recharge facility. Flood water and surface water from the SJREC entities would be delivered to the site from the CCID Outside Canal or diverted from the Los Banos Creek Diversion Facility through Los Banos Creek. The approximately 60-acre site would be able to recharge up to 4,500 AFY. During critical years, the SJREC and GSAs could extract up to 7,000 AF of stored groundwater. The recharged groundwater will help offset regional groundwater usage in the vicinity of Los Banos Creek. The operation of this facility would help achieve regional groundwater sustainability by raising groundwater levels, increasing groundwater storage, and improving groundwater quality.
- The Los Banos Creek Storage Project is another joint project with San Luis Water District, Grasslands Water District and the SJREC. The project will increase the beneficial use of the Los Banos Creek Detention Reservoir by making releases during the flood control season and provide that water to the

riparian landowners, making space available for storage. The SJREC entities would pump surface water or groundwater into the available storage space in the spring and early summer and the water would be returned to them in the summer or fall to meet peak irrigation or habitat water demands. The project would provide 8,000 AFY of water supply to the SJREC during critical years. In other years, it would be available to Grasslands Water District and San Luis Water District. A proof-of-concept project is scheduled for WY 2022 and involves the installation of a temporary pipeline and filter station to convey water from an existing San Luis Water District facility into the reservoir.

In addition to these SJREC projects, the City is actively pursuing water conservation to offset an increase in demand based on projected population growth. These efforts include: 1) stormwater capture, 2) demand reduction through reduced watering, 3) surface water transfer, 4) purchasing groundwater credits, and 5) participation in recharge projects.

In summary, there are sufficient groundwater supplies available to the City, based on the analysis provided above. There are ongoing efforts by the City to purchase surface water supplies to further reduce its reliance on groundwater resources. However, because the City does not have a water treatment plant, any future surface water supplies would be used solely for groundwater recharge or non-potable irrigation or industrial demands.

2.6 WATER SHORTAGE CONTINGENCY PLANNING

To prepare for water shortages, the City used a two-pronged approach by implementing consumption reduction measures and customer response actions to reduce water usage during drought conditions.²³ Table 10, *Mandatory Reduction Methods*, provides the reduction methods implemented by the City.

Table 10 Mandatory Reduction Methods

Reduction Method	Explanation
Expand public information campaign	Community event booths, community center banners, City and Facebook website, newspaper articles, door hanger packets, etc.
Improve customer billing	Bills include bar-graph illustrating user's water history and savings
Increase frequency of meter reading	All connections are metered
Increase water waste patrols	Daily patrol with City vehicles with "WATER PATROL" signs appended
Offer water use surveys	City offers assistance in setting sprinkler timers and water audits

Source: Appendix D, Water Shortage Contingency Plan in 2020 Los Banos UWMP

The following stages and response actions will be implemented by the City Council as necessary to respond to various drought conditions, as shown in Table 11, *Stages of Water Shortage Contingency Plan*.

²³ City of Los Banos, 2021. *Urban Water Management Plan 2020 Update for the City of Los Banos*.

Table 11 Stages of Water Shortage Contingency Plan

Stage	Water Supply Condition
Stage 1 Water Shortage	<p>The water use reduction goal during a Stage 1 Water Shortage condition is up to 10%. Upon declaration by of a Stage 1 Water Shortage condition, the following actions are prohibited:</p> <ul style="list-style-type: none"> - Minimize landscape irrigation runoff and limit overwatering when feasible. - Landscape irrigation is prohibited between the hours of 11 am and 7 pm. - Landscape irrigation is limited to specific days as per City Council direction. - Cars, trucks, and trailers can only be washed using automatic shutoff valves. - Potable water may not be used for washing hard surfaces (e.g., concrete, asphalt, etc.)
Stage 2 Water Shortage	<p>The water use reduction goal during Stage 2 Moderate Water Shortage up to 20%. In addition to the requirements for a Stage 1 Water Shortage, the following water conservation restriction shall be in effect:</p> <ul style="list-style-type: none"> - Restaurants are required to serve water only upon request. - Lodging establishments are required to provide the option to opt out of linen service.
Stage 3 Water Shortage	<p>The water use reduction goal during a Stage 3 Water Shortage condition is up to 30%. In addition to the requirements for a Stage 1 and Stage 2 Water Shortage, the following water conservation restrictions shall be in effect:</p> <ul style="list-style-type: none"> - It is prohibited to clean hardscapes with water (other than for health and safety requirements). - A mandatory irrigation conservation program will be implements (certain types of landscape irrigation will be prohibited).
Stage 4 Water Shortage	<p>The water use reduction goal during a Stage 4 Critical Water Shortage condition is up to 40%. In addition to the requirements for a Stage 1, Stage 2, and Stage 3 Water Shortage, the following water conservation restrictions shall be in effect:</p> <ul style="list-style-type: none"> - New service connections are prohibited (other than those needed for human health and safety). - The filling of artificial water features is prohibited. - A broom must be used for cleaning hard surfaces (e.g., concrete, asphalt, etc.). - Continued community outreach and awareness campaigns must be implemented. - A bucket must be used when washing outdoor furniture or vehicles to prevent water waste.
Stage 5 Water Shortage	<p>The water use reduction goal during a Stage 5 Emergency Water Shortage is up to 50%. In addition to the requirements for a Stage 1, Stage 2, Stage 3, and Stage 4 Water Shortage, the following water conservation restrictions shall be in effect:</p> <ul style="list-style-type: none"> - The filling of swimming pools is prohibited.
Stage 6 Water Shortage	<p>The water use reduction goal during a Stage 6 Catastrophic Water Shortage is more than 50%. In addition to the requirements for a Stage 1, Stage 2, Stage 3, Stage 4, and Stage 5 Water Shortage, the following water conservation restrictions shall be in effect:</p> <ul style="list-style-type: none"> - Landscape irrigation is prohibited except trees and large brush - All commercial and private washing of cars, trucks, and trailers is prohibited. - Potable water tanks may be imported into the City for use for filling stations or emergency water..

Source: Appendix D, *Water Shortage Contingency Plan*, 2020 UWMP, 2021.

Each stage has been established to reflect potential gaps between supply and demand during moderate, severe, and emergency drought conditions and supply shortages. If one stage is not successful in achieving a certain water use reduction, then the next stage will be enacted. Should the City acquire the ability to import additional surface water supply or increase the groundwater well network, then the vulnerability identified in each stage may be reevaluated.²⁴

²⁴ Provost & Protchard Consulting Group, 2021. *Urban Water Management Plan 2020 Update*.

2.7 WATER EFFICIENCY STRATEGIES

There are many water efficiency strategies that have been implemented in the City of Los Banos that would also reduce future water demand. The City's WELO adopted in 2017 applies to new construction (≥ 500 square feet) and rehabilitation projects ($\geq 2,500$ square feet) with landscaped areas. Compliance with the ordinance results in a reduction in outdoor water demand by requiring efficient landscape design, installation, management, and maintenance. In addition, large landscape water users within the City are subject to higher base water rates, depending on the meter size.

All of the water connections within the City are metered and the City encourages water conservation through its water and sewer service rate structure. The City also implements a tiered pricing structure for residential accounts where the water user pays a higher rate when exceeding the 1,500 cubic feet per month allowance. Commercial rates vary depending on the meter size.

Upon request, City personnel will perform an exterior inspection for single-family and multi-family residential customers to determine potential sources of water waste or opportunities for water conservation. In addition, the City offers water audits to all water customers, including landscape accounts, which may include irrigation scheduling assistance and information. The City also helps customers with the programming of irrigation timers. The implementation of the City's Water Conservation Patrol occurs year-round. The Water Conservation Patrol educates customers on exterior water conservation measures and informs the public how to avoid fines and other consequences of water wasting. For commercial, industrial, and institutional (CII) accounts, the City is available to conduct water audits including both interior and exterior water use. All City-maintained median strips and traffic islands are landscaped with drought-tolerant plants.

2.8 SUMMARY

A Water Supply Assessment (WSA) was prepared to assess the water demand and supply conditions with implementation of the General Plan 2042. As shown in Table 3, the increase in water demand for the proposed project is estimated to be 4,080 AFY for a total water demand of 12,389 AFY in 2042.

According to the City's UWMP, the City has adequate supplies to serve 100 percent of its customers during normal, dry year, and multiple dry year demand through 2045. The UWMP's interpolated water demand by 2042 is 10,832 AFY, which is less than the amount projected with buildout of the General Plan 2042, because the 2020 UWMP assumed a population growth rate much lower than that assumed in the 2015 UWMP. Therefore, the General Plan 2042 projected water demand would be greater than the 2020 UWMP projected demand by 1,557 AFY.

However, with buildout under General Plan 2042, land would be annexed into the City and converted from agricultural use to urban use. As seen in Table 11, if the land on which private wells are located are converted to non-agricultural use and become connected to the City's water distribution system, this would result in a reduction in groundwater pumping within the EIR Study Area and an additional recharge of 686 AFY to the Delta-Mendota Subbasin. This decrease in groundwater pumping from private wells (4,766 AFY) would offset the increase in groundwater pumping (4,080 AFY) by the City to serve new development with buildout of the

General Plan 2042. Therefore, the City should have sufficient water supplies to meet the demand under normal, single-dry, and multiple-dry years.

The City obtains all of its water supply from groundwater wells that extract from the Delta-Mendota Subbasin, which is in a state of critical overdraft. The analysis provided in Section 2.5.4 shows that the City would meet the sustainability criterion established by the SJREC GSP water budget for Los Banos with buildout of the General Plan 2042. Because there are six separate GSPs submitted for the Delta-Mendota Subbasin and each GSP uses different data and methodologies, the DWR has asked each GSP within the subbasin to coordinate efforts and use the same data and methodologies so that impacts to the Delta-Mendota Subbasin can be evaluated in a holistic manner.

Therefore, the groundwater sustainability criterion established for the City of Los Banos in the SJREC GSP may change in the future. Although the City will meet the sustainability criteria in 2042, based on the current methodology and analysis provided in this WSA, specific criteria regarding pumping restrictions may be developed over the next few years for each city that is a GSA within the Delta-Mendota Subbasin. Therefore, it is recommended that the City continue to vigorously pursue options that would reduce their reliance on groundwater supplies, such as partnering with CCID and/or Grasslands for surface water transfers, buying recharge credits, capturing stormwater, and exploring the potential for the increased use of wastewater effluent.