Proposed

Initial Study / Mitigated Negative Declaration

for the

MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project

Madera County MND# 2022-15

October 2022

COUNTY OF MADERA
CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)
INITIAL STUDY

1. PROJECT TITLE:

MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project

2. LEAD AGENCY NAME AND ADDRESS:

County of Madera
Community and Economic Development Department
200 West 4th Street, Suite 3100
Madera, California 93637

3. CONTACT PERSON AND PHONE NUMBER:

Jamie Bax
559-675-7821
Jamie.Bax@maderacounty.com

4. PROJECT LOCATION & APN:

The Project is located within County Maintenance District 10A (MD10A) along street segments throughout the unincorporated community of Madera Ranchos in Madera County, California.

5. PROJECT SPONSOR'S NAME AND ADDRESS:

Madera County (Maintenance District 10A)
200 W 4th Street
Madera, CA 93637

6. GENERAL PLAN DESIGNATION:

RR (Rural Residential)

PI (Public Institution)

VLDR (Very Low Density Residential)

PO (Professional Office)

CC (Community Commercial)

NC (Neighborhood Commercial)

OS (Open Space)

7. ZONING:

RRM/MHA (Residential, Rural, Multiple Family District/Manufactured Housing Architectural Review Overlay)

RRS/MHA (Residential Rural Single Family/ Manufactured Housing Architectural Review Overlay)

RRS-2/MHA (Residential Rural Single Family-2 Acre/Manufactured Housing Architectural Review Overlay)

IA (Institution Area District)

CRM (Commercial, Rural, Median District)

CRR (Commercial, Rural, Restricted District)

PDD (Planned Development District)

OS (Open Space)

8. DESCRIPTION OF PROJECT:

The MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project (Project) would improve the existing water distribution system within the Madera Ranchos Maintenance District 10A (MD10A) through the installation of new and replacement water distribution pipelines, water meters, and fire hydrants. The Project would install up to approximately 41.21 miles (221,760 linear feet) of pipeline primarily within existing public rights-of-way and install new meter connections to existing and additional customers within MD10A, providing water service to all 1,347 parcels within the Madera Ranchos. Figure 1, "Project Location," Figure 2, "MD10A District Boundary," and Figure 3, "Study Area," illustrate the location of the Project and alignments of new pipeline segments to be installed under the Project.

System Background and Existing Conditions

Madera County maintains and operates approximately 30 water service districts, including MD10A, which is approximately 10 miles southeast of the city of Madera. MD10A includes 1,347 lots on approximately 1,363 acres. MD10A provides water for residential and commercial services within the Madera Ranchos community. MD10A covers approximately 2.6 square miles, bounded generally by Avenue 13 on the north, Avenue 11½ on the south, Road 36 on the west, and Road 38 on the east.

In 2009, the Madera County Resource Management Agency completed a "Technical Evaluation and Rate Study for MD10A-Madera Ranchos", outlining anticipated improvements to the District's water infrastructure to improve infrastructure needs for water supply, water quality and water distribution for existing and full buildout conditions, including fire flow, compliance with drinking water regulations, and expected demand growth throughout MD10A service area.

The MD10A's water system supply consists of seven wells, although only four of them are active: Well 96-1 (Charlton Well), Well 96-2 (New Fender Well), Kensington Well, and Dublin Well. The other three wells (Old Fender, Fernwood and Sparta) are inactive due to high concentration of contaminants in the ground water. The combined production capacity of the active wells is 2,100 gpm. Water is pumped from the wells directly to the distribution system after being pressurized via hydropneumatic tanks. All wells are equipped with chlorination systems for disinfection. A treatment plant is being designed to be installed at the Berkshire Well. There are no storage tanks in the system other than the hydropneumatic tanks, but one new storage tank is planned to be constructed at the Dublin Plant site.

The existing distribution system is a network of 4-inch to 12-inch pipelines, built in several phases from 1960 to present time. The total length of existing pipelines is 78,801 feet. Piping materials are a combination of steel, PVC and asbestos-cement (AC). In additional to potable water service, fire hydrants are supplied directly from the wells. The hydrants

are placed throughout MD10A at a maximum distance of 500 feet. (am Consulting Engineers, 2021)

The MD10A distribution system has several problems that require remedial measures. Madera County is currently developing projects to improve water quality and increase water supply and water storage. In addition to these actions, the MD10A distribution system needs renovation. Many of the distribution pipelines are undersized and have severe corrosion problems, leading to the need for frequent repairs for leaks and low-pressure issues. The existing distribution mains are typically located in easements that run through customers' backyards at or near the property lines, presenting challenges for maintenance and future expansion of the water network. For that reason, the proposed new water mains would be placed along roadways, where access to the pipelines is more readily available. (am Consulting Engineers, 2021)

Frequent service interruptions caused by low pressure issues due to undersized mains and breaks of corroded pipelines diminish the quality of service that customers expect of the County. Despite the efforts to adequately disinfect and flush the water mains after a repair has been completed, water quality is being compromised at times. The main breaks in MD10A also cause large amounts of water to be lost. Water is also lost through small unidentified leaks in the distribution system due its deteriorated condition.

Proposed Project

The Project would add new water distribution pipelines to the current network to loop dead ends, improving water distribution capability and substituting deteriorated pipelines currently in service within the water system, and would provide facilities needed for water service throughout the MD10A district boundary. The Project would improve the existing water distribution system allowing delivery of drinking water that meets drinking water standards and customer expectations. The Project would also significantly reduce the amount of water losses in the system, increase its overall efficiency and deliver long-term water savings. (am Consulting Engineers, 2021)

The Project would install new water mains along different alignments than those used in the existing network. The new alignments would avoid right-of-way issues present under existing conditions by placing pipeline under existing roads and streets providing for easier access for maintenance and operation. Also, new larger water mains would be installed in some of the existing alignments to supply the required fire flow and provide a more reliable water distribution system. The Project design also seeks to eliminate dead ends and add loops to the water distribution system to improve water pressure and aid in fire flows. The Project would provide water distribution for existing and future needs of MD10A water distribution system, providing service to all 1,347 parcels within the Madera Ranchos subdivision. Water meters would be installed for all service connections.

The Project would install PVC pipes ranging from 2 to 12 inches in diameter along the alignments illustrated on Figure 3. Earthwork for Project construction would involve trench excavation, pipeline and meter installation, backfilling, compaction, asphaltic concrete paving, clean-up of work areas, and restoration of fences and other disturbances that may be necessary for construction. Construction contractors would be required to avoid and/or minimize disturbance within environmentally sensitive areas All excavations would be performed, protected, and supported as required for safety, and barriers would be placed at each end of excavations and other areas as may be necessary along excavations to warn all pedestrian and vehicular traffic of such excavations. Warning lights would be

placed along excavations from sunset each day to sunrise of the next day until such excavation is entirely refilled. No more than 500 lineal feet of trench would be excavated at any one time. Excavated trenches would be up to approximately 3 feet wide.

Temporary construction-period traffic control devices and personnel sufficient to maintain a safe and orderly flow of traffic around the construction operation would be provided. Full closure of roads undergoing work would be avoided as possible. If necessary, full road closures would be limited to a single period exceeding eight hours, although the County may allow the road to be closed more than once over the course of the Project.

For the purposes of this Initial Study evaluation, it is anticipated that construction of the Project would require up to approximately two years to complete and would occur during 2023 and 2024.

9. SURROUNDING LAND USES AND SETTING:

The Project is within a large-lot rural residential subdivision (Madera Ranchos) in an area bounded generally by Avenue 13 on the north, Avenue 11½ on the south, Road 36 on the west, and Road 38 on the east in unincorporated Madera County. Parcel sizes vary, but typical lots within the Project area are approximately 2 acres in size. Many of the parcels are developed with single-family residences while some are vacant or used for raising livestock and other rural uses.

Project pipeline alignments and meter locations are primarily within existing paved road surfaces and the ruderal or weedy roadsides adjacent to the roadway. Private properties adjacent to Project construction areas include private residences, commercial business, and undeveloped parcels.

The Project area is situated at an elevation of approximately 350 feet above mean sea level in the San Joaquin Valley. The average winter minimum temperature is 37.2 degrees Fahrenheit (˚F), and the average summer maximum temperature is 93.9˚F; the average annual precipitation is approximately 12.23 inches (NOAA 2022). Surrounding lands include orchards, vineyards, fallow farmland, a middle school and high school, and rural residences. Most of the Project disturbance area is developed and heavily impacted with residential, rural residential and commercial development with the only vegetation present being ruderal or roadside weedy vegetation. There are small areas of annual grassland vegetation that are marginally located within the Project disturbance areas.

10. OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED:

State Water Resources Control Board, Division of Financial Assistance (DFA)

State Water Board, Division of Drinking Water (DDW)

11. HAVE CALIFORNIA NATIVE AMERICAN TRIBES TRADITIONALLY AND CULTURALLY AFFILIATED WITH THE PROJECT AREA REQUESTED CONSULTATION PURSUANT TO PUBLIC RESOURCES CODE SECTION 21080.3.1? IF SO, IS THERE A PLAN FOR CONSULTATION THAT INCLUDES, FOR EXAMPLE, THE DETERMINATION OF SIGNIFICANCE OF IMPACTS TO TRIBAL CULTURAL RESOURCES, PROCEDURES REGARDING CONFIDENTIALITY, ETC.?

In accordance with Public Resources Code Section 21080.3.1, notification letters were sent to tribal representatives of California Native American tribes that have requested to be notified of projects within the Project area of Madera County. Tribal representatives

were advised of the Project and invited to request formal consultation with the County regarding the Project within 30 days of receiving the notification letters. Eight notification letters were sent to representatives of the following tribes on May 20, 2022:

- Table Mountain Rancheria
- Picayune Rancheria of the Chukchansi Indians
- Dumna Wo Wah Tribal Government
- Chowchilla Yokuts Tribe

As of the preparation of this Initial Study, more than 30 days following the County's transmittal of notification letters, no requests for consultation have been received. Section XVIII of this Initial Study provides additional discussion of tribal cultural resources and outreach.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

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

DETERMINATION (*TO BE COMPLETED BY LEAD AGENCY*)

On the basis of this initial evaluation:

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

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

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

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

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

Signed: _____ Date: _____

By: _____ Title: _____

I. AESTHETICS

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

Responses:

(a) No Impact. Project work areas would not be visible from any areas either designated as or having the characteristics of a scenic vista.

(b) No Impact. Project work areas do not contain scenic resources and are not visible from a state scenic highway.

(c) Less Than Significant. The Project area is developed with existing roads, residences, and other land uses. Project construction activities and disturbance areas would be temporarily visible along road segments within the Madera Ranchos. Project construction would not substantially degrade the existing visual quality of the area and would not conflict with zoning or other regulation associated with visual quality. Following construction, disturbed areas would be resurfaced and restored similar to their existing condition with no long-term change or reduction in visual quality.

(d) Less Than Significant. Temporary lighting associated with the Project would be limited to potential use of lighting during construction for work area safety and for traffic control devises. Such lighting, if used, would be limited to use at active work areas and would be of short duration, without the potential to result in significant lighting and glare impacts. No permanent lighting would be installed or used for the Project.

II. AGRICULTURAL AND FORESTRY RESOURCES

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

Responses:

(a) No Impact. The Project is not located on and would not impact prime, unique, or important farmland.

(b) No Impact. The Project would not affect lands subject to a Williamson Act contract and would not affect lands zoned for agricultural use.

(c-d) No Impact. The Project is not located within and would not impact forest land or forest resources.

(e) No Impact. The Project would not involve changes that could convert agricultural land or forest land to non-agricultural or non-forest land.

III. AIR QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Conflict with, or obstruct implementation of, the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

Responses:

(a and b) Less Than Significant Impact. An "Air Quality and Greenhouse Gas Assessment for the MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project" (ECORP, 2022a) was prepared in support of this Initial Study and its methods and conclusions are discussed here. (The report is included with this Initial Study as Appendix A.) Air quality impacts were assessed in accordance with methodologies recommended by the San Joaquin Valley Air Pollution Control District (SJVAPCD). Construction emissions were modeled using the California Emissions Estimator Model (CalEEMod), version 2020.4.0. CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. Project construction air pollutant emissions were calculated using CalEEMod model defaults for Madera County as well as construction phasing and timing anticipated for the Project. Post construction air pollutant emissions are addressed qualitatively as there are no stationary or mobile sources of emissions associated with the operation of the Project.

The Project region is classified as nonattainment for the federal O_3 and $PM_{2.5}$ standards and is also a nonattainment area for state O_3, $PM_{2.5}$, and PM_{10} standards (CARB 2019). The U.S. Environmental Protection Agency (EPA), under the provisions of the federal Clean Air Act (CAA), requires each state with regions that have not attained the federal air quality standards to prepare a State Implementation Plan (SIP) detailing how these standards are to be met in each local area. The SIP is a legal agreement between each state and the federal government to commit resources to improving air quality and serves as the template for conducting regional and project-level air quality analysis. California Air Resources Board (CARB) is the lead agency for developing the SIP in California. Local air districts, including the SJVAPCD, prepare air quality attainment plans or air quality management plans and submit them to CARB for review, approval, and incorporation into the applicable SIP. The air districts develop the strategies stated in the SIPs for achieving air quality standards on a regional basis.

The SJVAPCD is required, pursuant to the federal CAA, to reduce emissions of criteria pollutants for which the San Joaquin Valley Air Basin (SJVAB) is in nonattainment status. To reduce such emissions, the SJVAPCD prepared the 2007 Ozone Plan, 2013 Plan for the Revoked 1-Hour Ozone Standard, 2016 Plan for the 2008 8-Hour Ozone Standard, 2016 Moderate Area Plan for

the 2012 $PM_{2.5}$ Standard, 2020 RACT Demonstration for the 2015 8-Hour Ozone Standard, 2007 PM_{10} Maintenance Plan and Request for Re-designation, and 2018 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard. These plans collectively address the SJVAB nonattainment status with the national and state O_3 standards as well as particulate matter by establishing a program of rules and regulations directed at reducing air pollutant emissions and achieving state (California) and national air quality standards. Pollutant control strategies are based on the latest scientific and technical information and planning assumptions. SJVAPCD established thresholds of significance for criteria pollutant emissions are based on SJVAPCD New Source Review (NSR) offset requirements for stationary sources. Stationary sources in the SJVAB are subject to some of the most stringent regulatory requirements in the nation. Emission reductions achieved through implementation of SJVAPCD offset requirements are a major component of the SJVAPCD's air quality planning efforts. Thus, projects with emissions below the thresholds of significance for criteria pollutants are determined to "Not conflict or obstruct implementation of the District's air quality plan" (SJVAPCD 2015b).

Three basic sources of short-term emissions would be generated through construction of the Project: operation of the construction vehicles (e.g., tractors, dozers, backhoes), the creation of fugitive dust during excavation and backfill, and the use of asphalt or other oil-based substances during repaving activities. Activities such as excavation and grading operations, worker vehicles, and wind blowing over exposed soils would generate exhaust emissions and fugitive particulate matter emissions that affect local air quality at various times during the approximately two-year Project construction period. Effects would be variable depending on the weather, soil conditions, the amount of activity taking place, and the nature of dust control efforts. The dry climate of the area during the summer months creates a high potential for dust generation. Project construction activities would be subject to SJVAPCD Regulation VIII, which specifies the following measures to control fugitive dust:

- Apply water to unpaved surfaces and areas.
- Use nontoxic chemical or organic dust suppressants on unpaved roads and traffic areas.
- Limit or reduce vehicle speed on unpaved roads and traffic areas to a maximum 15 miles per hour.
- Maintain areas in a stabilized condition by restricting vehicle access.
- Install wind barriers.
- During high winds, cease outdoor activities that disturb the soil.
- Keep bulk materials sufficiently wet when handling.
- Store and handle materials in a three-sided structure.
- When storing bulk materials, apply water to the surface or cover the storage pile with a tarp.
- Don't overload haul trucks. Overloaded trucks are likely to spill bulk materials.
- Cover haul trucks with a tarp or other suitable cover. Or, wet the top of the load enough to limit visible dust emissions.
- Clean the interior of cargo compartments on emptied haul trucks prior to leaving a site.
- Prevent trackout by installing a trackout control device.
- Clean up trackout at least once a day. If along a busy road or highway, clean up trackout immediately.
- Monitor dust-generating activities and implement appropriate measures for maximum dust control.

Predicted emissions that would be generated during Project construction were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. Predicted annual emissions associated with Project construction for the highest emissions construction year (2023) are summarized in Table III-1. Construction-generated emissions would be short-term and of temporary duration, occurring intermittently during the construction period at various locations within the Project area. Emissions would be considered a significant air quality impact if the volume of pollutants generated exceeds the SJVAPCD's thresholds of significance. As shown in Table III-1, criteria pollutant emissions would be well below the SJVAPCD significance thresholds.

Table III-1
Unmitigated Project Construction-Generated Emissions

	Maximum Pollutants (tons per year)					
Construction Year	***ROG***	***NO_x***	***CO***	***SO_2***	***PM_{10}***	***$PM_{2.5}$***
Construction 2023	0.40	3.97	4.40	0.01	0.32	0.19
SJVAPCD Significance Threshold	10 tons/year	10 tons/year	100 tons/year	27 tons/year	15 tons/year	15 tons/year
Exceed SJVAPCD Significance Threshold	No	No	No	No	No	No

Source: ECORP, 2022a. CalEEMod version 2020.4.0.
Notes: Emission reduction/credits for construction emissions are applied based on the required implementation of SJVAPCD Regulation VIII. The specific regulation applied in CalEEMod was watering unpaved surfaces two times per day with a maximum vehicle speed of 15 mph.

In addition to the SJVAPCD criteria air pollutant thresholds, SJVAPCD Rule 9510, Indirect Source Review, aims to fulfill the SJVAPCD's emission reduction commitments in the PM_{10} and Ozone Attainment Plans and applies to certain types and sizes of construction projects within the jurisdiction of the SJVAPCD. The Project does not clearly fall within one of the construction project types identified in Rule 9510; nevertheless, an assessment was performed to identify potential emissions reductions that could be achieved for Project construction through implementation of certain emission reduction measures. Reduction measures considered in the analysis are listed below.

- All diesel-fueled construction equipment shall be California Air Resources Board (CARB) Tier 4-certified as set forth in Section 2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 of the Code of Federal Regulations.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications.
- Project construction shall comply with all applicable SJVAPCD rules and regulations.

As shown in Table III-2, with implementation of the above emissions reduction measures, Project construction NO_x and PM_{10} emissions would be reduced by 90 percent and 78 percent, respectively, achieving the Rule 9510 reduction targets for these criteria pollutants.

Table III-2
Construction Related NOx and PM_{10} Emission Reductions (tons per year)

Emissions without Reduction Measures *(tons per year)*	Emissions with Reduction Measures *(tons per year)*	Percent Reduction
NOx Emissions		
3.97	1.08	72.7%
	SJVAPCD Rule 9510 NOx Reduction Target:	20%
PM_{10} Emissions		
0.32	0.16	50.0%
	SJVAPCD Rule 9510 PM10 Reduction Target:	45%

Source: ECORP, 2022a. CalEEMod version 2020.4.0.
Notes: Emission reduction/credits for construction emissions are applied based on the required implementation of SJVAPCD Regulation VIII. The specific regulation applied in CalEEMod was watering unpaved surfaces two times per day with a maximum vehicle speed of 15 mph.

Once construction is complete, Project operations would not generate quantifiable criteria emissions. The Project would construct and use water distribution pipelines and meters as improvements to an existing water supply system and would not increase the number of residents or workers in the area and thus would not conflict with the population growth forecasts in the applicable plans.

For the reasons discussed above, the Project would not result in the potential for significant impacts associated with conflict or obstruction implementation of an applicable air quality plan or result in a cumulative considerable increase in criteria air pollutants. Although the emission reduction measures identified above are not required to reduce a significant air quality impact, this Initial Study recommends their implementation to further reduce Project construction emissions and includes the measure as recommended Mitigation Measure 1. (Mitigation measures are presented following Section XXI of this Initial Study.)

(c) Less than Significant Impact. Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers.

The nearest sensitive receptors to the Project construction areas are single-family residences located directly adjacent to the linear pipeline replacement alignment. However, it is recognized that construction activity would not be concentrated exclusively at the nearest position to any given sensitive receptor. Due to the linear nature of the Project along street segments throughout the community of Madera Ranchos, emissions would be generated from different locations over the duration of construction rather than a single location. While Project construction would be adjacent to sensitive residential receptors over the course of construction activity, construction would not occur adjacent to any specific individual single sensitive residential receptor the entire duration and would typically only be adjacent to an individual receptor for a period of a few days. Thus, since construction activities would not be concentrated exclusively at a single point and instead would occur intermittently throughout the Project area over the course of construction, a reasonable proxy distance of 820 feet between Project construction activity and any given residential receptor is considered for the purposes of health risk assessment.

Air Pollutant Health Risk

Construction of the Project would result in temporary, short-term Project-generated emissions of diesel particulate matter (DPM), ROG, NO_x, CO, and PM_{10} from the exhaust of off-road, heavy-

duty diesel equipment for site preparation/excavation (e.g., clearing, trenching); truck traffic; paving; and other miscellaneous activities. As discussed previously, the portion of the SJVAB which encompasses the Project area is designated as a nonattainment area for federal O_3 and PM_{10} standards and state O_3, $PM_{2.5}$ and PM_{10} standards. Thus, existing O_3, $PM_{2.5}$ and PM_{10} levels in the SJVAB are at unhealthy levels during certain periods; however, as shown in Table III-1, above, the Project would not exceed the SJVAPCD significance thresholds for construction emissions indicating that the Project would not have a significant effect on health risk associated with criteria pollutants.

The SJVAPCD Prioritization Calculator health risk screening tool was used for this analysis to assess the potential health risk-related effects of Project construction. The SJVAPCD Prioritization Calculator identifies a prioritization score based on the Project emission potency at the vicinity sensitive residential receptors. A prioritization score of 10 or greater, as determined by the screening protocol, would be considered potentially significant indicating that a detailed Health Risk Assessment (HRA) should be performed.

In addition to cancer risk, the significance thresholds for exposure to toxic air contaminants (TACs) requires an evaluation of noncancer risk stated in terms of a hazard index. A chronic hazard index of 1.0 would be considered individually significant. There is no acute health hazard for diesel particulate matter (DPM), which is the only significant air toxic associated with construction for this Project. Thus, the maximum acute index for construction of the Project is zero.

The calculated carcinogenic risk and highest maximum chronic hazard indexes at the nearby sensitive residential receptors due to Project construction using the Prioritization Calculator screening tool is presented in Table III-3. As shown in the table, impacts related to cancer risk and non-cancer risk (chronic and acute hazard indices) associated with Project construction would not exceed the screening thresholds at nearby sensitive residential receptors. Therefore, Project construction would not result in a potentially significant contribution to regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants.

Table III-3
Unmitigated Project Construction-Generated Emissions

Exposure Scenario	Maximum Cancer Risk at Residence	Maximum Chronic Hazard Index at Residence	Maximum Acute Hazard Index at Residence
Project Construction	3.70	0.02	0.00
SJVAPCD Screening Threshold	10.0	1.0	1.0
Exceed SJVAPCD Screening Threshold	No	No	No

Source: ECORP, 2022a.

Valley Fever

Coccidioidomycosis (CM), also referred to as San Joaquin Valley Fever or Valley Fever, is a fungal infection that most commonly affects people who live in hot dry areas with alkaline soil. The disease, which affects both humans and animals, is caused by inhalation of arthroconidia (spores) of the fungus *Coccidioides immitis* (CI). CI spores are found in the top few inches of soil and the existence of the fungus in most soil areas is temporary. In about 50 to 75 percent of

people, valley fever causes either no symptoms or mild symptoms and those infected never seek medical care; when symptoms are more pronounced, they usually present as lung problems (cough, shortness of breath, sputum production, fever, and chest pains). The disease can progress to chronic or progressive lung disease and may even become disseminated to the skin, lining tissue of the brain (meninges), skeleton, and other body areas. Madera County is considered a highly endemic area for valley fever. When soil containing this fungus is disturbed by ground-disturbing activities such as digging or grading, by vehicles raising dust, or by the wind, the fungal spores can become airborne. When people breathe the spores into their lungs, they are at risk of infection.

The potential for exposure and infection from Valley Fever during ground-disturbing activities can and would be reduced through control of fugitive dust emissions during Project construction. As discussed above, Project-generated dust would be controlled by adhering to SJVAPCD fugitive dust control measures pursuant to Regulation VIII and implementation of fugitive dust control measures before, during, and after any dust-generating activity. With the minimal site grading associated with the Project and required conformance with SJVAPCD Regulation VIII, dust from the construction of the Project would not add significantly to the existing exposure level of people to this fungus, including construction workers, and this impact is considered less than significant.

Naturally Occurring Asbestos

The Project is not located within an area designated by the State of California as likely to contain naturally occurring asbestos (Department of Conservation [DOC] 2000) and construction activities would not be anticipated to result in increased exposure of sensitive land uses to naturally occurring asbestos.

(d) No Impact. During construction, the Project would present a limited potential for generation of objectionable odors during construction in the form of diesel exhaust in the immediate vicinity of the site and associated with asphaltic concrete paving for resurfacing disturbed road areas. However, these emissions would be temporary and would rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Any such odors would be localized and generally confined to Project work areas and immediately adjacent areas during the short duration of activities in a particular work area. Therefore, odors generated during Project construction would not adversely expose a substantial number of people to odor emissions.

IV. BIOLOGICAL RESOURCES

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

To support this Initial Study, a "Biological Resources Assessment (BRA) for the MD10A Water Tank Storage Project" (ECORP, 2022b) was prepared and is included as Appendix B. The BRA assesses the potential for occurrence of special-status plant and animal species or their habitats, and sensitive habitats such as wetlands, riparian communities, and sensitive natural communities within the Project site and adjacent areas. The assessment includes information generated from literature review and an assessment-level reconnaissance site visit.

Most of the Project study area is developed and heavily impacted with residential, rural residential and commercial development with the only vegetation present being ruderal or roadside weedy vegetation. There are small areas of annual grassland vegetation that are marginally located within the Project study area. This vegetation community is dominated by nonnative grasses. Raccoon Creek, which meanders from east to west through the southern portion of the study area, supports wetland plant species that are commonly found in a seasonal wetland swale. Developed areas support weedy roadside vegetation, hedgerows of shrubs and windrows of trees, or well-manicured landscaping ranging from unvegetated xeriscaping to lawns, shrubs, and trees. The study area lacks any significant wildlife habitat elements such as aquatic habitat,

emergent wetlands, or woodlands. Wildlife observed onsite during the reconnaissance site visit included mourning dove (*Zenaida macroura*), Eurasian collared-dove (*Streptopelia decaocto*), western kingbird (*Tyrannus verticalis*), California ground squirrel (*Otospermophilus beecheyi*), and gray fox (*Urocyon cinereoargenteus*). The study area is not located within an area mapped in the Essential Habitat Connectivity Project (Spencer et al. 2010). (ECORP, 2022b)

A preliminary aquatic resources assessment was performed as part of the BRA to identify potential Waters of the U.S./State concurrent with the BRA site visit. Aquatic resources identified as present in the study area included wetlands associated with Racoon Creek, which is geomorphologically a seasonal swale that lacks a distinct ordinary high-water mark (OHWM) and supports uplands interspersed with pockets of wetlands in low-lying areas where seasonal rainfall can form pools. The study area contains four areas composing a total of 0.003 acre (130.9 square feet) of potential Waters of the U.S. and/or Waters of the State, as illustrated on Figures 4a through 4d, "Potential Aquatic Resources Areas" 1 through 4. As most of the study area is heavily impacted and has been leveled, developed, and historically farmed, there are no other wetland features present. (ECORP, 2022b)

Four sensitive natural communities were identified as having the potential to occur within or in the vicinity of the study area based on the literature review; however, upon further analysis and after field review, it was concluded that no sensitive natural communities are present within the study area. (ECORP, 2022b)

Associated with the BRA, nineteen special-status plant species were identified as potentially occurring in the study area based on the initial literature review and database queries. With further analysis and field review, 14 of these species are considered absent due to a lack of suitable habitat within the study area. The following five special-status plants are considered to have low potential to occur due to the presence of marginally suitable habitat and the disturbed/developed nature of the study area: succulent owl's clover (*Castilleja campestris* ssp*. succulenta*), dwarf downingia (*Downingia pusilla*), spiny-sepaled button-celery (*Eryngium spinosepalum*), Pincushion navarretia (*Navarretia myersii* ssp*. myersii*), and shining navarretia (*Navarretia nigelliformis* ssp*. radians*).

No special-status invertebrates, fish, or reptile species were identified through the BRA as having the potential to occur within the study area. The following two special-status amphibian species, six special-status bird species, and two special-status mammal species were identified as having the potential to occur within the study area: amphibians - western spadefoot (*Spea hammondii*) and Central Valley District Population Segment [DPS] of California tiger salamander (*Ambystoma californiense*); birds - white-tailed kite (*Elanus leucurus*), Cooper's hawk (*Accipiter cooperii*), Swainson's hawk (*Buteo swainsoni*), Nuttall's woodpecker (*Dryobates nuttallii*), yellow-billed magpie (*Pica nuttalli*), and oak titmouse (*Baeolophus inornatus*); and mammals - pallid bat (*Antrozous pallidus*) and hoary bat (*Lasiurus cinereus*).

Responses:

(a) Less than Significant Impact with Mitigation.

No special-status species are known to occur within the Project biological resources study area; however, protocol-level surveys of special-status plant and animal surveys have not been conducted and therefore this analysis considers the potential for certain species to be present. The study area supports potential habitat for special-status species within the potential impact area as discussed below.

Special-Status Plants

As discussed above, five special-status plants are considered to have low potential to occur due to the presence of marginally suitable habitat and the disturbed/developed nature of the study area (succulent owl's clover, dwarf downingia, spiny-sepaled button-celery, Pincushion navarretia, and shining navarretia). Project implementation could permanently remove or alter marginally suitable or suitable potential habitat for these special-status plant species and if special-status plant populations occur onsite they could be directly or indirectly impacted by Project construction activities. Mitigation Measures 2 and 3 provide measures to minimize potential impacts on biological resources during construction and Mitigation Measure 4 provides additional measures to avoid, minimize, and address potential impacts on special-status plant species. With implementation of these measures, the Project is not expected to significantly impact special-status plants. (Mitigation measures are presented following Section XXI of this Initial Study.)

Special-Status Amphibians

As discussed above, two special-status amphibian species are identified as having the potential to occur within the Project study area (western spadefoot and California tiger salamander). Project development could permanently remove or alter suitable potential habitat for special-status amphibians, and if special-status amphibians were to occur onsite they could be directly or indirectly impacted during construction. Mitigation Measures 2 and 3 provide measures to minimize potential impacts on biological resources during construction. Mitigation Measure 5 provides additional measures to avoid, minimize, and address potential impacts on western spadefoot and Mitigation Measure 6 provides additional measures to avoid, minimize, and address potential impacts on California tiger salamander. With implementation of these measures, the Project is not expected to significantly impact special-status amphibians. (Mitigation measures are presented following Section XXI of this Initial Study.)

Special-Status and Other Protected Birds

As discussed above, there is potential nesting habitat for one state-listed bird species (Swainson's hawk) in the study area, and there is low potential or potential for five non-listed special-status bird species and a variety of other non-listed birds that are protected under the MBTA and the California Fish and Game Code to occur onsite (white-tailed kite, Cooper's hawk, Nuttall's woodpecker, yellow-billed magpie, and oak titmouse). Project development could permanently remove or alter suitable nesting habitat for these bird species and if active nests occur within construction disturbance areas the species could be directly or indirectly impacted during construction. Mitigation Measures 2 and 3 provide measures to minimize potential impacts on biological resources during construction. Mitigation Measure 7 provides additional measures to avoid, minimize, and address potential impacts on special-status and other protected bird species. With implementation of these measures, the Project is not expected to significantly impact special-status and other protected birds. (Mitigation measures are presented following Section XXI of this Initial Study.)

Special-Status Mammals

As discussed above, there is marginal roosting habitat for two special-status bat species in the study area (pallid bat and hoary bat). Project development could permanently remove or alter suitable potential roosting habitat for special-status bats, and if special-status bats occur onsite they could be directly or indirectly impacted by the Project. Mitigation Measures 2 and 3 provide measures to minimize potential impacts on biological resources during construction. Mitigation

Measure 8 provides additional measures to avoid, minimize, and address potential impacts on special-status bat species. With implementation of these measures, the Project is not expected to significantly impact special-status bats. (Mitigation measures are presented following Section XXI of this Initial Study.)

(b) No Impact. The study area is developed and supports weedy ruderal and nonnative annual grassland habitat. There are no sensitive natural communities as defined by CDFW, and there is no riparian habitat. Therefore, the Project would not impact riparian habitat or sensitive natural communities.

(c) Less than Significant Impact with Mitigation. As discussed above, a preliminary aquatic resources assessment was performed as part of the BRA to identify potential Waters of the U.S./State concurrent with the BRA site visit. Aquatic resources identified as present in the study area included wetlands associated with Racoon Creek, which is geomorphologically a seasonal swale that lacks a distinct OHWM and supports uplands interspersed with pockets of wetlands in low-lying areas where seasonal rainfall can form pools. The study area contains four areas composing a total of 0.003 acre (130.9 square feet) of potential Waters of the U.S. and/or Waters of the State, as shown on Figures 4a through 4d. Depending on final pipeline alignment within the portions of the study area where these four aquatic features are located, Project construction would have the potential to result in fill of portions of one or more of these aquatic features. Mitigation Measures 2 and 3 provide measures to minimize potential impacts on biological resources during construction, including provisions to protect water quality. Mitigation Measure 9 provides additional measures to avoid, minimize, and address potential impacts on aquatic resources. Implementation of these measures would reduce this potential impact to less than significant. (Mitigation measures are presented following Section XXI of this Initial Study.)

(d) No Impact. The study area provides limited migratory opportunities for terrestrial wildlife because of the developed nature of the study area and surrounding lands and the absence of significant wildlife habitat elements. Project construction is likely to temporarily disturb and displace some wildlife from the vicinity of the study area. Some wildlife such as birds or nocturnal species are likely to continue to use the habitats opportunistically for the duration of construction. Once construction is complete, wildlife movements are expected to be unaffected as compared to existing conditions. The Project is not expected to substantially interfere with wildlife movement. There are no documented nursery sites, and no nursery sites were observed within the study area during the site reconnaissance. Therefore, the Project is not expected to impact wildlife nursery sites.

(e) No Impact. The Project would not conflict with local policies or ordinances protecting biological resources.

(f) No Impact. The study area is not covered by any local, regional, or state conservation plan. Therefore, the Project would not conflict with a local, regional, or state conservation plan. There would be no impact.

V. CULTURAL RESOURCES

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

Responses:

(a−c) Less than Significant Impact with Mitigation. To support preparation of this Initial Study, a Cultural Resources Inventory Report (ECORP, 2022c) was prepared to assess the potential presence of historical and archaeological resources in the Project study area. The inventory report is considered confidential and is not included as an appendix to this Initial Study; however, the report's methods and findings are summarized here. The analysis determined that, with mitigation to address the potential inadvertent discovery of archeological resources, the Project would not result in a significant impact to historical or archeological resources.

The records search included the Project site plus a 0.5-mile radius based on information obtained through a request to the Southern San Joaquin Valley Information Center (SSJVIC) of the CHRIS at California State University-Bakersfield on April 7, 2022 (SSJVIC search #22-150). The records search determined that one previously recorded historic-era cultural resource is located within 1 mile of the Project study area but that no previously recorded cultural resources area within the study area. No pre-contact resources have been identified within 1 mile of the study area.

The California Native American Heritage Commission (NAHC) was contacted on April 7, 2022, to request a search of the Sacred Lands File to determine if any California Native American tribes have recorded Sacred Lands within the study area. Letters were also mailed to the Madera County Historical Society on April 7, 2022, to solicit comments or obtain historical information that may be available in the repository regarding events, people, or resources of historical significance in the area. A search of the Sacred Lands File by the NAHC failed to indicate the presence of Native American cultural resources in the Project area. Follow up phone calls to tribal representatives were completed by ECORP on August 4, 2022. No responses to the follow-up letters or phone calls or emails to individual tribal entities were received as of the completion of the ECORP Historic Properties Identification Report in August 2022.

ECORP conducted an intensive pedestrian survey of the area of potential effect on June 29 and 30, 2022, under the guidance of the Secretary of the Interior's Standards for the Identification of Historic Properties (NPS 1983). The Project study area for the cultural resources review included the area within which Project construction activities would take place and consisted of the proposed pipeline alignments with a 20-foot-wide study area along the alignments and other Project feature locations. Portions of the study area within the public right-of-way were visited and inspected during the pedestrian survey and adjacent areas within private property portions of the study area were observed from the public right-of-way. The Project area is mostly comprised of paved roads and landscaped residential front yards, however, ECORP examined the ground

surface for indications of surface or subsurface cultural resources. The general morphological characteristics of the ground surface were inspected for indications of subsurface deposits that may be manifested on the surface, such as circular depressions or ditches. Whenever possible, the locations of subsurface exposures caused by such factors as rodent activity, water or soil erosion, or vegetation disturbances were examined for artifacts or for indications of buried deposits. Almost all of the surveyed areas were disturbed in some manner. Landscaping and gravels were prevalent along the roadways within the study area. (ECORP, 2022c)

Madera Ranchos Roads

There are no cultural resources previously recorded within the Project area; however, ECORP architectural historians determined through archival research that roads within Madera Ranchos are historic in age and identified six groups of roads (derived from six plat maps filed at the Madera County Recorder's Office between 1958 and 1962) that were then further evaluated by ECORP for potential significance as historic resources. ECORP recorded the six groups of roads and prepared resource descriptions, evaluations, and confidential DPR 523 records for the road groups (records are provided in the Historic Properties Identification Report [ECORP, 2022c]).

ECORP (2022c) evaluated the road groups for eligibility under National Register of Historic Places (NRHP) Criterion A through D and California Register of Historic Resources (CRHR) Criterion 1 through 4, and concluded that none of the road groups meet the eligibility criteria for inclusion on the NRHP or CRHR either as an individual resource or as a contributing element to any known or suspected district. Therefore, none of the roads or road groups are considered Historical Resources as defined by CEQA or Historic Properties under Section 106 of the NHPA.

Potential for Inadvertent Discovery

Although no significant cultural resources are known to be present within study area, there is a low potential for pre-contact archaeological sites to be present within the Project area that could be disturbed during construction. Also, while no cultural resources or human remains are known to be present within Project site, the excavations needed for installing Project components would have the potential to unearth previously unknown resources. Mitigation Measure 10 requires that any unanticipated discoveries during Project construction be managed through a procedure designed to assess and treat the find as quickly as possible and in accordance with applicable state and federal laws and would reduce potential adverse impacts to less than significant. (Mitigation measures are presented following Section XXI of this Initial Study.)

VI. ENERGY

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

Responses:

(a) No Impact. No wasteful, inefficient, or unnecessary consumption of energy resources is reasonably anticipated to occur during construction or operations. Construction of Project facilities would limit excavation and disturbance activities to the areas immediately necessary to accommodate pipeline and meter installation and would minimize the amount of energy/fuel needed for installation of project components and restoration of work areas. By improving the water distribution system, including reducing water loss that occurs with the existing distribution system, the Project would improve efficiency associated with energy used for groundwater pumping and distribution, resulting in a beneficial effect associated with energy conservation.

(b) No Impact. The Project would not conflict with or obstruct a state or local renewable energy or energy efficiency plan.

VII. GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zone Map issued by the State Geologist for the area, or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geological unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Responses:

(a) No Impact. Project pipeline and meter installation would be within trenches backfilled and compacted to meet specific design specifications. In the unlikely event of a seismic-related pipeline rupture, water discharge would be minimized through system controls and would not result in substantial risk of upset associated with seismic events, subsidence, or landslides.

(b) No Impact. The Project area is generally flat and much of the work areas would be within paved road rights of way. Stormwater runoff from work areas would be managed to avoid the potential for substantial erosion in drainage areas, and the Project would not result potential for substantial erosion or loss of topsoil.

(c-d) No Impact. According to the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Web Soil Survey website (NRCS 2022), the following soils types

are located within the a Project site: AtA (Atwater loamy sand, MLRA 17); AtB (Atwater loamy sand, MLRA 17); AwA (Atwater Loamy Sand); AwB (Atwater Loamy Sand); HgA (Hanford Sandy Loam); RaA (Ramona Sandy Loam); RaB (Ramona sandy loam); SaA (San Joaquin Sandy Loam, MLRA 17); SbA (San Joaquin-Alamo complex); TuB (Trigo fine sandy loam); WfB (Whitney Fine Sandy Loam); and WrB (Whitney and Rocklin sandy loams). No potential for impacts associated with on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse is anticipated. Trench excavation and backfill compaction specifications would be sufficient to minimize the potential for damage to Project components from expansive soils.

(e) No Impact. The Project does not involve the installation or use of septic tanks or other wastewater disposal system. Construction contractors would be required to provide portable toilets for construction personnel. No restroom facilities are located at the site, and none are proposed or necessary for the Project.

(f) Less than Significant Impact with Mitigation. No unique paleontological or unique geological resources are known to be present within the Project site. While no such resources are known to be present, excavations needed for installing Project components (e.g., pipes and meters) in alluvium underlying the site would have the potential to unearth previously unknown unique paleontological resources. Mitigation Measure 11 requires that any unanticipated fossil or other potential paleontological resource discoveries during Project construction be managed through a procedure designed to assess and treat the find as quickly as possible and would reduce potential adverse impacts to less than significant. (Mitigation measures are presented following Section XXI of this Initial Study.)

VIII. GREENHOUSE GAS EMISSIONS

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

Responses:

(a) Less than Significant Impact. Construction of the Project would generate GHG emissions from worker commute trips, haul trucks carrying supplies and materials to and from the Project work areas, and off-road construction equipment (e.g., excavators, graders). GHG emissions associated with Project construction were assessed in the "Air Quality and Greenhouse Gas Assessment for the MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project" (ECORP, 2022a) report prepared in support of this Initial Study and included as Appendix A. Table VIII-1 summarizes estimated GHG emissions that would result from construction of the Project. As shown in Table VIII-1, the Project the Project's annual CO_2e emissions during the two years of Project construction is anticipated to be below the CAPCOA potentially significant impact threshold of 900 metric tons of CO_2e annually. Once construction is complete, the generation of these GHG emissions would cease and the Project would not result in long-term GHG emissions. For these reasons, the Project impact associated with GHG emissions would not have a significant impact on the environment.

Table VIII-1
Construction-Related GHG Emissions

Emission Source	CO_2e (metric tons per year)
Project Construction 2023	898
Project Construction 2024	895
CAPCOA's Potentially Significant Impact Threshold	*900*
Exceed CAPCOA Threshold?	No

Source: ECORP, 2022a. CalEEMod version 202.4.0.

(b) No Impact. The Project would not conflict with any applicable plan, policy, or regulation adopted by the County for the purpose of reducing GHG emissions. The State of California promulgates several mandates and goals to reduce statewide GHG emissions, including the goal to reduce statewide GHG emissions to 40 percent below 1990 levels by the year 2030 (SB 32). Temporary Project-related GHG emissions during construction would not exceed GHG significance thresholds developed in consideration of statewide greenhouse reduction goals. Furthermore, the Project would not include new permanent sources of GHG emissions and would not generate new or unplanned permanent GHG emissions. Therefore, the Project would not conflict with an applicable plan, policy, or regulation associated with GHG emissions reduction.

IX. HAZARDS AND HAZARDOUS MATERIALS

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

Responses:

(a and b) Less Than Significant Impact. Project construction would require the use of fuels and lubricants for operation of construction equipment and vehicles. All such use would be done in compliance with local, state, and federal management, transport, and disposal requirements. The Project would not create the potential for substantial risk or upset of conditions associated with the use of hazardous materials.

(c) No Impact. Project construction activities would periodically occur within 0.25 miles of school sites located within and adjacent to the Madera Ranchos community and MD10A. However, with the exception of fuels and lubricants used for Project construction vehicles and equipment, no use or handling of hazardous or acutely hazardous materials or substances is anticipated in conjunction with Project construction.

(d) No Impact. The Project is not located in an area included on a list of hazardous materials sites.

(e) No Impact. The Project site is not located within 2 miles of an airport or airstrip.

(f) No Impact. Project construction activities would involve work within public roads. Construction contractors would be required to implement provisions to ensure access to emergency facilities and access for emergency vehicles during the construction period. Thus, the Project would not impair or interfere with emergency response or an emergency response plan.

(g) Less than Significant Impact. Project construction activities would occur primarily within public road rights-of-way with limited potential for inadvertent/accidental ignition of fires. Potential fire ignition risks during construction would be minimized through construction procedures and specifications of the construction documents, including requirements for the contractor to maintain construction storage areas in clean and fire safe manner. Following completion of the Project, the improved water distribution system and fire hydrants provided by the Project would have a long-term beneficial contribution to available water distribution and emergency response capabilities in the event of a local fire.

X. HYDROLOGY AND WATER QUALITY

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

Responses:

(a) No Impact. Project construction provisions would implement best management practices (BMPs) for controlling stormwater runoff and limiting the potential for erosion and sediment runoff from disturbed areas. Following construction, the Project water system improvements would convey potable water and would not have the potential to degrade surface or groundwater quality.

(b) No Impact. The Project would not require increased groundwater pumping or groundwater consumption. The Project improvements to the MD10A water distribution system would reduce water loss that occurs with the existing system. Although the Project would provide for additional service connections within the MD10A service area, the Project does not authorize development and would relieve the use of private wells within the MD10A district boundary. Thus, the Project would not increase the amount of groundwater pumped or consumed within the MD10A service area, nor would the Project have the potential to impede groundwater management.

(c) No Impact. Project construction provisions would implement best management practices (BMPs) for controlling stormwater runoff and limiting the potential for erosion and sediment runoff from disturbed areas, and stormwater discharges would be subject to the provisions of a construction stormwater pollution prevention plan (SWPPP). Such discharges would not have the potential to result in substantial erosion or siltation, substantially increase the rate or amount of surface water runoff in a manner that could result in flooding, cause polluted runoff, or impede or redirect flood flows.

(d) No Impact. The Project is not located in a flood hazard, tsunami, or seiche zone, and would not have the potential to release pollutants from flooding.

(e) No Impact. The Project installation of water distribution pipes and meters would not increase groundwater pumping or use and would not have the potential to obstruct implementation of a water quality control plan (see “c” above regarding water quality). Once completed, the Project would provide for more efficient conveyance of potable water within the MD10A service area.

XI. LAND USE AND PLANNING

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

Responses:

(a) No Impact. The Project would involve the installation of underground water distribution pipes and meters and would not have the potential to physically divide an established community.

(b) No Impact. The Project would develop water distribution facilities necessary for and consistent with land uses and land use and zoning within the Project area. The Project would not conflict with the County General Plan, zoning, or other land use plan or policies associated with avoiding or mitigating an environmental effect.

XII. MINERAL RESOURCES

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

Responses:

(a and b) No Impact. The Project is located within an established residential community with no feasible potential for mineral resources extraction. The Project is not within an area identified as a locally important mineral resource recovery site in a local plan.

XIII. NOISE

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

Responses:

(a and b) Less than Significant Impact. Project construction would require the operation of mechanical equipment and vehicles that would generate noise and groundborne vibration typical of construction activities. Construction contract provisions would require that noise construction vehicles and equipment be fitted with noise suppression mufflers. Construction noise would be limited to daytime periods and the approximately two-year construction period with active construction areas of limited duration throughout the MD10A service area. Following construction, operation and use of the improved water distribution system would not generate noise.

(c) No Impact. The Project site is not located within two miles of an airport or within the vicinity of a private airstrip.

XIV. POPULATION AND HOUSING

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

Responses:

(a) No Impact. The Project would provide for improved water distribution for continued water service to existing and planned uses and the Project would not increase water supply in a manner that would result in unplanned population growth either directly or indirectly.

(b) No Impact. The Project would not displace housing or people.

XV. PUBLIC SERVICES

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

Responses:

(a) No Impact. The Project would not increase public service requirements and would not result in the potential need for expanded public facilities.

XVI. RECREATION

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

Responses:

(a and b) No Impact. The Project would not directly or indirectly increase the use of existing parks or recreation facilities and would not result in expansion or new recreational facilities.

XVII. TRANSPORTATION

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

Responses:

(a) No Impact. The Project does not involve activities, vehicle trips, or physical changes that would have the potential to conflict with local plans or policies pertaining to vehicle, bicycle, pedestrian, or transit circulation or facilities.

(b) No Impact. The Project would involve vehicle trips during the construction period for worker access and delivery of equipment and materials. Construction-related vehicle trips would not create the potential for conflicting with CEQA Guidelines section 15064.3 pertaining to vehicle miles traveled. Long-term maintenance and operation of the water distribution system would require minimal vehicle trips and would not have the potential to conflict with CEQA Guidelines section 15064.3 pertaining to vehicle miles traveled.

(c) Less than Significant. Project construction would involve temporary work activities within public roads. Traffic controls would be implemented to provide for safe use of roads by the public and emergency vehicle access. Roads would be restored to their original or improved condition, and the Project would not permanently alter any roadways or create incompatible uses.

(d) Less than Significant. Project construction activities would involve work within public roads. Construction contractors would be required to implement provisions to ensure access to emergency facilities and access for emergency vehicles during the construction period. Thus, the Project would not impair or interfere with emergency response or an emergency response plan.

XVIII. TRIBAL CULTURAL RESOURCES

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

Responses:

(a) No Impact. In accordance with Public Resources Code Section 21080.3.1, notification letters were sent to tribal representatives of California Native American tribes that have requested to be notified of projects within the project area of Madera County. Tribal representatives were advised of the Project and invited to request formal consultation with the County regarding the Project within 30 days of receiving the notification letters. Eight notification letters were sent to representatives of the following tribes on May 20, 2022:

- Table Mountain Rancheria
- Picayune Rancheria of the Chukchansi Indians
- Dumna Wo Wah Tribal Government
- Chowchilla Yokuts Tribe

As of the preparation of this Initial Study, more than 30 days following the County's transmittal of notification letters, no tribal representatives requested consultation.

XIX. UTILITIES AND SERVICE SYSTEMS

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

Responses:

(a) No Impact. The Project would install new pipes and meters associated with an existing water supply system and the impacts of the Project are evaluated in this Initial Study. Except for Project components described and evaluated herein, the Project would not require the relocation or construction of water, wastewater, stormwater drainage, or other utilities or service systems.

(b) No Impact. The Project would provide improvements to an existing water supply system and would not create a new water use or increase water demand or use.

(c) No Impact. The Project would not require wastewater treatment service.

(d and e) No Impact. Project construction would generate nominal solid waste associated with construction activities and would not result in new long-term solid waste generation.

XX. WILDFIRE

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

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Responses:

(a) No Impact. Project construction activities would involve work within public roads. Construction contractors would be required to implement provisions for public circulation and to ensure access to emergency facilities and access for emergency vehicles during the construction period. Thus, the Project would not impair or interfere with emergency response or an emergency response or evacuation plan.

(b) No Impact. Project pipeline and meter locations would be predominantly installed in existing roads and areas with limited vegetation. Potential fire ignition risks during construction would be minimized through construction procedures and specifications of the construction documentations, including requirements for the contractor to maintain construction storage areas in clean and fire safe manner. Following construction, the water system improvements provided by the Project would have a long-term beneficial contribution to available water supplies in the event of a local fire.

(c) No Impact. The Project would not require installation or maintenance of infrastructure with the potential to exacerbate fire risk.

(d) No Impact. As discussed above, the Project would not exacerbate risk of fire, and the Project work areas to not have characteristics that would create potential exposure of people or structures to significant risk from post-fire conditions in the event of a fire.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

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

Responses:

(a) Less than Significant Impact with Mitigation. For the reasons discussed in Sections I through XX, above, with implementation of mitigation, the Project would not have the potential to substantially degrade the quality of the environment or substantially degrade biological or cultural resources.

(b) Less than Significant. For the reasons discussed in Sections I through XX, above, with implementation of mitigation, the Project would have either no impact or a less than significant impact on resource issues as evaluated herein. In no instance are the Project's residual impacts considered to have the potential to result in cumulatively considerable impacts.

(c) No Impact. For the reasons discussed in Sections I through XX, above, the Project would not have the potential to result in environmental effects that would cause substantial adverse direct or indirect effects on human beings.

MITIGATION MEASURES

Mitigation Measure 1. *The following emission reduction measures shall be implemented during Project construction:*

a. *All diesel-fueled construction equipment shall be California Air Resources Board (CARB) Tier 4-certified as set forth in Section 2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 of the Code of Federal Regulations.*

b. *All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications.*

c. *Project construction shall comply with all applicable SJVAPCD rules and regulations.*

Mitigation Measure 2. *Project construction shall minimize the potential for impacts to water quality and effects on aquatic resources though implementation of measures including the following:*

a. *Aquatic resources adjacent to work areas shall be clearly demarcated prior to the initiation of construction activities and avoidance buffers shall be established consistent with any applicable regulatory requirements or permit conditions.*

b. *Erosion and sediment control best management practices (BMPs) shall be installed and maintained as necessary to minimize potential sediment and other pollutant discharge from Project works areas. BMP components shall be placed between demarcated aquatic resources and the outer edge of the work areas prior to commencement of construction activities and shall be properly maintained until construction is completed and the soils have been stabilized.*

c. *Any fueling or maintenance of equipment and vehicles within Project work areas shall use appropriate secondary containment techniques to prevent and contain spills.*

Mitigation Measure 3. *A qualified biologist shall conduct a mandatory Worker Environmental Awareness Program for all contractors, work crews, and any onsite personnel to aid workers in recognizing special-status species and sensitive biological resources that may occur onsite. The program shall include identification of the special-status species and their habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and measures required to avoid and reduce impacts to biological resources within the work area.*

Mitigation Measure 4. *Prior to construction, floristic plant surveys shall be conducted in unpaved areas within 25 feet of planned work areas according to USFWS, CDFW, and CNPS protocols. Surveys shall be conducted by a qualified biologist and timed according to the appropriate phenological stage for identifying target species or as may otherwise be deemed sufficient by a qualified biologist. Known reference populations shall be visited and/or local herbaria records should be reviewed, if available, prior to surveys to confirm the phenological stage of the target species. If no special-status plants are found within the survey areas, no further measures pertaining to special-status plants are necessary.*

If special-status plants are identified during the surveys prescribed above, the following measures shall be implemented:

a. *If avoidance of the special-status plants is feasible, disturbance avoidance zones shall be established and clearly demarcated for special-status plant occurrences prior to construction. Avoidance zones shall include the extent of the special-status*

plants plus a 25-foot buffer, unless otherwise determined by a qualified biologist, and shall be maintained until the completion of construction activities within 100 feet of the special-status plants. A qualified biologist shall confirm the avoidance buffer is sufficient to ensure special-status plants are not impacted by the work.

b. *If avoidance of special-status plants is not feasible, the County shall develop and implement preservation of on- or offsite habitat and/or other measures to compensate for direct impacts to special-status plants through consultation with CDFW and/or USFWS.*

Mitigation Measure 5. *Final Project design pipeline alignments, meter locations, and construction activity areas shall avoid areas of potential western spadefoot habitat to the extent feasible. Where such areas cannot be avoided, a qualified biologist shall conduct surveys for western spadefoot in areas of potential habitat that would be disturbed by the Project. The surveys shall be conducted at the appropriate time of year to detect western spadefoot, generally the breeding season, according to methods approved by CDFW. If western spadefoot is found in habitat that will be eliminated or made unsuitable for western spadefoot, then a plan to collect and relocate adult and larval western spadefoot and egg masses to suitable habitat shall be prepared in consultation with CDFW.*

Mitigation Measure 6. *Final Project design pipeline alignments, meter locations, and construction activity areas shall avoid areas of potential California tiger salamander habitat to the extent feasible. Where such areas cannot be avoided, a qualified biologist shall conduct a California tiger salamander site assessment according to the Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (USFWS 2003) and submit the report to USFWS and CDFW. Measures to avoid, minimize, and/or compensate for potential effects on California tiger salamander habitat shall be developed based on the information provided from the site assessment and based on USFWS and CDFW coordination and recommendations. Construction or other Project disturbances within areas that may be identified as potential California tiger salamander habitat through the process described herein, shall be avoided until such time as a qualified biologist deems, through consultation with USFWS and CDFW as necessary, that appropriate measures have been implemented to ensure no significant impacts will occur to California tiger salamander.*

Mitigation Measure 7. *If construction is to be initiated during the nesting season (generally February 1 through August 31), a qualified biologist shall conduct a preconstruction nesting bird survey of all suitable nesting habitat on the Project within 14 days of the commencement of construction. The survey shall be conducted within a 500-foot radius of Project work areas for raptors and within a 100-foot radius for other nesting birds. If any active nests are observed, these nests shall be designated a sensitive area and protected by an avoidance buffer established in coordination with CDFW until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival or the nest is otherwise no longer occupied.*

Mitigation Measure 8. *Bat roost surveys shall be conducted by a qualified wildlife biologist within 14 days before removal of any tree having the potential to provide bat roosting habitat. Locations of vegetation and tree removal or excavation shall be examined for potential bat roosts. Specific survey methodologies shall be determined by a qualified biologist and consistent with any applicable recommendations or requirements of CDFW, and may include visual surveys of bats (e.g., observation of bats during foraging period), inspection for suitable habitat, bat sign (e.g., guano), or use of ultrasonic detectors (e.g., SonoBat, Anabat). Removal of any significant roost sites located shall be avoided to the extent feasible.*

If it is determined that an active bat roost site cannot be avoided and will be affected, a qualified biologist, in consultation with CDFW, shall implement measures to exclude bats from the roost site before the tree is removed. The biologist shall first notify and consult with CDFW on appropriate bat exclusion methods and roost removal procedures.

Mitigation Measure 9. *Final Project design shall avoid potential disturbance or placement of fill within areas identified as potential Waters of the U.S. and/or Waters of the State to the extent feasible. If avoidance is not possible, the County shall prepare and submit an Aquatic Resources Delineation for the Project to the USACE and obtain a verification or Preliminary Jurisdictional Determination.*

If required due to disturbance or placement of fill within jurisdictional waters, the County shall file a request for authorization to fill Waters of the U.S. under Section 404 of the federal CWA (Section 404 Permit) prior to discharging any dredged or fill materials into any Waters of the U.S. Measures shall be developed as part of the Section 404 Permit process to ensure no net loss of wetland function and values. To facilitate such authorization if required, an application for a Section 404 Nationwide Permit (0.5 acre or less of impacts for Nationwide Permit 58-Utility Line Activities for Water and Other Substances) or an Individual Permit for the Project shall be prepared and submitted to USACE. Mitigation for impacts to Waters of the U.S. shall compensate for direct impacts at a minimum ratio of 1:1 unless alternative ratio or compensation requirements is deemed suitable and developed in consultation with USACE.

If required due to disturbance or placement of fill within jurisdictional waters, the County shall file a request for a Water Quality Certification or obtain a waiver pursuant to Section 401 of the CWA from the RWQCB for Section 404 permit actions. Pursuant to the Porter-Cologne Water Quality Act, permit authorization from the RWQCB shall be obtained prior to the discharge of material in an area that could affect Waters of the State. Measures to offset impacts associated with such potential discharges to Waters of the State shall be developed in consultation with the RWQCB.

Mitigation Measure 10. *If subsurface deposits believed to be cultural or human in origin are discovered during construction, work shall halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology, shall be retained to evaluate the significance of the find, and shall have the authority to modify the no-work radius as appropriate, using professional judgment. The following actions/notifications shall apply depending on the nature of the find:*

a. *If the professional archaeologist determines that the find does not represent a cultural resource, work may resume, and no agency notifications are required.*
b. *If the professional archaeologist determines that the find does represent a cultural resource from any time period or cultural affiliation, the archaeologist shall immediately notify the County of Madera. The County shall consult on a finding of eligibility and implement appropriate treatment measures, if the find is determined to be a Historical Resource under CEQA, as defined in Section 15064.5(a) of the CEQA Guidelines or a historic property under Section 106 NHPA, if applicable. Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the site either: 1) is not a Historical Resource under CEQA, as defined in Section 15064.5(a) of the CEQA Guidelines or a Historic Property under Section 106; or 2) that the treatment measures have been completed to their satisfaction.*
c. *If the find includes human remains, or remains that are potentially human, they shall ensure reasonable protection measures are taken to protect the discovery from disturbance (AB 2641). The archaeologist shall notify the Madera County Coroner (per*

§ 7050.5 of the Health and Safety Code). The provisions of § 7050.5 of the California Health and Safety Code, §5097.98 of the California PRC, and AB 2641 will be implemented. If the coroner determines the remains are Native American and not the result of a crime scene, the coroner will notify the NAHC, which then will designate a Native American Most Likely Descendant (MLD) for the Project (§ 5097.98 of the PRC). The designated MLD will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (§ 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§ 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work may not resume within the no work radius until the lead agencies, through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.

Mitigation Measure 11. *If subsurface deposits having the potential to be a paleontological resource are discovered during construction, all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist/paleontologist shall be retained to evaluate the significance of the find, and shall have the authority to modify the no-work radius as appropriate, using professional judgment. The following actions/notifications shall apply depending on the nature of the find:*

a. *If the professional archaeologist/paleontologist determines that the find does not represent a unique paleontological resource, work may resume, and no agency notifications are required.*
b. *If the professional archaeologist/paleontologist determines that the find does represent a unique paleontological resource, the archaeologist/paleontologist shall immediately notify the County of Madera. The County shall consult on a finding of eligibility and implement appropriate treatment measures for the find. Work may not resume within the no-work radius until the County determines that appropriate treatment measures have been completed sufficient to avoid the loss of a unique paleontological resource.*

LIST OF FIGURES

Figure 1 Project Location
Figure 2 MD10A District Boundary
Figure 3 Study Area
Figure 4a Potential Aquatic Resource Area 1
Figure 4b Potential Aquatic Resource Area 2
Figure 4c Potential Aquatic Resource Area 3
Figure 4d Potential Aquatic Resource Area 4

LIST OF APPENDICES

Appendix A Air Quality and Greenhouse Gas Assessment for the MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project
Appendix B Biological Resources Assessment for the MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project

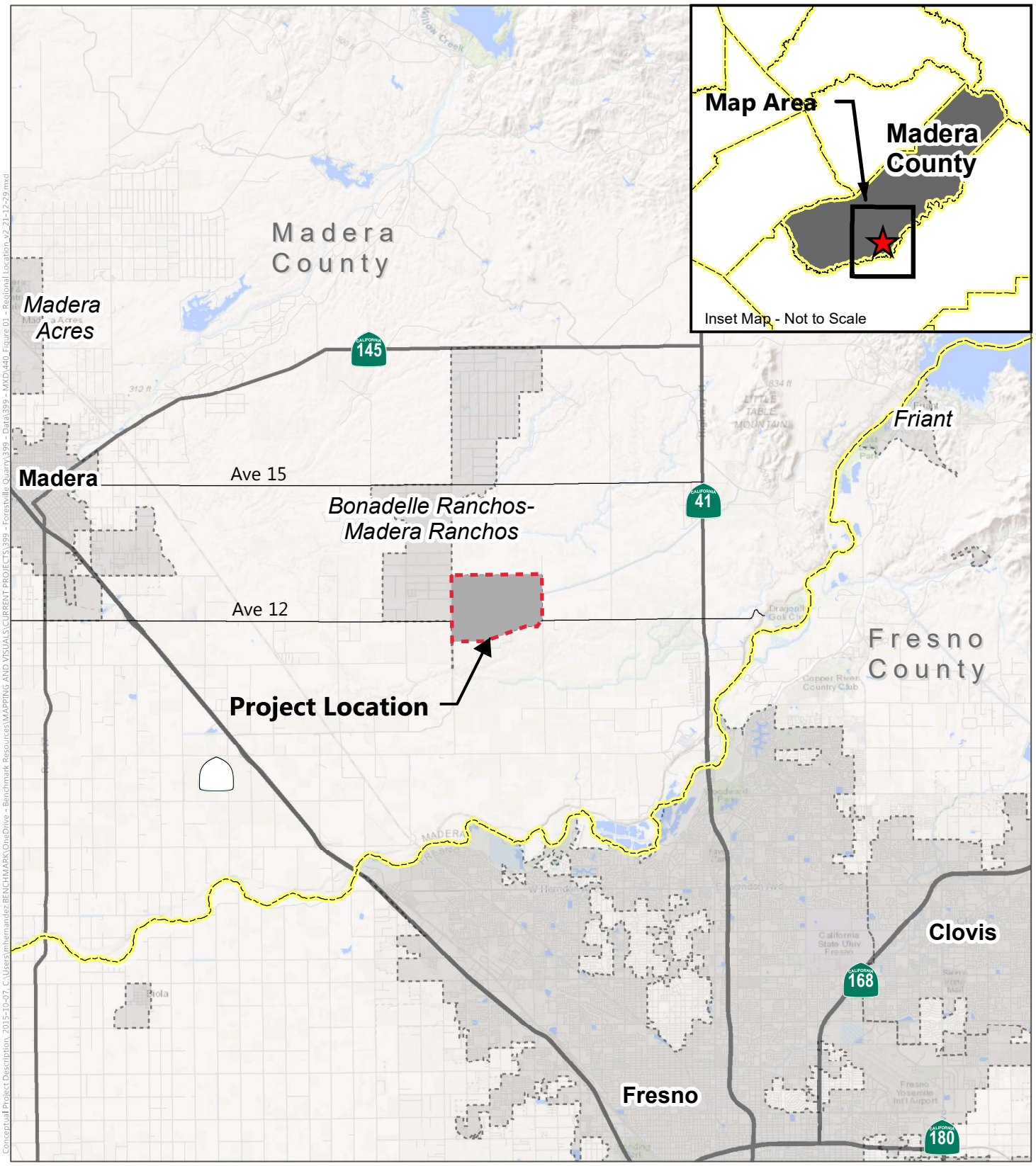
BIBLIOGRAPHY

ECORP, 2022a. “Air Quality and Greenhouse Gas Assessment for the MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project.” ECORP Consulting, Inc. May 2022.

__, 2022b. “Biological Resources Assessment for the MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project.” ECORP Consulting, Inc. September 2022.

__, 2022c. “Cultural Resources Inventory Report for the MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project.” ECORP Consulting, Inc. August 2022.

FIGURES



SOURCES: ESRI World Shaded Relief accessed Dec 2021, ESRI World Topographic Map accessed Dec 2021; ESRI World Streetmap, 2009; compiled by Benchmark Resources in 2022

County Boundary

MD10A District

Project Location

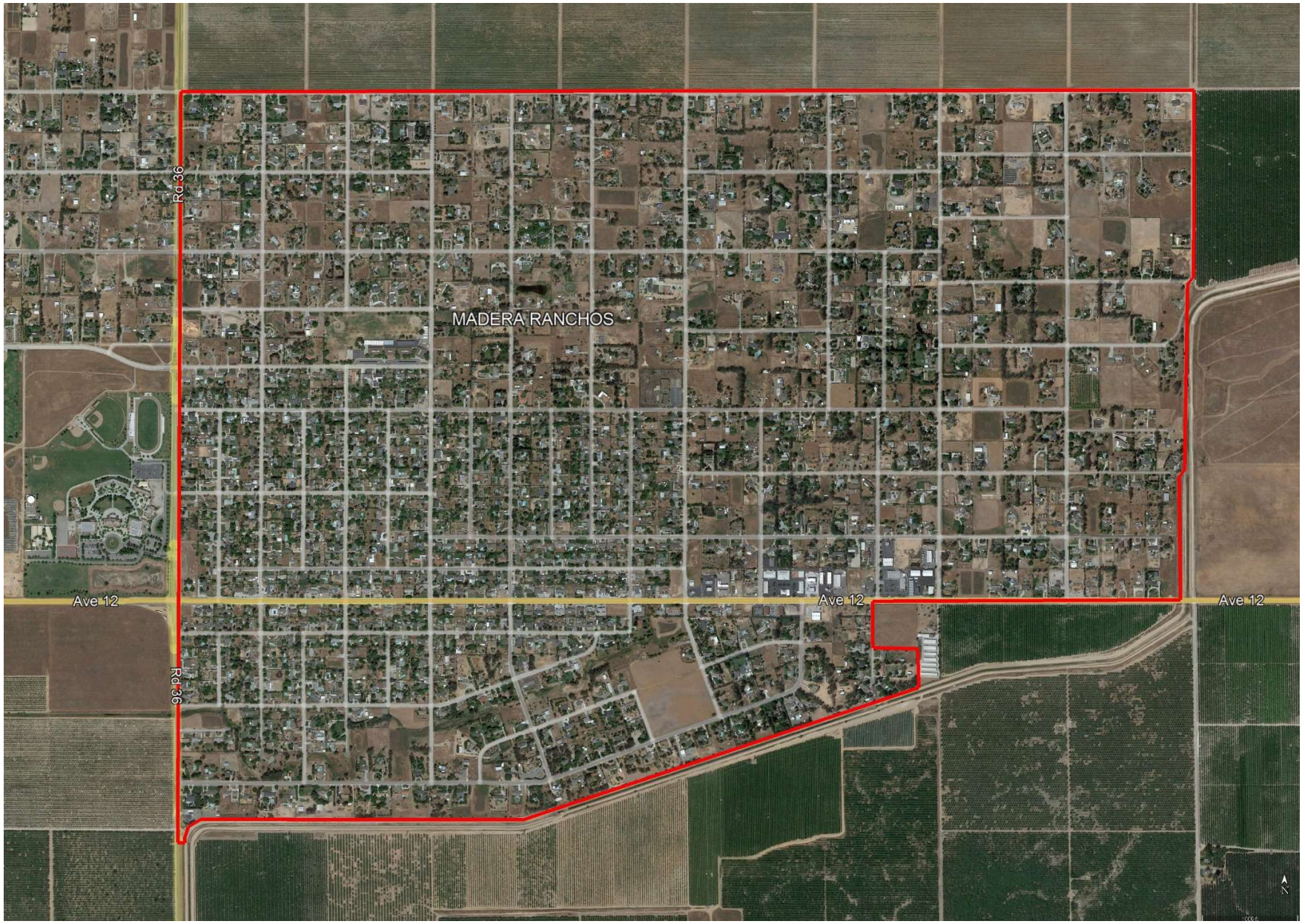
MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project

BENCHMARK RESOURCES

N

0 1.5 3 6 Miles

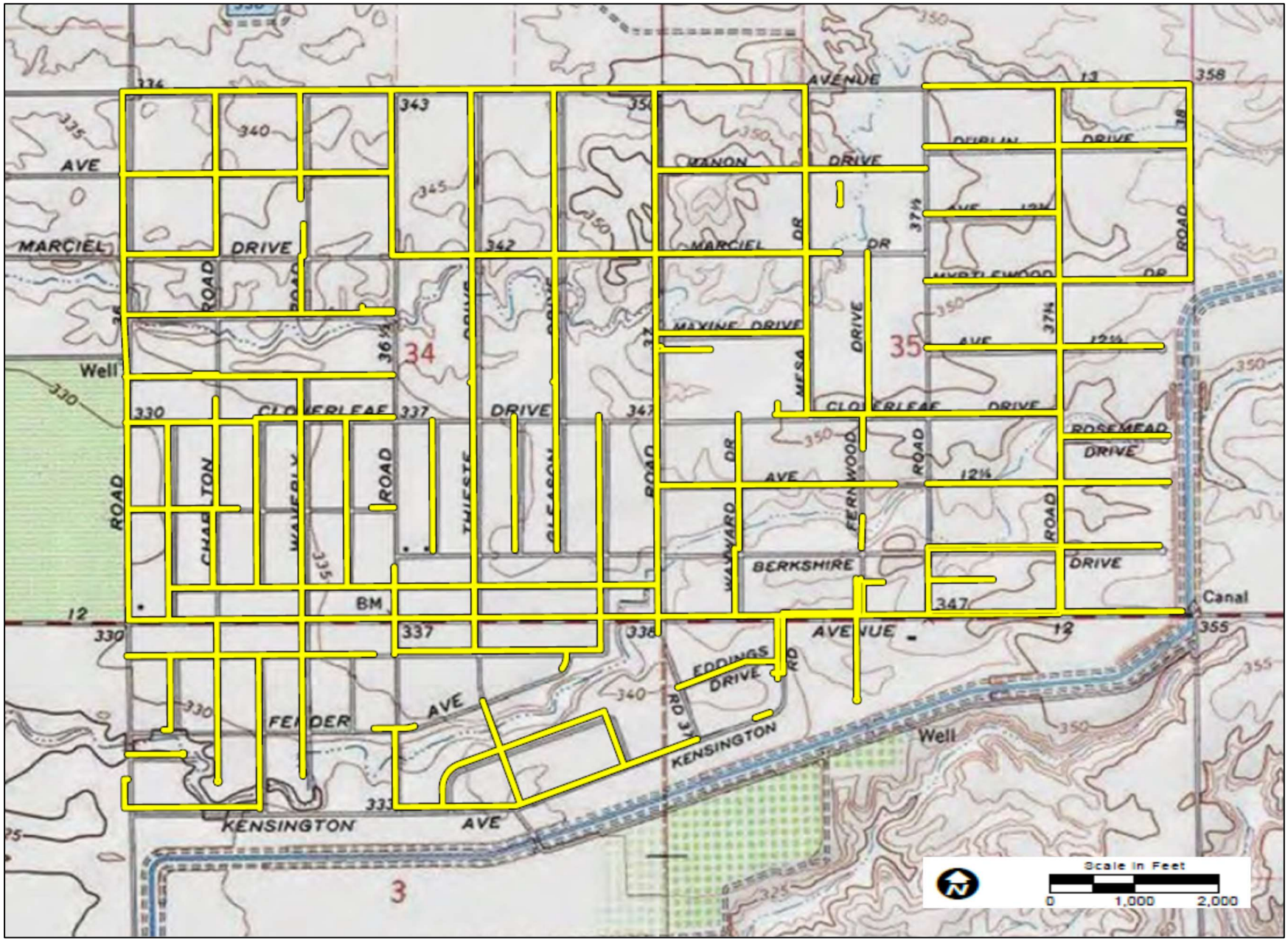
Figure 1



SOURCE: Google Earth, 2022.
NOTES: District shown with red boundary.

MD10A District Boundary
MD10A MADERA RANCHOS - PIPE REPLACEMENT AND METER INSTALLATION PROJECT
Figure 2

BENCHMARK RESOURCES



SOURCE: Base Map: ESRI, USGS. Study Area: ECORP 2022 per am Consulting Engineers 2022.
NOTES: Study area illustrated in yellow.

Study Area
MD10A MADERA RANCHOS - PIPE REPLACEMENT AND METER INSTALLATION PROJECT
Figure 3

BENCHMARK RESOURCES

Figure 4-2. Preliminary Aquatic Resources Assessment
2022-090 Madera County MD 10A Distribution Project

SOURCE: ECORP 2022b.

Potential Aquatic Resource Area 1
MD10A MADERA RANCHOS - PIPE REPLACEMENT AND METER INSTALLATION PROJECT
Figure 4a

BENCHMARK RESOURCES

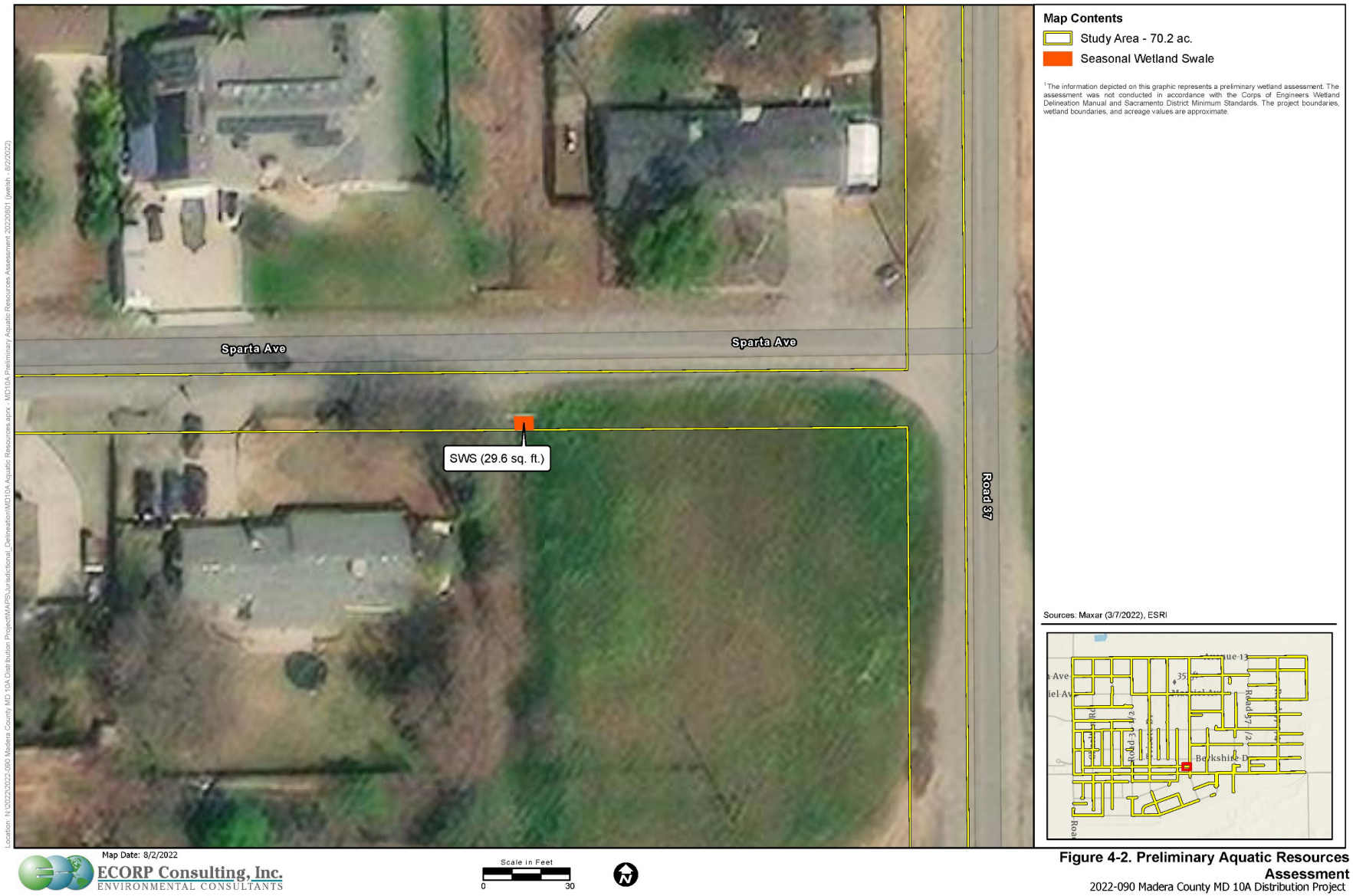


Figure 4-2. Preliminary Aquatic Resources Assessment
2022-090 Madera County MD 10A Distribution Project

SOURCE: ECORP 2022b.

Figure 4-2. Preliminary Aquatic Resources Assessment
2022-090 Madera County MD 10A Distribution Project

SOURCE: ECORP 2022b.

Figure 4-2. Preliminary Aquatic Resources Assessment
2022-090 Madera County MD 10A Distribution Project

SOURCE: ECORP 2022b.

Potential Aquatic Resource Area 4
MD10A MADERA RANCHOS - PIPE REPLACEMENT AND METER INSTALLATION PROJECT
Figure 4d

BENCHMARK RESOURCES

APPENDICES

Appendix A

Air Quality and Greenhouse Gas Assessment for the MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project

Air Quality and Greenhouse Gas Emissions Assessment

MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project

Madera County, California

Prepared For:

Benchmark Resources
2515 East Bidwell Street
Folsom, CA 95630

May 2022

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

CONTENTS

1.0 INTRODUCTION 1
1.1 Project Location and Description 1
2.0 AIR QUALITY 2
2.1 Air Quality Setting 2
2.1.1 San Joaquin Valley Air Basin 2
2.1.2 Criteria Air Pollutants 3
2.1.3 Toxic Air Contaminants 6
2.1.4 Ambient Air Quality 7
2.1.5 Sensitive Receptors 9
2.2 Regulatory Framework 9
2.2.1 Federal 9
2.2.2 State 10
2.2.3 Local 12
2.3 Air Quality Emissions Impact Assessment 14
2.3.1 Thresholds of Significance 14
2.3.2 Methodology 15
2.3.3 Impact Analysis 15
3.0 GREENHOUSE GAS EMISSIONS 26
3.1 Greenhouse Gas Setting 26
3.1.1 Sources of Greenhouse Gas Emissions 27
3.2 Regulatory Framework 28
3.2.1 State 28
3.2.2 Local 29
3.3 Greenhouse Gas Emissions Impact Assessment 31
3.3.1 Thresholds of Significance 31
3.3.2 Methodology 33
3.3.3 Impact Analysis 33
4.0 REFERENCES 35

LIST OF TABLES

Table 2-1. Criteria Air Pollutants- Summary of Common Sources and Effects 4
Table 2-2. Summary of Ambient Air Quality Data 8
Table 2-3. Attainment Status of Criteria Pollutants in the Madera County Portion of the SJVAB 9
Table 2-4. SJVAPCD Significance Thresholds 15

Table 2-5. Unmitigated Project Construction-Generated Emissions 18
Table 2-6. Construction Related NO_x & PM_{10} Emissions- Baseline and Mitigated (tons per year) 20
Table 2-7. Health Risk Summary 22
Table 3-1. Greenhouse Gases 27
Table 3-2. Construction-Related Greenhouse Gas Emissions 33

LIST OF ATTACHMENTS

Attachment A – CalEEMod Output Files Criteria Air Pollutants & Greenhouse Gas Emissions

Attachment B – SJVAPCD Prioritization Calculator

LIST OF ACRONYMS AND ABBREVIATIONS

°F	Degrees Fahrenheit
µg/m^3	Micrograms per cubic meter; ppm = parts per million
1992 CO Plan	1992 Federal Attainment Plan for Carbon Monoxide
AB	Assembly Bill
AQMD	Air Quality Management District
ATCM	Airborne Toxic Control Measure
BAAQMD	Bay Area Air Quality Management District
BAU	Business As Usual
BPS	Best Performance Standards
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CH_4	Methane
CI	*Coccidioides immitis*
CM	*Coccidioidomycosis*
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
County	Madera County
CTG	Control Techniques Guidance
DOC	Department of Conservation
DPM	Diesel particulate matter
EIR/EIS	Environmental Impact Report/ Environmental Impact Statement
EO	Executive Order
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	Greenhouse gas

LIST OF ACRONYMS AND ABBREVIATIONS

GWP	Global warming potential
HRA	Health Risk Assessment
IPCC	Intergovernmental Panel on Climate Change
ISR	Indirect Source Review
LOS	Level of service
mph	Miles per hour
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO_2	Nitrogen dioxide
NO_x	Nitric oxides
NSR	New Source Review
O_3	Ozone
PM	Particulate matter
PM_{10}	Coarse particulate matter
$PM_{2.5}$	Fine particulate matter
ppb	Parts per billion
ppm	Parts per million
Project	MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project
RACT	Reasonable Available Control Technologies
ROGs	Reactive organic gases
SB	Senate Bill
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SO_x	Sulfur oxides
SR	State Route
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
TACs	Toxic air contaminants
USEPA	U.S. Environmental Protection Agency
VOCs	Volatile organic compounds
VMT	Vehicle Miles Traveled

1.0 INTRODUCTION

This report documents the results of an assessment of both air quality and greenhouse gas (GHG) emissions completed for the MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project (Project). The Project consists of the replacement and installation of approximately 42,240 linear feet of water distribution pipe in the unincorporated community of Madera Ranchos. The purpose of this assessment is to estimate Project-generated criteria air pollutants and GHG emissions attributable to the Project and to determine the level of impact the Project would have on the environment. This assessment was prepared using methodologies and assumptions recommended in the provisions promulgated by the San Joaquin Valley Air Pollution Control District (SJVAPCD). Regional and local existing conditions are presented, along with pertinent emissions standards and regulations.

1.1 Project Location and Description

The Madera County Maintenance District10A (MD10) is proposing the replacement and installation of approximately 221,760 linear feet of water distribution pipe and water service meters in the community of Madera Ranchos in Madera County. The Project will install pipelines and meters primarily by way of trenching, pipeline/meter installation, backfilling, and resurfacing within the public rights-of-way of the existing street network within the Madera Ranchos community. Excavation would require trenches approximately 2 to 3 feet wide along the length of pipeline replacement segments. Construction is anticipated to require up to approximately two years.

2.0 AIR QUALITY

2.1 Air Quality Setting

Air quality in a region is determined by its topography, meteorology, and existing air pollutant sources. These factors are discussed below, along with the current regulatory structure that applies to the San Joaquin Valley Air Basin (SJVAB), which encompasses the Project Site, pursuant to the regulatory authority of the SJVAPCD.

Ambient air quality is commonly characterized by climate conditions, the meteorological influences on air quality, and the quantity and type of pollutants released. The air basin is subject to a combination of topographical and climatic factors that reduce the potential for high levels of regional and local air pollutants. The following section describes the pertinent characteristics of the air basin and provides an overview of the physical conditions affecting pollutant dispersion in the Project Area.

2.1.1 San Joaquin Valley Air Basin

The California Air Resources Board (CARB) divides the State into air basins that share similar meteorological and topographical features. The SJVAB occupies the southern two-thirds of the Central Valley and includes the Madera County. The SJVAB is mostly flat, less than 1,000 feet in elevation, and is surrounded on three sides by the Sierra Nevada, Tehachapi, and Coast Range mountains. This bowl-shaped feature forms a natural barrier to the dispersion (spreading over an area) of air pollutants. As a result, the SJVAB is highly susceptible to pollutant accumulation over time (SJVAPCD 2002).

Climate and Meteorology

The climate in the SJVAB is strongly influenced by the presence of mountain ranges. The mountains create a partial rain shadow over the valley and block the free circulation of air, trapping stable air in the valley for extended periods. The climate is semi-arid and is characterized by long, hot, dry summers and cool, wet, and foggy winters. Based on historical data obtained from the meteorological station located in Bakersfield, ambient temperatures range from an average minimum of 39˚F in January to an average maximum of 98˚F in July. The average monthly precipitation is approximately 6.24 inches per year, with January and February averaging 1.35 inches. The average daily wind speed is 5.9 miles per hour (mph). The air flow patterns are characterized by one of four directions depending on the season. For example, during the summer, winds are predominantly northwestern (upvalley), while winters typically feature a prevailing stagnant condition that leads to high incidence of valley fog.

Atmospheric Stability and Inversions

Stability describes the relative resistance of the atmosphere to vertical motion, which in turn mixes the air. The stability of the atmosphere is dependent on the vertical distribution of temperature with height. Unstable conditions often occur during daytime hours when solar heating warms the lower atmospheric layers while the upper layers remain cold. In contrast, an inversion is a layer of warmer air over a layer of cooler air. Inversions influence the mixing depth of the atmosphere, which is the vertical depth available for diluting air pollution near the ground. The SJVAB experiences both surface-based and elevated

inversions. The shallow surface-based inversions can be present in the morning but are often broken by daytime heating of the air layers near the ground. The deep, elevated inversions occur less frequently than the surface-based inversions but generally result in more severe air stagnation. The surface-based inversions occur more frequently in the fall, and the stronger elevated inversions usually occur during December and January. These naturally occurring conditions can make local air quality significantly worse than it would be without the inversions and the stagnation created by regional weather and topography.

2.1.2 Criteria Air Pollutants

Criteria air pollutants are defined as those pollutants for which the federal and state governments have established air quality standards for outdoor or ambient concentrations to protect public health with a determined margin of safety. Ozone (O_3), coarse particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) are generally considered to be regional pollutants because they or their precursors affect air quality on a regional scale. Pollutants such as carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) are considered to be local pollutants because they tend to accumulate in the air locally. Health effects commonly associated with criteria pollutants are summarized in Table 2-1.

Table 2-1. Criteria Air Pollutants- Summary of Common Sources and Effects

Pollutant	Major Manmade Sources	Human Health & Welfare Effects
CO	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, effecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
NO_2	A reddish-brown gas formed during fuel combustion for motor vehicles, energy utilities and industrial sources.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Causes brown discoloration of the atmosphere.
O_3	Formed by a chemical reaction between reactive organic gases (ROGs) and nitrous oxides (N_2O) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, solvents, paints and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield.
PM_{10} & $PM_{2.5}$	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
SO_2	A colorless, nonflammable gas formed when fuel containing sulfur is burned. Examples are refineries, cement manufacturing, and locomotives.	Respiratory irritant. Aggravates lung and heart problems. Can damage crops and natural vegetation. Impairs visibility.

Source: California Air Pollution Control Officers Association (CAPCOA 2013)

Carbon Monoxide

CO in the urban environment is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. CO combines with hemoglobin in the bloodstream and reduces the amount of oxygen that can be circulated through the body. High CO concentrations can cause headaches, aggravate cardiovascular disease, and impair central nervous system functions. CO concentrations can vary greatly over comparatively short distances. Relatively high concentrations of CO are typically found near crowded intersections and along heavy roadways with slow moving traffic. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations within relatively short distances of the source. Overall CO emissions are decreasing because of the Federal Motor Vehicle Control Program, which has mandated increasingly lower emission levels for vehicles manufactured since 1973. CO levels in the SSAB follow the state and federal one- and eight-hour standards.

Nitrogen Oxides

Nitrogen gas comprises about 80 percent of the air and is naturally occurring. At high temperatures and under certain conditions, nitrogen can combine with oxygen to form several different gaseous compounds collectively called nitric oxides (NO_x). Motor vehicle emissions are the main source of NO_x in urban areas. NO_x is very toxic to animals and humans because of its ability to form nitric acid with water in the eyes, lungs, mucus membrane, and skin. In animals, long-term exposure to NO_x increases susceptibility to respiratory infections, and lowering resistance to such diseases as pneumonia and influenza. Laboratory studies show that susceptible humans, such as asthmatics, who are exposed to high concentrations can suffer from lung irritation or possible lung damage. Precursors of NO_x, such as NO and NO_2, attribute to the formation of O_3 and $PM_{2.5}$. Epidemiological studies have also shown associations between NO_2 concentrations and daily mortality from respiratory and cardiovascular causes and with hospital admissions for respiratory conditions.

Ozone

O_3 is a secondary pollutant, meaning it is not directly emitted. It is formed when volatile organic compounds (VOCs) or reactive organic gasses (ROGs) and NO_x undergo photochemical reactions that occur only in the presence of sunlight. The primary source of ROG emissions is unburned hydrocarbons in motor vehicles and other internal combustion engine exhaust. NO_x forms as a result of the combustion process, most notably due to the operation of motor vehicles. Sunlight and hot weather cause ground-level O_3 to form. Ground-level O_3 is the primary constituent of smog. Because O_3 formation occurs over extended periods of time, both O_3 and its precursors are transported by wind and high O_3 concentrations can occur in areas well away from sources of its constituent pollutants.

People with lung disease, children, older adults, and people who are active can be affected when O_3 levels exceed ambient air quality standards. Numerous scientific studies have linked ground-level O_3 exposure to a variety of problems including lung irritation, difficult breathing, permanent lung damage to those with repeated exposure, and respiratory illnesses.

Particulate Matter

PM includes both aerosols and solid particulates of a wide range of sizes and composition. Of concern are those particles smaller than or equal to 10 microns in diameter size (PM_{10}) and small than or equal to 2.5 microns in diameter ($PM_{2.5}$). Smaller particulates are of greater concern because they can penetrate deeper into the lungs than larger particles. PM_{10} is generally emitted directly as a result of mechanical processes that crush or grind larger particles or form the resuspension of dust, typically through construction activities and vehicular travel. PM_{10} generally settles out of the atmosphere rapidly and is not readily transported over large distances. $PM_{2.5}$ is directly emitted in combustion exhaust and is formed in atmospheric reactions between various gaseous pollutants, including NO_x, sulfur oxides (SO_x) and VOCs. $PM_{2.5}$ can remain suspended in the atmosphere for days and/or weeks and can be transported long distances.

The principal health effects of airborne PM are on the respiratory system. Short-term exposure of high $PM_{2.5}$ and PM_{10} levels are associated with premature mortality and increased hospital admissions and emergency room visits. Long-term exposure is associated with premature mortality and chronic respiratory disease. According to the USEPA, some people are much more sensitive than others to breathing PM_{10} and $PM_{2.5}$. People with influenza, chronic respiratory and cardiovascular diseases, and the elderly may suffer worse illnesses; people with bronchitis can expect aggravated symptoms; and children may experience decline in lung function due to breathing in PM_{10} and $PM_{2.5}$. Other groups considered sensitive include smokers and people who cannot breathe well through their noses. Exercising athletes are also considered sensitive because many breathe through their mouths.

2.1.3 Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Additionally, diesel engines emit a complex mixture of air pollutants composed of gaseous and solid material. The solid emissions in diesel exhaust are known as diesel particulate matter (DPM). In 1998, California identified DPM as a TAC based on its potential to cause cancer, premature death, and other health problems (e.g., asthma attacks and other respiratory symptoms). Those most vulnerable are children (whose lungs are still developing) and the elderly (who may have other serious health problems). Overall, diesel engine emissions are responsible for the majority of California's known cancer risk from outdoor air pollutants. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage, and death.

Diesel Exhaust

Most recently, CARB identified DPM as a TAC. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Diesel exhaust is a complex mixture of particles and gases produced when an engine burns diesel fuel. DPM is a concern because it causes lung cancer; many compounds found in diesel exhaust are carcinogenic. DPM includes the particle-phase constituents in diesel exhaust. The chemical composition and particle sizes of DPM vary between different engine types (heavy-duty, light-duty), engine operating conditions (idle, accelerate, decelerate), fuel formulations (high/low sulfur fuel), and the year of the engine (USEPA 2002). Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation, and diesel exhaust can cause

coughs, headaches, light-headedness, and nausea. DPM poses the greatest health risk among the TACs; due to their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

Asbestos

The term "asbestos" describes naturally occurring fibrous minerals found in certain types of rock formations. It is a mineral compound of silicon, oxygen, hydrogen, and various metal cations. When mined and processed, asbestos is typically separated into very thin fibers. When these fibers are present in the air, they are normally invisible to the naked eye. Once airborne, asbestos fibers can cause serious health problems. If inhaled, asbestos fibers can impair normal lung functions, and increase the risk of developing lung cancer, mesothelioma, or asbestosis.

Naturally occurring asbestos, which was identified as a TAC in 1986 by CARB, is in many parts of California and is commonly associated with ultramafic rock. The Project site is not located in an area of known or suspected naturally occurring asbestos (DOC 2000).

2.1.4 Ambient Air Quality

Ambient air quality at the Project Site can be inferred from ambient air quality measurements conducted at nearby air quality monitoring stations. CARB maintains more than 60 monitoring stations throughout California. O_3, PM_{10} and $PM_{2.5}$ are the pollutant species most potently affecting the Project region. As described in detail below, the Project region is designated as a nonattainment area for the federal O_3 and $PM_{2.5}$ standards and is also a nonattainment area for the state standards for O_3, PM_{10} and $PM_{2.5}$ (CARB 2019). The Fresno Skypark air quality monitoring station (7252 N Blythe Ave, Fresno CA 93722), located approximately 6.5 miles south-southeast of the Project Site, monitors ambient concentrations of O_3 and NO_2. The Clovis-N Villa Avenue air quality monitoring station (908 Villa Avenue, Clovis) located approximately 11 miles southeast of the Project Site, monitors ambient concentrations of PM_{10} and $PM_{2.5}$, a subset of PM_{10}. Ambient emission concentrations will vary due to localized variations in emission sources and climate and should be considered “generally” representative of ambient concentrations in the Project Area.

Table 2-2 summarizes the most recently reviewed O_3 data at the Fresno-Sierra Skypark monitoring station and most recently reviewed PM_{10} and $PM_{2.5}$ from the Clovis-North Villa Avenue monitoring station for each year that the monitoring data is provided. O_3, PM_{10} and $PM_{2.5}$ are the pollutant species most potently affecting the Project region.

Table 2-2. Summary of Ambient Air Quality Data

Pollutant Standards	2018	2019	2020
O_3- Fresno-Sierra Skypark #2			
Max 1-hour concentration (ppm)	0.100	0.097	0.116
Max 8-hour concentration (ppm) (state/federal)	0.087 / 0.087	0.084 / 0.084	0.095 / 0.095
Number of days above 1-hour standard (state/federal)	4 / 0	2 / 0	8 / 0
Number of days above 8-hour standard (state/federal)	13 / 27	3 / 9	11 / 18
PM_{10}- Clovis-North Villa Avenue			
Max 24-hour concentration (µg/m^3) (state/federal)	118.6 / 114.6	155.7 / 150.9	296.0 / 180.9
Number of days above 24-hour standard (state/federal)	90.4 / 0	65.9 / 0	117.5 / 5.8
$PM_{2.5}$- Clovis-North Villa Avenue			
Max 24-hour concentration (µg/m^3) (state/federal)	82.3 / 26.0	39.1 / 39.1	193.7 / 193.7
Number of days above federal 24-hour standard	26.0	*	40.0

Source: CARB 2021a
µg/m^3 = micrograms per cubic meter; ppm = parts per million
* = Insufficient data available

The USEPA and CARB designate air basins or portions of air basins and counties as being in "attainment" or "nonattainment" for each of the criteria pollutants. Areas that do not meet the standards are classified as nonattainment areas. The National Ambient Air Quality Standards (NAAQS) (other than O_3, PM_{10} and $PM_{2.5}$ and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. The NAAQS for O_3, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant. The California Ambient Air Quality Standards (CAAQS) are not to be exceeded during a three-year period. The attainment status for the portion of the SJVAB encompassing the Project Site is included in Table 2-3.

Table 2-3. Attainment Status of Criteria Pollutants in the Madera County Portion of the SJVAB

Pollutant	State Designation	Federal Designation
O_3	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Unclassified/Attainment
NO_2	Attainment	Unclassified/Attainment
SO_2	Attainment	Unclassified/Attainment

Source: CARB 2019

The determination of whether an area meets the state and federal standards is based on air quality monitoring data. Some areas are unclassified, which means there is insufficient monitoring data for determining attainment or nonattainment. Unclassified areas are typically treated as being in attainment. Because the attainment/nonattainment designation is pollutant-specific, an area may be classified as nonattainment for one pollutant and attainment for another. Similarly, because the state and federal standards differ, an area could be classified as attainment for the federal standards of a pollutant and as nonattainment for the state standards of the same pollutant. As previously mentioned, the region is designated as a nonattainment area for the federal O_3, PM_{10} and $PM_{2.5}$ standards and is also a nonattainment area for the state standards for O_3, PM_{10} and $PM_{2.5}$ (CARB 2019).

2.1.5 Sensitive Receptors

Sensitive receptors are defined as facilities or land uses that include members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. The nearest sensitive receptors to the Project Site are single-family residences located directly adjacent to the linear pipeline replacement alignment.

2.2 Regulatory Framework

2.2.1 Federal

Clean Air Act

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the USEPA to establish the NAAQS, with states retaining the option to adopt more stringent standards or to include other specific pollutants. On April 2, 2007, the Supreme Court found that carbon dioxide (CO_2) is an air pollutant covered by the CAA; however, no NAAQS have been established for CO_2.

These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those "sensitive receptors" most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

The USEPA has classified air basins (or portions thereof) as being in attainment, nonattainment, or unclassified for each criteria air pollutant, based on whether or not the NAAQS have been achieved. If an area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation. Table 2-3 lists the federal attainment status of the SJVAB for the criteria pollutants.

2.2.2 State

California Clean Air Act

The California Clean Air Act (CCAA) allows the state to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the CAAQS. CARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB also has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts.

California State Implementation Plan

The CCAA (and its subsequent amendments) requires the state to prepare an air quality control plan referred to as the SIP. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The USEPA has the responsibility to review all SIPs to determine if they conform to the requirements of the CAA. State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards SIP revisions to the USEPA for approval and publication in the Federal Register.

The SJVAPCD is the agency primarily responsible for ensuring that national and state ambient air quality standards are not exceeded and that air quality conditions are maintained in the SJVAB. In an attempt to achieve NAAQS and CAAQS and maintain air quality, the air district has completed the following air

quality attainment plans and reports, which together constitute the SIP for the portion of the SJVAB encompassing the Project:

- **2007 Ozone Plan**. The Ozone Plan, approved in 2007, contains a comprehensive list of regulatory and incentive-based measures to reduce emissions and particulate matter with the goal of addressing the USEPA's standards. The 2007 Ozone Plan calls for a 75 percent reduction of ozone-forming NOx emissions (SJVAPCD 2007a). These NO_x reductions are preferred and essential to meeting the new 8-hour ozone and $PM_{2.5}$ standards. The plan calls for new and more stringent rules and regulations for stationary sources, new and more stringent tail-pipe emission standards for mobile sources, emission standards for locomotives, local regulations and voluntary measures to reduce and/or mitigate mobile source emissions, incentive-based measures, and alternative compliance programs.

- **2013 Plan for the Revoked 1-Hour Ozone Standard.** The SJVAPCD initially adopted this plan in 2004 to address USEPA's 1-hour ozone standard. Although the USEPA approved the SJVAPCD's 2004 plan in 2010, the USEPA withdrew this approval as a result of a court ruling in November 2012. The SJVAPCD adopted a new plan for the USEPA's revoked 1-hour ozone standard in September 2013 (SJVAPCD 2013).

- **2014 Reasonably Available Control Technology (RACT) Demonstration for the 8-Hour Ozone State Implementation Plan (SIP).** The SJVAPCD adopted the Reasonably Available Control Technology (RACT) Demonstration for the 8-Hour Ozone Standard in 2014. The Clean Air Act requires RACT for certain sources in all nonattainment areas (SJVAPCD 2014).

- **2016 Plan for the 2008 8-Hour Ozone Standard.** The Ozone Plan, approved in 2016, contains a comprehensive list of regulatory and incentive-based measures to reduce emissions and particulate matter with the goal of addressing the USEPA's standards. The plan calls for new and more stringent rules and regulations for stationary sources, new and more stringent tail-pipe emission standards for mobile sources, emission standards for locomotives, local regulations and voluntary measures to reduce and/or mitigate mobile source emissions, incentive-based measures, and alternative compliance programs (SJVAPCD 2016).

- **2020 Reasonably Available Control Technology Demonstration for the 2015 8-Hour Ozone Standard**. The SJVAPCD adopted the RACT Demonstration for the 2015 8-Hour Ozone Standard on June 18, 2020. The Clean Air Act requires RACT for certain sources in all nonattainment areas. The SJVAPCD is required to ensure the USEPA's Control Techniques Guidance (CTG) is being implemented through SJVAPCD regulations. The 43 CTGs were developed to control major sources of emissions (SJVAPCD 2020).

- **2007 PM_{10} Maintenance Plan and Request for Redesignation.** In 2007, the SJVAPCD adopted the 2007 PM_{10} Attainment Plan to ensure the continued attainment of the USEPA's PM_{10} standard. Since the EPA determined that the air basin had attained the federal PM_{10} standards on October 30, 2006, the valley is designated as an attainment area (SJVAPCD 2007b).

- **2018 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard**. In 2018, the SJVAPCD adopted the 2018 $PM_{2.5}$ Plan to address the USEPA's annual and 24-hour standards. The plan utilizes the best available information to develop a strategy to demonstrate attainment of the federal standard for $PM_{2.5}$. A number of local strategies are included in the plan, including regulations to address stationary sources, use of a risk-based approach to prioritize measures to expedite attainment standards, incentive measures, technology advances, policy efforts to shape new legislation, and public outreach (SJVAPCD 2018).

Tanner Air Toxics Act & Air Toxics "Hot Spots" Information and Assessment Act

CARB's Statewide comprehensive air toxics program was established in 1983 with Assembly Bill (AB) 1807, the Toxic Air Contaminant Identification and Control Act (Tanner Air Toxics Act of 1983). AB 1807 created California's program to reduce exposure to air toxics and sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an airborne toxics control measure (ATCM) for sources that emit designated TACs. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions.

CARB also administers the state's mobile source emissions control program and oversees air quality programs established by state statute, such as AB 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment (HRA) and, if specific thresholds are exceeded, required to communicate the results to the public in the form of notices and public meetings. In September 1992, the "Hot Spots" Act was amended by Senate Bill (SB) 1731, which required facilities that pose a significant health risk to the community to reduce their risk through a risk management plan.

2.2.3 Local

San Joaquin Valley air Pollution Control District

The SJVAPCD is the agency primarily responsible for ensuring that NAAQS and CAAQS are not exceeded in the SJVAB and that air quality conditions are maintained. SJVAPCD responsibilities include preparing plans for the attainment of ambient air quality standards, adopting and enforcing air pollution rules, issuing permits for and inspecting stationary air pollution sources, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, and implementing state and federal programs and regulations. The SJVAPCD has also adopted various rules and regulations for the control of stationary and area sources of emissions. Provisions applicable to the proposed Project are summarized as follows:

- **Regulation IV (Visible Emissions), Rule 4101, Nuisance.** The purpose of this rule is to protect the health and safety of the public from source operations that emit or may emit air contaminants or other materials. It prohibits emissions of air contaminants or other materials "which cause

injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public."

- **Regulation IV (Visible Emissions), Rule 4601, Architectural Coatings.** The rule limits volatile organic compound (VOC) emissions from architectural coatings and specifies practices for proper storage, cleanup, and labeling requirements. Rule 4601 applies to "any person who supplies, sells, offers for sale, applies, or solicits the application of any architectural coating, or who manufactures, blends or repackages any architectural coating for use within the District." Materials covered by the rule include adhesives, architectural coatings, paints, varnishes, sealers, stains, concrete curing compounds, concrete/masonry sealers, and waterproofing sealers.

- **Regulation IV (Visible Emissions), Rule 4641, Cutback, Slow Curve and Emulsified Asphalt, Paving and Maintenance Operations.** The purpose of this rule is to limit VOC emissions by restricting the application and manufacturing of certain types of asphalt and maintenance operations and applies to the use of these materials. Specifically, certain types of asphalt cannot be used for penetrating prime coat, dust palliative, or other paving: rapid cure and medium cure cutback asphalt, slow cure asphalt that contains more than 0.5 percent of organic compound which evaporates at 500˚F or lower, and emulsified asphalt containing VOC in excess of 3 percent which evaporates at 500˚F or lower.

- **Regulation VIII (Fugitive PM_{10} Prohibitions), Rules 8021–8071, Fugitive PM_{10} Prohibitions.** The purpose of these rules is to limit airborne particulate emissions associated with construction, demolition, excavation, extraction, and other earthmoving activities, as well as with open disturbed land and emissions associated with paved and unpaved roads. Accordingly, these rules include specific measures to be employed to prevent and reduce fugitive dust emissions from anthropogenic sources.

- **Regulation IX (Mobile and Indirect Sources), Rule 9510, Indirect Source Review.** This rule is the result of state requirements outlined in California Health and Safety Code Section 40604 and the SIP. The air district's SIP commitments were originally contained in the SJVAPCD's 2003 PM_{10} Plan and Extreme Ozone Attainment Demonstration Plans, which presented the SJVAPCD's strategy to reduce PM_{10} and NO_x in order to reach the ambient air pollution standards on schedule, which had been 2010. The plans quantify the reduction from current SJVAPCD rules and proposed rules, as well as state and federal regulations, and then model future emissions to determine whether the SJVAPCD may reach attainment for applicable pollutants. This rule will reduce emissions of NO_x and PM_{10} from new development projects that attract or generate motor vehicle trips. In general, new development contributes to the air pollution problem in the SJVAB by increasing the number of vehicles and vehicle miles traveled. Although newer, cleaner technology is reducing per-vehicle pollution, the emissions increase from new development partially offsets emission reductions gained from technology advances.

  Indirect Source Review applies to larger development projects that have not yet gained discretionary approval. A discretionary permit is a permit from a public agency, which requires some amount of deliberation by that agency, including the potential to require modifications or

conditions on the project. In accordance with this rule, developers of larger residential, commercial, and industrial projects are required to reduce smog-forming NO_x and PM_{10} emissions from their projects' baselines as follows (SJVAPCD 2017):

- 20 percent of construction NO_x exhaust
- 45 percent of construction PM_{10} exhaust
- 33 percent of operational NO_x over 10 years
- 50 percent of operational PM_{10} over 10 years

These reductions are intended to be achieved through incorporation of on-site reduction measures. If, after implementation of on-site emissions reduction measures project emissions still exceed the minimum baseline reduction, the Indirect Source Review requires a project applicant to pay an off-site fee to the SJVAPCD, which is then used to fund clean-air projects within the air basin.

2.3 Air Quality Emissions Impact Assessment

2.3.1 Thresholds of Significance

The impact analysis provided below is based on the following CEQA Guidelines Appendix G thresholds of significance. The Project would result in a significant impact to air quality if it would do any of the following:

1) Conflict with or obstruct implementation of any applicable air quality plan.

2) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

3) Expose sensitive receptors to substantial pollutant concentrations.

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

The significance criteria established by the applicable air quality management or air pollution control district (SJVAPCD) may be relied upon to make the above determinations. The SJVAPCD has identified significance thresholds for use in evaluating project impacts under CEQA. Accordingly, the SJVAPCD - recommended thresholds of significance are used to determine whether construction of the proposed Project would result in a significant air quality impact. Significance thresholds for evaluating construction and operational air quality impacts are listed in Table 2-4.

Table 2-4. SJVAPCD Significance Thresholds

Criteria Pollutant and Precursors	Construction Activities	Operations
	Maximum Pollutants (tons per year)	Maximum Pollutants (tons per year)
ROG	10	10
NO_x	10	10
PM_{10}	100	15
$PM_{2.5}$	27	15
CO	15	100
SO_2	15	27

Source: SJVAPCD 2015a

By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's individual emissions exceed its identified significance thresholds, the project would be cumulatively considerable. Projects that do not exceed significance thresholds would not be considered cumulative considerable.

2.3.2 Methodology

Air quality impacts were assessed in accordance with methodologies recommended by the SJVAPCD. Where criteria air pollutant quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod), version 2020.4.0. CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. Project construction-generated air pollutant emissions were calculated using CalEEMod model defaults for Madera County. Post construction air pollutant emissions are discussed quantitatively as there are no stationary or mobile sources of emissions associated with the operation of the pipeline beyond existing conditions.

2.3.3 Impact Analysis

Conflict with an Applicable Air Quality Management Plan

As previously described, the Project region is classified as nonattainment for the federal O_3 and $PM_{2.5}$ standards and is also a nonattainment area for state O_3, $PM_{2.5}$ and PM_{10} standards (CARB 2019). The USEPA, under the provisions of the CAA, requires each state with regions that have not attained the federal air quality standards to prepare a SIP detailing how these standards are to be met in each local area. The SIP is a legal agreement between each state and the federal government to commit resources to improving air quality. It serves as the template for conducting regional and project-level air quality analysis. CARB is the lead agency for developing the SIP in California. Local air districts, such as the SJVAPCD, prepare air quality attainment plans or air quality management plans and submit them to CARB

for review, approval, and incorporation into the applicable SIP. The air districts develop the strategies stated in the SIPs for achieving air quality standards on a regional basis.

The SJVAPCD is required, pursuant to the federal CAA, to reduce emissions of criteria pollutants for which the SJVAB is in nonattainment. In order to reduce such emissions, the SJVAPCD prepared the 2007 Ozone Plan, 2013 Plan for the Revoked 1-Hour Ozone Standard, 2016 Plan for the 2008 8-Hour Ozone Standard, 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard, 2020 RACT Demonstration for the 2015 8-Hour Ozone Standard, 2007 PM_{10} Maintenance Plan and Request for Re-designation, and 2018 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard. These plans collectively address the air basin's nonattainment status with the national and state O_3 standards as well as particulate matter by establishing a program of rules and regulations directed at reducing air pollutant emissions and achieving state (California) and national air quality standards. Pollutant control strategies are based on the latest scientific and technical information and planning assumptions. According to the SJVAPCD (2015b), the established thresholds of significance for criteria pollutant emissions are based on SJVAPCD New Source Review (NSR) offset requirements for stationary sources. Stationary sources in the SJVAB are subject to some of the most stringent regulatory requirements in the nation. Emission reductions achieved through implementation of SJVAPCD offset requirements are a major component of the District's air quality planning efforts. Thus, projects with emissions below the thresholds of significance for criteria pollutants are determined to "Not conflict or obstruct implementation of the District's air quality plan" (SJVAPCD 2015b).

As shown in Tables 2-5 and 2-6 below, with implementation of reduction measures, described below, Project construction would not generate emissions that would exceed SJVAPCD significance thresholds and therefore would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new air quality violations. Additionally, once construction is complete, the Project would not generate quantifiable criteria emissions from Project operations.

Furthermore, the Project is proposing the replacement of existing water pipeline facilities and associated infrastructure. The Proposed Project would not increase the number of residents or workers in the area and thus would not conflict with the population growth forecasts in the applicable plans.

For these reasons, the Project would not conflict with or obstruct implementation of any applicable air quality plan.

Project Construction-Generated Criteria Air Quality Emissions

Emissions generated during Project construction would be temporary and short-term but have the potential to represent a significant air quality impact. Three basic sources of short-term emissions would be generated through construction of the Proposed Project: operation of the construction vehicles (i.e., tractors, dozers, backhoes), the creation of fugitive dust during clearing and grading, and the use of asphalt or other oil-based substances during paving activities. Activities such as excavation and grading operations, worker vehicle traffic, and wind blowing over exposed soils would generate exhaust emissions and fugitive PM emissions that affect local air quality at various times during Project construction. Effects would be variable depending on the weather, soil conditions, the amount of activity taking place, and the nature of dust control efforts. The dry climate of the area during the summer months creates a high

potential for dust generation. Project construction activities would be subject to SJVAPCD Regulation VIII, which specifies the following measures to control fugitive dust:

- Apply water to unpaved surfaces and areas.
- Use nontoxic chemical or organic dust suppressants on unpaved roads and traffic areas.
- Limit or reduce vehicle speed on unpaved roads and traffic areas to a maximum 15 miles per hour.
- Maintain areas in a stabilized condition by restricting vehicle access.
- Install wind barriers.
- During high winds, cease outdoor activities that disturb the soil.
- Keep bulk materials sufficiently wet when handling.
- Store and handle materials in a three-sided structure.
- When storing bulk materials, apply water to the surface or cover the storage pile with a tarp.
- Don't overload haul trucks. Overloaded trucks are likely to spill bulk materials.
- Cover haul trucks with a tarp or other suitable cover. Or, wet the top of the load enough to limit visible dust emissions.
- Clean the interior of cargo compartments on emptied haul trucks prior to leaving a site.
- Prevent trackout by installing a trackout control device.
- Clean up trackout at least once a day. If along a busy road or highway, clean up trackout immediately.
- Monitor dust-generating activities and implement appropriate measures for maximum dust control.

Predicted emissions generated during Project construction were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. See Attachment A for more information regarding the construction assumptions, including construction equipment and duration, used in this analysis.

Predicted annual emissions associated with Project construction are summarized in Table 2-5. Construction-generated emissions would be short-term and of temporary duration, lasting only as long as construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the SJVAPCD's thresholds of significance.

Table 2-5. Annual Project Construction-Generated Emissions

Construction Year	Maximum Pollutants (tons per year)					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Construction First Year	0.40	3.97	4.37	0.01	0.32	0.19
Construction Second Year	0.38	3.78	4.40	0.01	0.31	0.18
SJVAPCD Significance Threshold	*10 tons/year*	*10 tons/year*	*100 tons/year*	*27 tons/year*	*15 tons/year*	*15 tons/year*
Exceed SJVAPCD Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod version 2020.4.0. Refer to Attachment A for Model Data Outputs.

As shown in Table 2-5, construction-generated emissions would not exceed SJVAPCD significance thresholds. Since the Project's emissions do not exceed SJVAPCD thresholds, no exceedance of the ambient air quality standards would occur, and no regional health effects from Project criteria pollutants would occur.

In addition to the SJVAPCD criteria air pollutant thresholds, SJVAPCD Rule 9510, Indirect Source Review, aims to fulfill the District's emission reduction commitments in the PM_{10} and Ozone Attainment Plans. This rule applies to the following construction projects within the jurisdiction of the SJVAPCD:

- 50 residential units
- 2,000 square feet of commercial space
- 25,000 square feet of light industrial space
- 100,000 square feet of heavy industrial space
- 20,000 square feet of medical office space
- 39,000 square feet of general office space
- 9,000 square feet of educational space
- 10,000 square feet of government space
- 20,000 square feet of recreational space; or
- 9,000 square feet of space not identified above.

This rule also applies to any transportation or transit project where construction exhaust emissions equal or exceed two tons of NO_x or two tons of PM_{10}. The project developers are required to reduce concentrations of NO_x by 20 percent and PM_{10} by 45 percent during construction activities.

The Project is a pipeline replacement project and does not clearly fall within one of construction project types identified in Rule 9510; nevertheless, this report assess potential emissions reductions that could be achieved for Project construction through implementation of certain emission reduction measures.

Reduction measures anticipated to be feasible for the Project include those listed below. An assessment of Project emissions with implementation of these measures was performed and the resulting emissions and percent of reduction achieved is presented in Table 2-6.

- During all construction activities, all diesel-fueled construction equipment including, but not limited to, rubber-tired dozers, graders, scrapers, excavators, asphalt paving equipment, cranes, and tractors shall be California Air Resources Board (CARB) Tier 4 Certified as set forth in Section 2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 of the Code of Federal Regulations.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. Equipment maintenance records shall be kept on-site and made available upon request by the SJVAPCD or the County.

- The Project shall comply with all applicable SJVAPCD rules and regulations. Copies of any applicable air quality permits and/or monitoring plans shall be provided to the County.

As demonstrated in Table 2-6, implementation of the above requirements has the potential to reduce total NO_x emissions by nearly 73 percent and total PM_{10} emissions by 50 percent, which is beyond the reduction that would be needed to achieve the SJVAPCD Rule 9510 target.

Table 2-6. Construction Related NO_x & PM_{10} Emissions- Scenarios (tons per year)

Construction	NO_x without Additional Emission Reduction Measures	NO_x with Additional Emission Reduction Measures	Percent Reduction
Total Construction	3.97	1.08	72.7%
SJVAPCD Rule 9510 NOx Reduction Target			*20%*
Construction	**PM_{10} without Additional Emission Reduction Measures**	**PM_{10} with Additional Emission Reduction Measures**	**Percent Reduction**
Total Construction	0.32	0.16	50.0%
SJVAPCD Rule 9510 PM_{10} Reduction Target			*45%*

Source: CalEEMod version 2020.4.0. Refer to Attachment A for Model Data Outputs.
Notes: Emission reduction/credits for construction emissions are applied based on the required implementation of SJVAPCD Regulation VIII. The specific regulation applied in CalEEMod was watering unpaved surfaces two times per day with a maximum vehicle speed of 15 mph.

Operational Emission Impacts

The existing MD10A water distribution system currently requires periodic maintenance and maintenance vehicle trips. Once construction is complete, no additional daily vehicle trips or personnel would be added to operate or maintain the replacement pipeline. Thus, the Proposed Project would not include the provision of new permanent stationary or mobile sources of criteria air pollutant emissions, and therefore, would not generate quantifiable criteria emissions from Project operations.

Exposure of Sensitive Receptors to Toxic Air Contaminants

As previously described, sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over age 65, children under age 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. The nearest sensitive receptors to the Project Site are single-family residences located directly adjacent to the linear pipeline replacement alignment.

Construction-Generated Air Contaminants

Construction of the Project would result in temporary, short-term Project-generated emissions of DPM, ROG, NOx, CO, and PM_{10} from the exhaust of off-road, heavy-duty diesel equipment for site preparation/excavation (e.g., clearing, trenching); truck traffic; paving; and other miscellaneous activities. As discussed previously, the portion of the SJVAB which encompasses the Project Area is designated as a nonattainment area for federal O_3 and PM_{10} standards and state O_3, $PM_{2.5}$ and PM_{10} standards (CARB 2019). Thus, existing O_3, $PM_{2.5}$ and PM_{10} levels in the SJVAB are at unhealthy levels during certain periods.

However, as shown in Table 2-5 and Table 2-6, the Project would not exceed the SJVAPCD significance thresholds for construction emissions and therefore no regional health effects from Project criteria pollutants would occur.

Per SJVAPCD guidance, this analysis employs the SJVAPCD Prioritization Calculator health risk screening tool to assess the potential health risk-related effects of Project construction. The SJVAPCD Prioritization Calculator identifies a Prioritization score based on the Project emission potency at the vicinity sensitive residential receptors. A prioritization score of 10 or greater, as determined by this screening protocol, is potentially significant and indicates that a detailed Health Risk Assessment (HRA) should be performed.

In addition to cancer risk, the significance thresholds for TAC exposure requires an evaluation of non-cancer risk stated in terms of a hazard index. A chronic hazard index of 1.0 is considered individually significant. It should be noted that there is no acute health hazard for DPM, which is the only significant air toxic associated with construction for this Project. Thus, the maximum acute index for construction of the Project is zero.

As previously described, the nearest sensitive receptors to the Project Site are single-family residences located directly adjacent to the linear pipeline replacement alignment. However, it is acknowledged at construction activity would not be concentrated exclusively at the nearest position to any given sensitive receptor. Due to the linear nature of the Project Site along street segments throughout the community of Madera Ranchos, emissions would be generated from different locations on the Project Site rather than a single location. While Project construction would virtually always be occurring adjacent to a sensitive residential receptor over the course of construction activity, it would not be occurring adjacent to any specific individual single sensitive residential receptor the entire duration. For instance, while residential receptors are located directly adjacent from proposed construction activity at the nearest, at other times over the course of construction any of these residences would also be located as much as 6,000 feet distant from construction activity at the furthest. It would therefore be overly speculative to identify the duration of construction activity at specific distances from any specific individual sensitive residential receptor. Thus, since construction activity would not be concentrated exclusively at a single point and instead would occur intermittently throughout the Project Site over the course of construction, a reasonable proxy distance of 820 feet between Project construction activity and any given residential receptor is considered here. This distance represents a conservative midpoint value between the measured nearest point between a residence and Project construction (directly adjacent) and the measured farthest point between a residence and Project construction (6,000 feet), as it is recognized that certain residences would be positioned both directly adjacent to construction activity as certain points during construction as well as distances less than 6,000 feet from construction activity.

The calculated carcinogenic risk and highest maximum chronic hazard indexes at the nearby sensitive residential receptors due to Project construction is depicted in Table 2-7. In addition, a printout of the SJVAPCD Prioritization Calculator with Project Construction CalEEMod outputs as inputs used to calculate the values below can be found in Attachment B of this document.

Table 2-7. Health Risk Summary

Exposure Scenario	Maximum Cancer Risk at Residence	Maximum Chronic Hazard Index at Residence	Maximum Acute Hazard Index at Residence
Project Construction	3.70	0.02	0.00
SJVAPCD Screening Threshold	*10.0*	*1.0*	*1.0*
Exceed SJVAPCD Screening Threshold?	**No**	**No**	**No**

Source: SJVAPCD Prioritization Calculator. Refer to Attachment B for Model Data Outputs. Health risk calculations assume implementation of the NOx and PM10 reduction measures identified in the Rule 9510 discussion above.

As shown in Table 2-7, impacts related to both cancer risk and non-cancer risk (chronic and acute hazard indexes) because of Project construction would not surpass the screening thresholds at the nearby sensitive residential receptors. Therefore, Project construction would not result in a potentially significant contribution to regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants.

Valley Fever

Coccidioidomycosis (CM), often referred to as San Joaquin Valley Fever or Valley Fever, is one of the most studied and oldest known fungal infections. Valley Fever most commonly affects people who live in hot dry areas with alkaline soil and varies with the season. This disease, which affects both humans and animals, is caused by inhalation of arthroconidia (spores) of the fungus *Coccidioides immitis* (CI). CI spores are found in the top few inches of soil and the existence of the fungus in most soil areas is temporary. The cocci fungus (an organism that grows and feeds on dead or decaying organic matter) lives as a saprophyte in dry, alkaline soil. When weather and moisture conditions are favorable, the fungus "blooms" and forms many tiny spores that lie dormant in the soil until they are stirred up by wind, vehicles, excavation, or other ground-moving activities and become airborne. Agricultural workers, construction workers, and other people who work outdoors and who are exposed to wind and dust are more likely to contract Valley Fever. Children and adults whose hobbies or sports activities expose them to wind and dust are also more likely to contract Valley Fever. After the fungal spores have settled in the lungs, they change into a multicellular structure called a spherule. Fungal growth in the lungs occurs as the spherule grows and bursts, releasing endospores, which then develop into more spherules.

Valley fever (Coccidioidomycosis) is found in California, including the Madera County. In about 50 to 75 percent of people, valley fever causes either no symptoms or mild symptoms and those infected never seek medical care; when symptoms are more pronounced, they usually present as lung problems (cough, shortness of breath, sputum production, fever, and chest pains). The disease can progress to chronic or progressive lung disease and may even become disseminated to the skin, lining tissue of the brain (meninges), skeleton, and other body areas.

Madera County is considered a highly endemic area for valley fever. When soil containing this fungus is disturbed by ground-disturbing activities such as digging or grading, by vehicles raising dust, or by the wind, the fungal spores get into the air. When people breathe the spores into their lungs, they may get valley fever. Fungal spores are small particles that can grow and reproduce in the body. The highest infection period for valley fever occurs during the driest months in California, between June and November. Infection from valley fever during ground-disturbing activities can be partially mitigated through the control of Project-generated dust. As noted, Project-generated dust would be controlled by adhering to SJVAPCD dust-reducing measures (Regulation VIII), which includes the preparation of a SJVAPCD-approved dust control plan describing all fugitive dust control measures that are to be implemented before, during, and after any dust-generating activity.

With minimal site grading and conformance with SJVAPCD Regulation VIII, dust from the construction of the Project would not add significantly to the existing exposure level of people to this fungus, including construction workers.

Naturally Occurring Asbestos

Another potential air quality issue associated with construction-related activities is the airborne entrainment of asbestos due to the disturbance of naturally occurring asbestos-containing soils. The proposed Project is not located within an area designated by the State of California as likely to contain naturally occurring asbestos (Department of Conservation [DOC] 2000). As a result, construction-related activities would not be anticipated to result in increased exposure of sensitive land uses to asbestos.

Operational Air Contaminants

Operation of the proposed Project would not result in the development of any substantial sources of air toxics. There would be no stationary sources associated with Project operations; nor would the Project attract additional mobile sources that spend long periods queuing and idling at the site. Onsite Project emissions would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, the Project would not be a substantial source of TACs. The Project will not result in a high carcinogenic or non-carcinogenic risk during operation.

Carbon Monoxide Hot Spots

It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections. Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Under certain meteorological conditions, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Given the high traffic volume potential, areas of high CO concentrations, or "hot spots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours. It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. However, transport of this criteria pollutant is extremely limited, and CO disperses rapidly with distance from the source under normal meteorological conditions. Furthermore, vehicle emissions standards have become increasingly more stringent in the last 20 years. Currently, the allowable CO emissions standard in

California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentration in the SJVAB is designated as in attainment. Detailed modeling of Project-specific CO "hot spots" is not necessary and thus this potential impact is addressed qualitatively.

A CO "hot spot" would occur if an exceedance of the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9 ppm were to occur. The analysis prepared for CO attainment in the South Coast Air Quality Management District's (SCAQMD's) *1992 Federal Attainment Plan for Carbon Monoxide* in Los Angeles County and a Modeling and Attainment Demonstration prepared by the SCAQMD as part of the 2003 Air Quality Management Plan can be used to demonstrate the potential for CO exceedances of these standards. The SCAQMD is the air pollution control officer for much of southern California. The SCAQMD conducted a CO hot spot analysis as part of the 1992 CO Federal Attainment Plan at four busy intersections in Los Angeles County during the peak morning and afternoon time periods. The intersections evaluated included Long Beach Boulevard and Imperial Highway (Lynwood), Wilshire Boulevard and Veteran Avenue (Westwood), Sunset Boulevard and Highland Avenue (Hollywood), and La Cienega Boulevard and Century Boulevard (Inglewood). The busiest intersection evaluated was at Wilshire Boulevard and Veteran Avenue, which has a traffic volume of approximately 100,000 vehicles per day. Despite this level of traffic, the CO analysis concluded that there was no violation of CO standards (SCAQMD 1992). In order to establish a more accurate record of baseline CO concentrations affecting the Los Angeles, a CO "hot spot" analysis was conducted in 2003 at the same four busy intersections in Los Angeles at the peak morning and afternoon time periods. This "hot spot" analysis did not predict any violation of CO standards. The highest one-hour concentration was measured at 4.6 ppm at Wilshire Boulevard and Veteran Avenue and the highest eight-hour concentration was measured at 8.4 ppm at Long Beach Boulevard and Imperial Highway. Thus, there was no violation of CO standards.

Similar considerations are also employed by other Air Districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD), the air pollution control officer for the San Francisco Bay Area, concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact.

Furthermore, the SJVAPCD Guidance for Assessing and Mitigating Impacts (2015b) includes the following CO hot spot criteria:

If neither of the following criteria are met at all intersections affected by the developmental project, the project will result in no potential to create a violation of the CO standard:

- A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to LOS E or F; or
- A traffic study indicates that the project will substantially worsen an already existing LOS F on one or more streets or at more or more intersections in the project vicinity.

The Proposed Project is not anticipated to result in additional daily traffic trip once construction is complete. Thus, the proposed Project would not generate traffic volumes at any intersection of more than 100,000 vehicles per day (or 44,000 vehicles per day) and the Project would not affect LOS on any roadways. There is no likelihood of the Project traffic exceeding CO values.

Odors

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

During construction, the Proposed Project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site. However, these emissions are short-term in nature and will rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Additionally, odors would be localized and generally confined to the Project Area. Therefore, odors generated during Project construction would not adversely expose a substantial number of people to odor emissions.

Land uses commonly considered to be potential sources of obnoxious odorous emissions include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The Proposed Project does not include any uses identified as being associated with odors. The installed pipe would not emit odors.

3.0 GREENHOUSE GAS EMISSIONS

3.1 Greenhouse Gas Setting

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. Because the earth has a much lower temperature than the sun, it emits lower-frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead trapped, resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth. Without the greenhouse effect, the earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are CO_2, methane (CH_4), and N_2O. Fluorinated gases also make up a small fraction of the GHGs that contribute to climate change. Fluorinated gases include chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride; however, it is noted that these gases are not associated with typical land use development. Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic factors together (Intergovernmental Panel on Climate Change [IPCC] 2014).

Table 3-1 describes the primary GHGs attributed to global climate change, including their physical properties, primary sources, and contributions to the greenhouse effect.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH_4 traps over 25 times more heat per molecule than CO_2, and N_2O absorbs 298 times more heat per molecule than CO_2 (IPCC 2014). Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO_2e), which weight each gas by its global warming potential. Expressing GHG emissions in CO_2e takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, or other forms. Of the total annual human-caused CO_2

emissions, approximately 55 percent is sequestered through ocean and land uptakes every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO_2 emissions remains stored in the atmosphere (IPCC 2013).

Table 3-1. Greenhouse Gases

Greenhouse Gas	Description
CO_2	Carbon dioxide is a colorless, odorless gas. CO_2 is emitted in a number of ways, both naturally and through human activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO_2 emissions. The atmospheric lifetime of CO_2 is variable because it is so readily exchanged in the atmosphere.[1]
CH_4	Methane is a colorless, odorless gas and is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. Methane is emitted from a variety of both human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (intestinal fermentation in livestock and manure management), rice cultivation, biomass burning, and waste management. These activities release significant quantities of CH_4 to the atmosphere. Natural sources of CH_4 include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. The atmospheric lifetime of CH_4 is about 12 years.[2]
N_2O	Nitrous oxide is a clear, colorless gas with a slightly sweet odor. Nitrous oxide is produced by both natural and human-related sources. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. N_2O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years.[3]

Sources: [1]USEPA 2016a, [2] USEPA 2016b, [3] USEPA 2016c

The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; it is sufficient to say the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature or to global, local, or microclimates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

3.1.1 Sources of Greenhouse Gas Emissions

In 2021, CARB released the 2021 edition of the California GHG inventory covering calendar year 2019 emissions. In 2019, California emitted 418.2 million gross metric tons of CO_2e including from imported electricity. Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2019, accounting for approximately 40 percent of total GHG emissions in the state. When emissions from extracting, refining and moving transportation fuels in California are

included, transportation is responsible for over 50 percent of statewide emissions in 2019. Continuing the downward trend from 2018, transportation emissions decreased 3.5 million metric tons of CO_2e in 2019, only being outpaced by electricity, which reduced emissions by 4.3 million metric tons of CO_2e in 2019. Emissions from the electricity sector account for 14 percent of the inventory and have shown a substantial decrease in 2019 due to increases in renewables. California's industrial sector accounts for the second largest source of the state's GHG emissions in 2019, accounting for 21 percent (CARB 2021b).

3.2 Regulatory Framework

3.2.1 State

Executive Orders S-3-05 and B-30-15

Executive Order (EO) S-3-05, signed by Governor Arnold Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the EO established total GHG emission targets for the State. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

On April 20, 2015, Governor Brown signed EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments such as the European Union, which adopted the same target in October 2014. California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the U.S. to limit global warming below 2 degrees Celsius, the warming threshold at which major climate disruptions are projected, such as super droughts and rising sea levels.

Assembly Bill 32 Climate Change Scoping Plan and Updates

In 2006, the California legislature passed Assembly Bill (AB) 32 (Health and Safety Code § 38500 et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 required CARB to design and implement feasible and cost-effective emission limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions). Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008, which outlined measures to meet the 2020 GHG reduction goals. California exceeded the target of reducing GHG emissions to 1990 levels by the year 2017.

The Scoping Plan is required by AB 32 to be updated at least every five years. The latest update, the 2017 Scoping Plan Update, addresses the 2030 target established by Senate Bill (SB) 32 as discussed below and establishes a proposed framework of action for California to meet a 40 percent reduction in GHG emissions by 2030 compared to 1990 levels. The key programs that the Scoping Plan Update builds on include increasing the use of renewable energy in the State, the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, and reduction of methane emissions from agricultural and other wastes.

Senate Bill 32 and Assembly Bill 197 of 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include § 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the State's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050.

Senate Bill 100 of 2018

In 2018, SB 100 was signed by Governor Brown, codifying a goal of 60 percent renewable procurement by 2030 and 100 percent by 2045 Renewables Portfolio Standard.

3.2.2 Local

San Joaquin County Air Pollution Control District

The SJVAPCD provides a tiered approach in assessing significance of project specific GHG emission increases. Projects implementing Best Performance Standards (BPS) would be determined to have a less than cumulatively significant impact. Otherwise, demonstration of a 29 percent reduction in GHG emissions, from business-as-usual (BAU), is required to determine that a project would have a less than cumulatively significant impact. The BAU approach was developed consistent with the GHG emission reduction targets established in the Scoping Plan. However, the BAU portion of the tiered approach is problematic based on the *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal.4th 204, 225, 229 (also known as the "Newhall Ranch" decision). In the Newhall Ranch decision, the California Supreme Court explained that use of a BAU method, in which a project that demonstrates certain GHG reductions below the Scoping Plan's BAU scenario, is an acceptable methodology for determining potentially significant GHG emissions effects for purposes of CEQA; however, such a BAU approach must include substantial evidence showing how a project-level reduction in GHG emissions "in comparison to business as usual is consistent with achieving AB 32's statewide goal of a 29 percent reduction from business as usual." Examining the Newhall Ranch project's EIR, the Court further explained that:

[*a]t bottom, the EIR's deficiency stems from taking a quantitative comparison method developed by the Scoping Plan as a measure of the greenhouse gas emissions reduction effort required by the state as a whole, and attempting to use that method, without consideration of any changes or adjustments, for a purpose very different from its original design: To measure the efficiency and conservation measures incorporated in a specific land use development proposed for a specific location. The EIR simply assumes that the level of effort required in one context, a 29 percent reduction from business as usual statewide, will suffice in the other, a specific land use development. From the information in the administrative record, we cannot say that conclusion is wrong, but neither can we discern the contours of a logical argument that it is right. The analytical gap left by the EIR's failure to establish, through substantial evidence and reasoned explanation, a quantitative equivalence between the Scoping Plan's statewide comparison and the EIR's own*

project-level comparison deprived the EIR of its "sufficiency as an informative document." (*Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal.4th 204, 227, internal citations omitted.)

Thus, given this Project's scope and relatively low projected GHG emissions, the project-level to state-level BAU comparison required in the Newhall Ranch decision would be inappropriate for the Project's analysis of GHG emissions. The BAU approach is further inapt because the SJVAPCD thresholds are based on statewide GHG-reduction targets for the year 2020, and the Project would be implemented beginning in the year 2022 at the earliest.

California Air Pollution Control Officers Association

California law has established thirty-five local air pollution control districts in California. These range from small, single county districts such as Lassen, to multi-county agencies such as the Bay Area and South Coast AQMDs. Districts provide local expertise and knowledge of local conditions to deal with local problems. They are governed by Boards consisting primarily of elected officials, and are staffed by engineers, planners, attorneys, inspectors, meteorologists, chemists, and technicians. In general, these local districts are responsible for control of stationary sources of emissions. While mobile source emissions are mostly controlled by state and federal regulations, local districts do have authority to implement control measures which affect transportation sources, including automobiles. Local district activities are overseen by both the state and federal agencies. The California Air Pollution Control Officers Association (CAPCOA) is an association of the air pollution control officers from all 35 local air quality agencies throughout California, including the SJVAPCD. CAPCOA was formed in 1976 to promote clean air and to provide a forum for sharing of knowledge, experience, and information among the air quality regulatory agencies around the State. The Association promotes unity and efficiency and strives to encourage consistency in methods and practices of air pollution control. It is an organization of air quality professionals. CAPCOA meets regularly with federal and state air quality officials to develop statewide rules and to assure consistent application of rules and regulations. CAPCOA actively participates in the development and implementation of air quality bills that speed progress toward healthful air quality, reduce costs, and generally streamline air quality laws.

CAPCOA has established a GHG significance threshold of 900 metric tons of CO_2e annually for assessing proposed land use development projects. This threshold represents a 90 percent capture rate (i.e., this threshold captures projects that represent approximately 90 percent of GHG emissions from new sources). The 900 metric tons of CO_2e per year value is typically used in defining small projects within California that are considered less than significant because it represents less than one percent of future 2050 statewide GHG emissions target and the lead agency can provide more efficient implementation of CEQA by focusing its scarce resources on the top 90 percent. The 900 metric ton threshold is considered by CAPCOA to be low enough to capture a substantial fraction of future residential and nonresidential development that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions.

3.3 Greenhouse Gas Emissions Impact Assessment

3.3.1 Thresholds of Significance

The impact analysis provided below is based on the following CEQA Guidelines Appendix G thresholds of significance. The Project would result in a significant impact to greenhouse gas emissions if it would:

1) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

2) Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The Appendix G thresholds for GHG's do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA. With respect to GHG emissions, the CEQA Guidelines § 15064.4(a) states that lead agencies "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions resulting from a project. The CEQA Guidelines note that an agency has the discretion to either quantify a project's GHG emissions or rely on a "qualitative analysis or other performance-based standards." (14 California Code of Regulations [CCR] 15064.4(b)). A lead agency may use a "model or methodology" to estimate GHG emissions and has the discretion to select the model or methodology it considers "most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change." (14 CCR 15064.4(c)). Section 15064.4(b) provides that the lead agency should consider the following when determining the significance of impacts from GHG emissions on the environment:

1. The extent a project may increase or reduce GHG emissions as compared to the existing environmental setting.

2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.

3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4(b)).

In addition, Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence" (14 CCR 15064.7(c)). The CEQA Guidelines also clarify that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impact analysis (see CEQA Guidelines § 15130(f)). As a note, the CEQA Guidelines were amended in response to SB 97. In particular, the CEQA Guidelines were

amended to specify that compliance with a GHG emissions reduction plan renders a cumulative impact insignificant.

Per CEQA Guidelines § 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that would avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plans [and] plans or regulations for the reduction of greenhouse gas emissions." Put another way, CEQA Guidelines § 15064(h)(3) allows a lead agency to make a finding of less than significant for GHG emissions if a project complies with adopted programs, plans, policies and/or other regulatory strategies to reduce GHG emissions.

The significance of the Project's GHG emissions is evaluated consistent with CEQA Guidelines § 15064.4(b)(2) by considering whether the Project complies with applicable plans, policies, regulations and requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. As previously described, portions of the SJVAPCD significance thresholds are problematic based on the Newhall Ranch decision. Therefore, for the purposes of this analysis Project GHG emissions are quantified and compared to the thresholds issued by CAPCOA, which is an association of the air pollution control officers from all 35 local air quality agencies throughout California, including the SJVAPCD. CAPCOA recommends a significance threshold of 900 metric tons annually. This threshold is based on a capture rate of 90 percent of land use development projects, which in turn translates into a 90 percent capture rate of all GHG emissions. The 900 metric ton threshold is considered by CAPCOA to be low enough to capture a substantial fraction of future projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions.

In *Center for Biological Diversity v. Department of Fish and Wildlife* (2015) 62 Cal. 4th 2014, 213, 221, 227, following its review of various potential GHG thresholds proposed in an academic study [Crockett, *Addressing the Significance of Greenhouse Gas Emissions: California's Search for Regulatory Certainty in an Uncertain World* (July 2011), 4 Golden Gate U. Envtl. L. J. 203], the California Supreme Court identified the use of numeric bright-line thresholds as a potential pathway for compliance with CEQA GHG requirements. The study found numeric bright line thresholds designed to determine when small projects were so small as to not cause a cumulatively considerable impact on global climate change was consistent with CEQA. Specifically, Public Resources Code section 21003(f) provides it is a policy of the state that "[a]ll persons and public agencies involved in the environmental review process be responsible for carrying out the process in the most efficient, expeditious manner in order to conserve the available financial, governmental, physical and social resources with the objective that those resources may be better applied toward the mitigation of actual significant effects on the environment." The Supreme

Court-reviewed study noted, "[s]ubjecting the smallest projects to the full panoply of CEQA requirements, even though the public benefit would be minimal, would not be consistent with implementing the statute in the most efficient, expeditious manner. Nor would it be consistent with applying lead agencies' scarce resources toward mitigating actual significant climate change impacts." (Crockett, *Addressing the Significance of Greenhouse Gas Emissions: California's Search for Regulatory Certainty in an Uncertain World* (July 2011), 4 Golden Gate U. Envtl. L. J. 203, 221, 227.)

3.3.2 Methodology

Where GHG emission quantification was required, emissions were modeled using the CalEEMod, version 2020.4.0. CalEEMod is a statewide land use emissions computer model designed to quantify potential GHG emissions associated with both construction and operations from a variety of land use projects. Project GHG emissions were calculated using a combination of model defaults for Madera County and information provided by the Project proponent, such as construction phasing and timing.

3.3.3 Impact Analysis

Generation of GHG Emissions

Construction-Generated GHG Emissions

Construction of the Project would generate GHG emissions from worker commute trips, haul trucks carrying supplies and materials to and from the Project site, and off-road construction equipment (e.g., excavators, graders). Table 3-2 illustrates the specific construction generated GHG emissions that would result from construction of the Project. Once construction is complete, the generation of these GHG emissions would cease.

Table 3-2. Construction-Related Greenhouse Gas Emissions

Emissions Source	CO_2e (Metric Tons/ Year)
Construction Year One	898
Construction Year Two	895
CAPCOA's Potentially Significant Impact Threshold	*900*
Exceed CAPCOA's Significance Threshold?	**No**

Source: CalEEMod version 2020.4.0. Refer to Attachment A for Model Data Outputs.

As shown in Table 3-2, Project would result in the generation of approximately 898 metric tons of CO_2e during the first year of Project construction and 895 metric tons of CO_2e during the second year of construction. Thus, emissions would not exceed the CAPCOA's potentially significant impact threshold of 900 metric tons of CO_2e annually. Once complete, the generation of these GHG emissions would cease.

Operational GHG Emissions

Maintenance of the existing water distribution systems requires periodic vehicle trips and equipment operations. Once construction is complete, the Project would be expected to require less maintenance activities that compared to existing conditions. Thus, the Proposed Project would not include the provision of new permanent stationary or mobile sources of GHG emissions, and therefore, would not generate quantifiable GHG emissions from Project operations.

Conflict with any Applicable Plan, Policy, or Regulation of an Agency Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases

The County of Madera does have an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. However, as previously described the State of California promulgates several mandates and goals to reduce statewide GHG emissions, including the goal to reduce statewide GHG emissions to 40 percent below 1990 levels by the year 2030 (SB 32). As previously described, temporary Project-related GHG emissions during construction would not exceed GHG significance thresholds, which were developed in consideration of statewide greenhouse reduction goals. Furthermore, the Project would not include new permanent sources of GHG emissions and would not generate new or unplanned permanent GHG emissions.

4.0 REFERENCES

CAPCOA. 2021. California Emissions Estimator Model (CalEEMod), version 2020.4.0.

_____. 2013. Health Effects. http://www.capcoa.org/health-effects/.

CARB. 2021a. Air Quality Data Statistics. http://www.arb.ca.gov/adam/index.html.

_____. 2021b. California Greenhouse Gas Emission Inventory 2021 Edition. https://ww2.arb.ca.gov/ghg-inventory-data

_____. 2019. State and Federal Area Designation Maps. http://www.arb.ca.gov/desig/adm/adm.htm.

_____. 2008. Climate Change Scoping Plan Appendices (Appendix F).

Crockett, Alexander G. 2011. Addressing the Significance of Greenhouse Gas Emissions Under CEQA: California's Search for Regulatory Certainty in an Uncertain World.

DOC. 2000. *A General Location Guide for Ultramafic Rocks in California-Areas More Likely to Contain Naturally Occurring Asbestos.*

IPCC. 2014. Climate Change 2014 Synthesis Report: Approved Summary for Policymakers. http://www.ipcc.ch/.

_____. 2013. Carbon and Other Biogeochemical Cycles. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. http://www.climatechange2013.org/ images/report/WG1AR5_ALL_FINAL.pdf.

SCAQMD (South Coast Air Quality Management District). 1992. 1992 Federal Attainment Plan for Carbon Monoxide

SJVAPCD. 2020. 2020 Reasonably Available Control Technology (RACT) Demonstration for the 2015 8-Hour Ozone Standard. http://valleyair.org/Air_Quality_Plans/docs/2020-RACT-Demonstration.pdf

_____. 2018. 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards. http://valleyair.org/pmplans/documents/2018/pm-plan-adopted/2018-Plan-for-the-1997-2006-and-2012-PM2.5-Standards.pdf

_____. 2017. Rule 9510 Indirect Source Review (ISR). https://www.valleyair.org/rules/currntrules/r9510-a.pdf.

_____. 2016. 2016 Plan for the 2008 8-Hour Ozone Standard. http://valleyair.org/Air_Quality_Plans/Ozone-Plan-2016/Adopted-Plan.pdf.

_____. 2015a. Air Quality Thresholds of Significance – Criteria Pollutants. http://www.valleyair.org/transportation/0714-GAMAQI-Criteria-Pollutant-Thresholds-of-Significance.pdf.

_____. 2015b. Guidance for Assessing and Mitigating Air Quality Impacts. http://www.valleyair.org/transportation/GAMAQI-2015/FINAL-DRAFT-GAMAQI.PDF.

_____. 2014. 2014 Reasonably Available Control Technology (RACT) Demonstration for the 8-Hour Ozone State Implementation Plan (SIP).

_____. 2013. 2013 Plan for the Revoked One-Hour Ozone Standard. http://valleyair.org/Air_Quality_Plans/Ozone-OneHourPlan-2013.htm.

_____. 2009. Final Staff Report- Addressing Greenhouse Gas Emissions Impacts Under the California Environmental Quality Act. https://www.valleyair.org/Programs/CCAP/12-17-09/1%20CCAP%20-%20FINAL%20CEQA%20GHG%20Staff%20Report%20-%20Dec%2017%202009.pdf.

_____. 2007a. 2007 Ozone Plan. https://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/2007_8HourOzone_CompletePlan.pdf.

_____. 2007b. 2007 PM_{10} Maintenance Plan and Request for Redesignation. https://www.valleyair.org/Air_Quality_Plans/docs/Maintenance%20Plan10-25-07.pdf.

USEPA. 2016a. Climate Change – Greenhouse Gas Emissions: Carbon Dioxide. http://www.epa.gov/climatechange/emissions/co2.html.

_____. 2016b. Methane. https://www3.epa.gov/climatechange/ghgemissions/gases/ch4.html.

_____. 2016c. Nitrous Oxide. https://www3.epa.gov/climatechange/ghgemissions/gases/n2o.html.

LIST OF ATTACHMENTS

Attachment A – CalEEMod Output Files Criteria Air Pollutants & Greenhouse Gas Emissions

Attachment B – SJVAPCD Prioritization Score Calculator

ATTACHMENT A

CalEEMod Output Files Criteria Air Pollutants & Greenhouse Gas Emissions

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Madera County MD10A Water Distribution Project

Madera County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	665.28	1000sqft	15.27	665,280.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.9	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Pipeline Installation assumed to span two years. All phases assumed to occur simultaneously.

Off-road Equipment - Asphalt removal equipment

Off-road Equipment - Pipe Installation equipment

Off-road Equipment -

Trips and VMT - 15 worker trips maximum assumed

Demolition - 3,894 tons of asphalt debris assumed to be excavated and hauled offsite

Construction Off-road Equipment Mitigation - SJVAPCD Regulation VIII & Rule 9510

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	300.00	493.00
tblConstructionPhase	NumDays	20.00	481.00
tblConstructionPhase	NumDays	20.00	486.00
tblConstructionPhase	PhaseEndDate	7/13/2023	12/10/2024
tblConstructionPhase	PhaseEndDate	5/19/2022	11/12/2024
tblConstructionPhase	PhaseEndDate	8/10/2023	12/20/2024
tblConstructionPhase	PhaseStartDate	5/20/2022	1/20/2023
tblConstructionPhase	PhaseStartDate	4/22/2022	1/10/2023
tblConstructionPhase	PhaseStartDate	7/14/2023	2/10/2023
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	WorkerTripNumber	279.00	15.00

2.0 Emissions Summary

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.4066	3.9771	4.3767	9.8800e-003	0.1613	0.1676	0.3289	0.0422	0.1574	0.1996	0.0000	882.7932	882.7932	0.1502	0.0371	897.6143
2024	0.3868	3.7845	4.4097	9.8600e-003	0.1600	0.1536	0.3136	0.0421	0.1440	0.1861	0.0000	880.1500	880.1500	0.1518	0.0365	894.8238
Maximum	**0.4066**	**3.9771**	**4.4097**	**9.8800e-003**	**0.1613**	**0.1676**	**0.3289**	**0.0422**	**0.1574**	**0.1996**	**0.0000**	**882.7932**	**882.7932**	**0.1518**	**0.0371**	**897.6143**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.1437	1.0827	4.9532	9.8800e-003	0.1489	0.0209	0.1698	0.0403	0.0207	0.0610	0.0000	882.7925	882.7925	0.1502	0.0371	897.6136
2024	0.1401	1.0795	4.9903	9.8600e-003	0.1490	0.0200	0.1690	0.0405	0.0199	0.0603	0.0000	880.1493	880.1493	0.1518	0.0365	894.8231
Maximum	**0.1437**	**1.0827**	**4.9903**	**9.8800e-003**	**0.1490**	**0.0209**	**0.1698**	**0.0405**	**0.0207**	**0.0610**	**0.0000**	**882.7925**	**882.7925**	**0.1518**	**0.0371**	**897.6136**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**64.23**	**72.14**	**-13.17**	**0.00**	**7.29**	**87.26**	**47.26**	**4.21**	**86.54**	**68.54**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
3	**10-22-2022**	**1-21-2023**	0.0628	0.0111
4	**1-22-2023**	**4-21-2023**	1.0796	0.3132
5	**4-22-2023**	**7-21-2023**	1.1617	0.3201
6	**7-22-2023**	**10-21-2023**	1.1768	0.3259
7	**10-22-2023**	**1-21-2024**	1.1734	0.3331
8	**1-22-2024**	**4-21-2024**	1.1208	0.3248
9	**4-22-2024**	**7-21-2024**	1.1131	0.3172
10	**7-22-2024**	**9-30-2024**	0.8685	0.2475
		Highest	1.1768	0.3331

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0574	6.0000e-005	6.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0119	0.0119	3.0000e-005	0.0000	0.0127
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0574**	**6.0000e-005**	**6.1000e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0119**	**0.0119**	**3.0000e-005**	**0.0000**	**0.0127**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0574	6.0000e-005	6.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0119	0.0119	3.0000e-005	0.0000	0.0127
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0574**	**6.0000e-005**	**6.1000e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0119**	**0.0119**	**3.0000e-005**	**0.0000**	**0.0127**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Pavement Removal - Trenching	Demolition	1/10/2023	11/12/2024	5	481	
2	Pipeline Installation	Building Construction	1/20/2023	12/10/2024	5	493	
3	Repaving	Paving	2/10/2023	12/20/2024	5	486	

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 15.27

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pavement Removal - Trenching	Concrete/Industrial Saws	1	8.00	81	0.73
Pavement Removal - Trenching	Excavators	1	8.00	158	0.38
Pavement Removal - Trenching	Rubber Tired Dozers	1	8.00	247	0.40
Pipeline Installation	Cranes	0	7.00	231	0.29
Pipeline Installation	Forklifts	1	8.00	89	0.20
Pipeline Installation	Generator Sets	1	8.00	84	0.74
Pipeline Installation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Pipeline Installation	Welders	1	8.00	46	0.45
Repaving	Pavers	2	8.00	130	0.42
Repaving	Paving Equipment	2	8.00	132	0.36
Repaving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Pavement Removal - Trenching	3	8.00	0.00	385.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline Installation	4	15.00	109.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Repaving	6	15.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Pavement Removal - Trenching - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0225	0.0000	0.0225	3.4100e-003	0.0000	3.4100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1533	1.4300	1.2727	2.5300e-003		0.0667	0.0667		0.0626	0.0626	0.0000	221.1817	221.1817	0.0528	0.0000	222.5020
Total	**0.1533**	**1.4300**	**1.2727**	**2.5300e-003**	**0.0225**	**0.0667**	**0.0892**	**3.4100e-003**	**0.0626**	**0.0661**	**0.0000**	**221.1817**	**221.1817**	**0.0528**	**0.0000**	**222.5020**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Pavement Removal - Trenching - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.2000e-004	0.0125	2.7100e-003	6.0000e-005	1.7400e-003	1.2000e-004	1.8600e-003	4.8000e-004	1.2000e-004	5.9000e-004	0.0000	5.6768	5.6768	1.0000e-005	8.9000e-004	5.9430
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.5600e-003	3.2300e-003	0.0409	1.1000e-004	0.0126	7.0000e-005	0.0127	3.3400e-003	7.0000e-005	3.4100e-003	0.0000	10.3592	10.3592	2.8000e-004	2.8000e-004	10.4490
Total	**4.7800e-003**	**0.0158**	**0.0436**	**1.7000e-004**	**0.0143**	**1.9000e-004**	**0.0145**	**3.8200e-003**	**1.9000e-004**	**4.0000e-003**	**0.0000**	**16.0359**	**16.0359**	**2.9000e-004**	**1.1700e-003**	**16.3920**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0101	0.0000	0.0101	1.5300e-003	0.0000	1.5300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0293	0.1269	1.4745	2.5300e-003		3.9100e-003	3.9100e-003		3.9100e-003	3.9100e-003	0.0000	221.1814	221.1814	0.0528	0.0000	222.5018
Total	**0.0293**	**0.1269**	**1.4745**	**2.5300e-003**	**0.0101**	**3.9100e-003**	**0.0140**	**1.5300e-003**	**3.9100e-003**	**5.4400e-003**	**0.0000**	**221.1814**	**221.1814**	**0.0528**	**0.0000**	**222.5018**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Pavement Removal - Trenching - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.2000e-004	0.0125	2.7100e-003	6.0000e-005	1.7400e-003	1.2000e-004	1.8600e-003	4.8000e-004	1.2000e-004	5.9000e-004	0.0000	5.6768	5.6768	1.0000e-005	8.9000e-004	5.9430
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.5600e-003	3.2300e-003	0.0409	1.1000e-004	0.0126	7.0000e-005	0.0127	3.3400e-003	7.0000e-005	3.4100e-003	0.0000	10.3592	10.3592	2.8000e-004	2.8000e-004	10.4490
Total	**4.7800e-003**	**0.0158**	**0.0436**	**1.7000e-004**	**0.0143**	**1.9000e-004**	**0.0145**	**3.8200e-003**	**1.9000e-004**	**4.0000e-003**	**0.0000**	**16.0359**	**16.0359**	**2.9000e-004**	**1.1700e-003**	**16.3920**

3.2 Pavement Removal - Trenching - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0201	0.0000	0.0201	3.0400e-003	0.0000	3.0400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1349	1.2422	1.1402	2.2700e-003		0.0568	0.0568		0.0533	0.0533	0.0000	197.6845	197.6845	0.0471	0.0000	198.8620
Total	**0.1349**	**1.2422**	**1.1402**	**2.2700e-003**	**0.0201**	**0.0568**	**0.0769**	**3.0400e-003**	**0.0533**	**0.0563**	**0.0000**	**197.6845**	**197.6845**	**0.0471**	**0.0000**	**198.8620**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Pavement Removal - Trenching - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9000e-004	0.0112	2.4000e-003	5.0000e-005	1.5500e-003	1.1000e-004	1.6600e-003	4.3000e-004	1.0000e-004	5.3000e-004	0.0000	4.9836	4.9836	1.0000e-005	7.8000e-004	5.2174
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7700e-003	2.5500e-003	0.0341	1.0000e-004	0.0113	6.0000e-005	0.0113	2.9900e-003	6.0000e-005	3.0500e-003	0.0000	9.0319	9.0319	2.2000e-004	2.3000e-004	9.1060
Total	**3.9600e-003**	**0.0138**	**0.0365**	**1.5000e-004**	**0.0128**	**1.7000e-004**	**0.0130**	**3.4200e-003**	**1.6000e-004**	**3.5800e-003**	**0.0000**	**14.0156**	**14.0156**	**2.3000e-004**	**1.0100e-003**	**14.3234**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.0400e-003	0.0000	9.0400e-003	1.3700e-003	0.0000	1.3700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0262	0.1135	1.3178	2.2700e-003		3.4900e-003	3.4900e-003		3.4900e-003	3.4900e-003	0.0000	197.6843	197.6843	0.0471	0.0000	198.8618
Total	**0.0262**	**0.1135**	**1.3178**	**2.2700e-003**	**9.0400e-003**	**3.4900e-003**	**0.0125**	**1.3700e-003**	**3.4900e-003**	**4.8600e-003**	**0.0000**	**197.6843**	**197.6843**	**0.0471**	**0.0000**	**198.8618**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Pavement Removal - Trenching - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9000e-004	0.0112	2.4000e-003	5.0000e-005	1.5500e-003	1.1000e-004	1.6600e-003	4.3000e-004	1.0000e-004	5.3000e-004	0.0000	4.9836	4.9836	1.0000e-005	7.8000e-004	5.2174
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7700e-003	2.5500e-003	0.0341	1.0000e-004	0.0113	6.0000e-005	0.0113	2.9900e-003	6.0000e-005	3.0500e-003	0.0000	9.0319	9.0319	2.2000e-004	2.3000e-004	9.1060
Total	**3.9600e-003**	**0.0138**	**0.0365**	**1.5000e-004**	**0.0128**	**1.7000e-004**	**0.0130**	**3.4200e-003**	**1.6000e-004**	**3.5800e-003**	**0.0000**	**14.0156**	**14.0156**	**2.3000e-004**	**1.0100e-003**	**14.3234**

3.3 Pipeline Installation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0978	0.7921	1.0387	1.6500e-003		0.0380	0.0380		0.0368	0.0368	0.0000	138.6341	138.6341	0.0205	0.0000	139.1454
Total	**0.0978**	**0.7921**	**1.0387**	**1.6500e-003**		**0.0380**	**0.0380**		**0.0368**	**0.0368**	**0.0000**	**138.6341**	**138.6341**	**0.0205**	**0.0000**	**139.1454**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Pipeline Installation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0154	0.5507	0.1933	2.5000e-003	0.0802	3.5000e-003	0.0837	0.0232	3.3500e-003	0.0265	0.0000	239.1549	239.1549	8.9000e-004	0.0350	249.6018
Worker	8.2900e-003	5.8700e-003	0.0742	2.1000e-004	0.0229	1.3000e-004	0.0230	6.0700e-003	1.2000e-004	6.2000e-003	0.0000	18.8117	18.8117	5.0000e-004	5.1000e-004	18.9748
Total	**0.0237**	**0.5566**	**0.2676**	**2.7100e-003**	**0.1030**	**3.6300e-003**	**0.1067**	**0.0293**	**3.4700e-003**	**0.0327**	**0.0000**	**257.9665**	**257.9665**	**1.3900e-003**	**0.0355**	**268.5766**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0458	0.2375	1.1003	1.6500e-003		8.7100e-003	8.7100e-003		8.7100e-003	8.7100e-003	0.0000	138.6340	138.6340	0.0205	0.0000	139.1452
Total	**0.0458**	**0.2375**	**1.1003**	**1.6500e-003**		**8.7100e-003**	**8.7100e-003**		**8.7100e-003**	**8.7100e-003**	**0.0000**	**138.6340**	**138.6340**	**0.0205**	**0.0000**	**139.1452**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Pipeline Installation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0154	0.5507	0.1933	2.5000e-003	0.0802	3.5000e-003	0.0837	0.0232	3.3500e-003	0.0265	0.0000	239.1549	239.1549	8.9000e-004	0.0350	249.6018
Worker	8.2900e-003	5.8700e-003	0.0742	2.1000e-004	0.0229	1.3000e-004	0.0230	6.0700e-003	1.2000e-004	6.2000e-003	0.0000	18.8117	18.8117	5.0000e-004	5.1000e-004	18.9748
Total	**0.0237**	**0.5566**	**0.2676**	**2.7100e-003**	**0.1030**	**3.6300e-003**	**0.1067**	**0.0293**	**3.4700e-003**	**0.0327**	**0.0000**	**257.9665**	**257.9665**	**1.3900e-003**	**0.0355**	**268.5766**

3.3 Pipeline Installation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0915	0.7504	1.0402	1.6500e-003		0.0330	0.0330		0.0319	0.0319	0.0000	139.2163	139.2163	0.0201	0.0000	139.7196
Total	**0.0915**	**0.7504**	**1.0402**	**1.6500e-003**		**0.0330**	**0.0330**		**0.0319**	**0.0319**	**0.0000**	**139.2163**	**139.2163**	**0.0201**	**0.0000**	**139.7196**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Pipeline Installation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0149	0.5532	0.1866	2.4700e-003	0.0805	3.5500e-003	0.0841	0.0233	3.3900e-003	0.0267	0.0000	236.4446	236.4446	8.5000e-004	0.0345	246.7582
Worker	7.7000e-003	5.1900e-003	0.0695	2.0000e-004	0.0229	1.3000e-004	0.0231	6.1000e-003	1.2000e-004	6.2200e-003	0.0000	18.4269	18.4269	4.6000e-004	4.7000e-004	18.5781
Total	**0.0226**	**0.5584**	**0.2562**	**2.6700e-003**	**0.1035**	**3.6800e-003**	**0.1071**	**0.0294**	**3.5100e-003**	**0.0329**	**0.0000**	**254.8715**	**254.8715**	**1.3100e-003**	**0.0350**	**265.3362**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0437	0.2336	1.1030	1.6500e-003		7.8000e-003	7.8000e-003		7.8000e-003	7.8000e-003	0.0000	139.2162	139.2162	0.0201	0.0000	139.7194
Total	**0.0437**	**0.2336**	**1.1030**	**1.6500e-003**		**7.8000e-003**	**7.8000e-003**		**7.8000e-003**	**7.8000e-003**	**0.0000**	**139.2162**	**139.2162**	**0.0201**	**0.0000**	**139.7194**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Pipeline Installation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0149	0.5532	0.1866	2.4700e-003	0.0805	3.5500e-003	0.0841	0.0233	3.3900e-003	0.0267	0.0000	236.4446	236.4446	8.5000e-004	0.0345	246.7582
Worker	7.7000e-003	5.1900e-003	0.0695	2.0000e-004	0.0229	1.3000e-004	0.0231	6.1000e-003	1.2000e-004	6.2200e-003	0.0000	18.4269	18.4269	4.6000e-004	4.7000e-004	18.5781
Total	**0.0226**	**0.5584**	**0.2562**	**2.6700e-003**	**0.1035**	**3.6800e-003**	**0.1071**	**0.0294**	**3.5100e-003**	**0.0329**	**0.0000**	**254.8715**	**254.8715**	**1.3100e-003**	**0.0350**	**265.3362**

3.4 Repaving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1193	1.1771	1.6845	2.6300e-003		0.0589	0.0589		0.0542	0.0542	0.0000	231.3103	231.3103	0.0748	0.0000	233.1806
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1193**	**1.1771**	**1.6845**	**2.6300e-003**		**0.0589**	**0.0589**		**0.0542**	**0.0542**	**0.0000**	**231.3103**	**231.3103**	**0.0748**	**0.0000**	**233.1806**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Repaving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7800e-003	5.5100e-003	0.0697	1.9000e-004	0.0215	1.2000e-004	0.0216	5.7000e-003	1.1000e-004	5.8200e-003	0.0000	17.6646	17.6646	4.7000e-004	4.7000e-004	17.8178
Total	**7.7800e-003**	**5.5100e-003**	**0.0697**	**1.9000e-004**	**0.0215**	**1.2000e-004**	**0.0216**	**5.7000e-003**	**1.1000e-004**	**5.8200e-003**	**0.0000**	**17.6646**	**17.6646**	**4.7000e-004**	**4.7000e-004**	**17.8178**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0324	0.1404	1.9977	2.6300e-003		4.3200e-003	4.3200e-003		4.3200e-003	4.3200e-003	0.0000	231.3100	231.3100	0.0748	0.0000	233.1803
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0324**	**0.1404**	**1.9977**	**2.6300e-003**		**4.3200e-003**	**4.3200e-003**		**4.3200e-003**	**4.3200e-003**	**0.0000**	**231.3100**	**231.3100**	**0.0748**	**0.0000**	**233.1803**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Repaving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7800e-003	5.5100e-003	0.0697	1.9000e-004	0.0215	1.2000e-004	0.0216	5.7000e-003	1.1000e-004	5.8200e-003	0.0000	17.6646	17.6646	4.7000e-004	4.7000e-004	17.8178
Total	**7.7800e-003**	**5.5100e-003**	**0.0697**	**1.9000e-004**	**0.0215**	**1.2000e-004**	**0.0216**	**5.7000e-003**	**1.1000e-004**	**5.8200e-003**	**0.0000**	**17.6646**	**17.6646**	**4.7000e-004**	**4.7000e-004**	**17.8178**

3.4 Repaving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1260	1.2144	1.8648	2.9100e-003		0.0597	0.0597		0.0550	0.0550	0.0000	255.3383	255.3383	0.0826	0.0000	257.4028
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1260**	**1.2144**	**1.8648**	**2.9100e-003**		**0.0597**	**0.0597**		**0.0550**	**0.0550**	**0.0000**	**255.3383**	**255.3383**	**0.0826**	**0.0000**	**257.4028**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Repaving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9500e-003	5.3600e-003	0.0718	2.1000e-004	0.0237	1.3000e-004	0.0238	6.3000e-003	1.2000e-004	6.4200e-003	0.0000	19.0237	19.0237	4.7000e-004	4.8000e-004	19.1798
Total	**7.9500e-003**	**5.3600e-003**	**0.0718**	**2.1000e-004**	**0.0237**	**1.3000e-004**	**0.0238**	**6.3000e-003**	**1.2000e-004**	**6.4200e-003**	**0.0000**	**19.0237**	**19.0237**	**4.7000e-004**	**4.8000e-004**	**19.1798**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0358	0.1550	2.2052	2.9100e-003		4.7700e-003	4.7700e-003		4.7700e-003	4.7700e-003	0.0000	255.3380	255.3380	0.0826	0.0000	257.4025
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0358**	**0.1550**	**2.2052**	**2.9100e-003**		**4.7700e-003**	**4.7700e-003**		**4.7700e-003**	**4.7700e-003**	**0.0000**	**255.3380**	**255.3380**	**0.0826**	**0.0000**	**257.4025**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Repaving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.9500e-003	5.3600e-003	0.0718	2.1000e-004	0.0237	1.3000e-004	0.0238	6.3000e-003	1.2000e-004	6.4200e-003	0.0000	19.0237	19.0237	4.7000e-004	4.8000e-004	19.1798
Total	**7.9500e-003**	**5.3600e-003**	**0.0718**	**2.1000e-004**	**0.0237**	**1.3000e-004**	**0.0238**	**6.3000e-003**	**1.2000e-004**	**6.4200e-003**	**0.0000**	**19.0237**	**19.0237**	**4.7000e-004**	**4.8000e-004**	**19.1798**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.500104	0.052860	0.172660	0.158983	0.033384	0.008488	0.010945	0.028437	0.000810	0.000210	0.026444	0.001975	0.004700

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0574	6.0000e-005	6.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0119	0.0119	3.0000e-005	0.0000	0.0127
Unmitigated	0.0574	6.0000e-005	6.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0119	0.0119	3.0000e-005	0.0000	0.0127

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0139					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0430					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.6000e-004	6.0000e-005	6.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0119	0.0119	3.0000e-005	0.0000	0.0127
Total	**0.0574**	**6.0000e-005**	**6.1000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0119**	**0.0119**	**3.0000e-005**	**0.0000**	**0.0127**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0139					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0430					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.6000e-004	6.0000e-005	6.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0119	0.0119	3.0000e-005	0.0000	0.0127
Total	**0.0574**	**6.0000e-005**	**6.1000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0119**	**0.0119**	**3.0000e-005**	**0.0000**	**0.0127**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Madera County MD10A Water Distribution Project - Madera County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ATTACHMENT B

SJVAPCD Prioritization Calculator Output

Name MD10A Pipe Replacement & Meter Install

Prioritization Calculator

Use to provide a Prioritization score based on the emission potency method. Entries required in yellow areas, output in gray areas.

Applicability			
Author or updater	Seth Myers	*Last Update*	April 22, 2022
Facility:	MD10A Water Distribution System - Madera Ranchos		
ID#:	CEQA		
Project #:	CEQA		
Unit and Process#	Construction		
Operating Hours hr/yr	2,080.00		

Receptor Proximity (meters)	Cancer Score	Chronic Score	Acute Score	Max Score
0< R<100				0.00E+00
100≤R<250				0.00E+00
250≤R<500	3.70E+00	2.31E-02	0.00E+00	3.70E+00
500≤R<1000	1.02E+00	6.35E-03	0.00E+00	1.02E+00
1000≤R<1500	2.77E-01	1.73E-03	0.00E+00	2.77E-01
1500≤R<2000	1.85E-01	1.15E-03	0.00E+00	1.85E-01
2000<R	9.24E-02	5.77E-04	0.00E+00	9.24E-02

Construction

Enter the unit's CAS# of the substances emitted and their amounts.

Prioritzation score for each substance generated below. Totals on last row.

Substance	CAS#	Annual Emissions (lbs/yr)	Maximum Hourly (lbs/hr)	Average Hourly (lbs/hr)	Cancer	Chronic	Acute
Diesel engine exhaust, particulate matter (Diesel PM)	**9901**	4.00E+01	2.00E-02	1.92E-02	9.24E+01	5.77E-01	0.00E+00
Carbon Monoxide [Criteria Pollutant]	**42101**	1.02E+04	5.15E+00	4.90E+00	0.00E+00	0.00E+00	0.00E+00
Oxides of Nitrogen	**42603**	2.20E+03	1.07E+00	1.06E+00	0.00E+00	0.00E+00	0.00E+00
Reactive Organic Gas	**16113**	2.20E+03	1.50E-01	1.06E+00	0.00E+00	0.00E+00	0.00E+00
Oxides of sulfur	**42401**	2.00E+01	1.00E-02	9.62E-03	0.00E+00	0.00E+00	0.00E+00
Particulate Matter	**11101**	2.40E+02	1.70E-01	1.15E-01	0.00E+00	0.00E+00	0.00E+00
Particulate Matter 2.5 Microns or less	**88101**	1.20E+02	6.00E-02	5.77E-02	0.00E+00	0.00E+00	0.00E+00

Appendix B

Biological Resources Assessment for the MD10A Madera Ranchos - Pipe Replacement and Meter Installation Project

Biological Resources Assessment
for the
MD10A Madera Ranchos – Pipe Replacement and Meter Installation Project

Madera County, California

Prepared For:

Benchmark Resources

Prepared By:

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS
2525 Warren Drive
Rocklin, California 95677

September 21, 2022

CONTENTS

1.0 INTRODUCTION 1
1.1 Project Location 1
1.2 Project Description 1
1.3 Purpose of this Biological Resources Assessment 1
2.0 REGULATORY SETTING 4
2.1 Federal Regulations 4
2.1.1 Federal Endangered Species Act 4
2.1.2 Migratory Bird Treaty Act 4
2.1.3 Magnuson-Stevens Fishery Conservation and Management Act 4
2.1.4 Federal Clean Water Act 5
2.2 State or Local Regulations 6
2.2.1 California Fish and Game Code 6
2.2.2 Porter-Cologne Water Quality Act 8
2.2.3 California Environmental Quality Act 8
2.2.4 Madera County General Plan 11
3.0 METHODS 12
3.1 Literature Review 12
3.2 Field Surveys Conducted 13
3.3 Special-Status Species Considered for the Project 13
3.4 Sensitive Natural Communities 13
4.0 RESULTS 14
4.1 Site Characteristics and Land Use 14
4.2 Vegetation Communities 14
4.3 Wildlife Observations, Movement Corridors, and Nursery Sites 14
4.4 Soils 15
4.5 Aquatic Resources 15
4.6 Evaluation of Potentially Occurring Special-Status Species 21
4.6.1 Plants 40
4.6.2 Invertebrates 42
4.6.3 Fish 42
4.6.4 Amphibians 42
4.6.5 Reptiles 43
4.6.6 Birds 43
4.6.7 Mammals 46

4.7 Sensitive Natural Communities 47
5.0 IMPACT ANALYSIS 47
5.1 Special Status Species 47
5.1.1 Special-Status Plants 47
5.1.2 Special-Status Amphibians 47
5.1.3 Special-Status and Other Protected Birds 48
5.1.4 Special-Status Mammals 48
5.2 Riparian Habitat and Sensitive Natural Communities 48
5.3 Aquatic Resources, Including Waters of the U.S. and State 48
5.4 Wildlife Movement/Corridors 49
5.5 Local Policies, Ordinances, and Other Plans 49
6.0 RECOMMENDATIONS 49
6.1 General Recommendations 49
6.2 Special-Status Species 50
6.2.1 Plants 50
6.2.2 Amphibians 51
6.2.3 Special-Status Birds and Migratory Bird Treaty Act-Protected Birds (Including Nesting Raptors) 51
6.2.4 Mammals 52
6.3 Waters of the U.S./State 52
7.0 REFERENCES 54

LIST OF TABLES

Table 4-1. Soil Units Occurring within the Study Area[1] 15
Table 4-2. Potentially Occurring Special-Status Species 23

LIST OF FIGURES

Figure 1-1. Study Area Location and Vicinity 2
Figure 4-1. Natural Resources Conservation Service Soil Types 16
Figure 4-2. Preliminary Aquatic Resources Assessment 17
Figure 4-3. National Wetlands Inventory 22

LIST OF ATTACHMENTS

Attachment A – Results of Database Queries

Attachment B – Representative Site Photos

Attachment C – Plants Observed Onsite

Attachment D – Natural Resources Conservation Service Soil Descriptions

LIST OF ACRONYMS AND ABBREVIATIONS

Term	Description
ARP	Aquatic Resources Program
BCC	Birds of Conservation Concern
BIOS	Biogeographic Information and Observation System
BRA	Biological Resources Assessment
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
EFH	Essential Fish Habitat
ESA	Endangered Species Act
DPS	Distinct Population Segment
F	Fahrenheit
FR	Federal Register
General Plan	Madera County General Plan
MBTA	Migratory Bird Treaty Act
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
NWI	National Wetlands Inventory
OHWM	Ordinary high water mark
Project	MD10A Madera Ranchos – Pipe Replacement and Meter Installation Project
RWQCB	Regional Water Quality Control Board
SSC	Species of Special Concern
SSHCP	South Sacramento Habitat Conservation Plan
Study Area	Environmental Study Limits
TNW	Traditional Navigable Waters
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

LIST OF ACRONYMS AND ABBREVIATIONS

Term	Description
VELB	Valley Elderberry Longhorn Beetle
WBWG	Western Bat Working Group

1.0 INTRODUCTION

On behalf of Benchmark Resources, ECORP Consulting, Inc. conducted a Biological Resources Assessment (BRA) for the MD10A Madera Ranchos – Pipe Replacement and Meter Installation Project (Project) located in Madera County, California. For this BRA, the Environmental Study Limits (Study Area) is approximately 70.2 acres. The purpose of the assessment was to collect information on the biological resources present and evaluate the potential for special-status species and their habitats to occur in the Study Area, assess potential biological impacts related to Project activities, and identify potential mitigation measures to inform the Project's California Environmental Quality Act (CEQA) documentation for biological resources.

1.1 Project Location

The Study Area is located within the Madera Ranchos subdivision, approximately 7 miles east of the City of Madera, in unincorporated Madera County. The Study Area includes paved roads and roadsides and corresponds to portions of Sections 33, 34, 35, and 36 of Township 11 South, Range 19 East and Sections 2, 3, and 4 of Township 12 South, Range 19 East (Mount Diablo Base Meridian) of the Gregg, California and Lanes Bridge, California 7.5' topographic quadrangles (U.S. Geological Survey [USGS] 1965 and1964, respectively; Figure 1-1). The approximate center of the Study Area is located at North American Datum 1983 coordinates 36.928143° latitude and -119.878361° longitude within the Middle San Joaquin-Lower Chowchilla Watershed (Hydrologic Unit Code #18040001; Natural Resources Conservation Service [NRCS] et al. 2016).

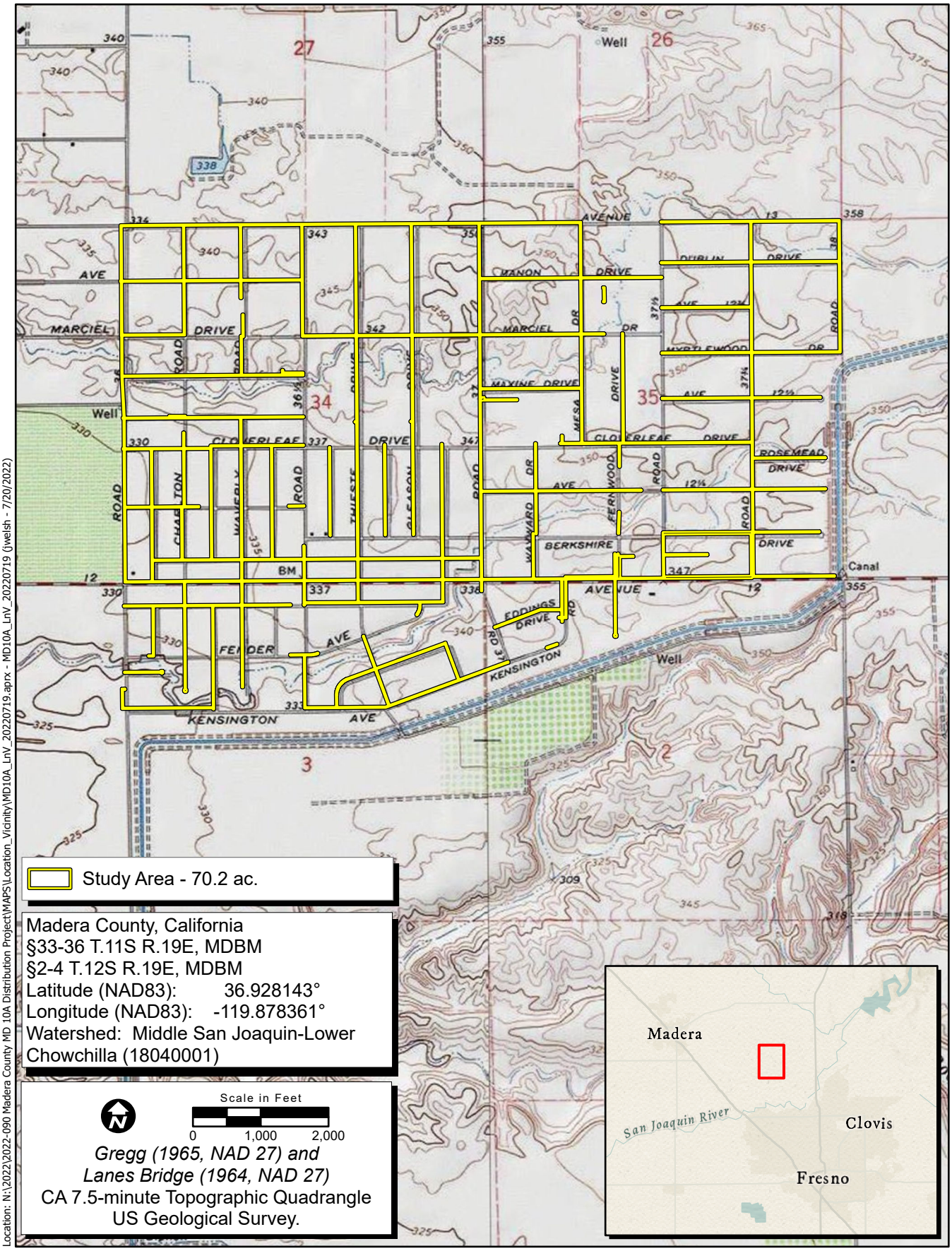
The limits of the Study Area as shown in this report were provided by Benchmark Resources and represent an approximation of the Project footprint.

1.2 Project Description

The Project entails the construction of approximately 41.21 miles of new water distribution pipeline within the Madera Ranchos community. Portions of the existing pipeline will be abandoned in place and other segments will be incorporated into the new system. The Project would replace the existing water distribution pipeline system with a new upgraded system, including meters, fire hydrants, new household water connections, and valves, to meet current and projected local water usage needs in the maintenance district of MD10A in Madera County. The proposed water distribution system will be installed largely beneath existing roads. Associated features (e.g., fire hydrants and water meters) will be built alongside the roads near the front yards of modern homes. The intent is to abandon much of the existing water distribution system and install new distribution pipes within the road rights-of-way and meter connections at properties.

1.3 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 habitats, and sensitive habitats such as wetlands, riparian communities, and sensitive natural communities within the Study Area.



Map Date: 7/20/2022
Sources: ESRI, USGS

Figure 1-1. Project Location and Vicinity

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

This assessment includes information generated from literature review and an assessment-level reconnaissance site visit. This BRA does not include determinate field surveys for plant and animal species, nor does it include an aquatic resources delineation performed according to U.S. Army Corps of Engineers (USACE) protocol.

This assessment includes an analysis of potential impacts on biological resources anticipated to result from the Project, as presently defined. The mitigation recommendations presented in this assessment are based on the review of existing literature and the results of site reconnaissance surveys as described herein.

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 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);
- are plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (California Rare Plant Rank [CRPR] 1 and 2), "plants about which more information is needed" (i.e., species with a CRPR of 3), or "plants of limited distribution – a watch list" (i.e., species with a CRPR of 4);
- are plants listed as rare under the California Native Plant Protection Act (NPPA; California Fish and Game Code, § 1900 et seq.); or
- are fully protected in California in accordance with the California Fish and Game Code, §§ 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. While other species (i.e., special-status lichens, California Natural Diversity Database [CNDDB] tracked species with no special status) are sometimes found in database searches or within the literature, these species were not included within this analysis.

2.0 REGULATORY SETTING

2.1 Federal Regulations

2.1.1 Federal Endangered Species Act

The federal ESA protects plants and animals that are listed as endangered or threatened by the USFWS and the National Marine Fisheries Service (NMFS). Section 9 of ESA prohibits, without authorization, 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 under federal jurisdiction and removing, cutting, digging up, damaging, or destroying any listed plant in any other area in knowing violation of state law (16 U.S. Code [USC] 1538). Under Section 7 of ESA, federal agencies are required to consult with USFWS and/or NMFS if their actions, including permit approvals and funding, could adversely affect a listed (or proposed) species (including plants) or its critical habitat. Through consultation and the issuance of a Biological Opinion, USFWS and NMFS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued existence of the species or adversely modify critical habitat. Section 10 of ESA provides for the issuance of incidental take permits where no other federal actions are necessary provided a habitat conservation plan is developed. Permitting under the South Sacramento Habitat Conservation Plan (SSHCP), which was developed pursuant to Section 10 of the ESA, allows for take authorization of certain Covered Species through a streamlined permitting process. The SSHCP is discussed further in Section 2.2.4.

2.1.2 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. As authorized by the MBTA, the USFWS issues permits to qualified applicant 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.

2.1.3 Magnuson-Stevens Fishery Conservation and Management Act

The 1996 Magnuson-Stevens Fishery Conservation and Management Act, as amended (16 USC 1801), requires federal agencies to consult with NMFS whenever a proposed action has a potential to adversely affect Essential Fish Habitat (EFH). Although states are not required to consult with NMFS, NMFS is required to develop EFH conservation recommendations for any state agency activities with the potential to affect EFH. EFH is defined as "…those waters and substrates necessary to fish for spawning, breeding,

feeding or growth to maturity" and includes the necessary habitat for managed fish to complete their life cycles and contribute to a sustainable fishery and healthy ecosystem. Although the concept of EFH is similar to the ESA definition of Critical Habitat, measures recommended by NMFS or a regional fisheries management council to protect EFH are advisory, rather than prescriptive (NMFS 1998).

2.1.4 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 United States* without a permit from the USACE. The USACE regulates discharge of dredged or fill material into Waters of the U.S. under Section 404 of the CWA. *Discharges of fill material* is defined as the addition of fill material into Waters of the U.S., including, but not limited to the following: placement of fill necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes, and subaqueous utility lines [33 CFR § 328.2(f)]. In addition, Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into Waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Projects involving activities that have no more than minimal individual and cumulative adverse environmental effects may meet the conditions of one of the Nationwide Permits already issued by USACE (Federal Register [FR] 82:1860, January 6, 2017). If impacts on wetlands could be substantial, an Individual Permit is required. 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). The SSHCP includes an Aquatic Resources Program (ARP) to allow for streamlined permitting pursuant to CWA Sections 404 and 401. The SSHCP is discussed further in Section 2.2.4.

2.1.4.1 Wetlands

Wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [51 FR 41250, Nov. 13, 1986, as amended at 58 FR 45036, Aug. 25, 1993]. Wetlands can be perennial or intermittent.

To be determined a wetland, the following three criteria must be met:

- A majority of dominant vegetation species are wetland-associated species;
- Hydrologic conditions exist that result in periods of flooding, ponding, or saturation during the growing season; and
- Hydric soils are present.

2.1.4.2 Other Waters

Other waters are nontidal, perennial, and intermittent watercourses and tributaries to such watercourses [51 FR 41250, Nov. 13, 1986, as amended at 58 FR 45036, August 25, 1993]. The limit of USACE jurisdiction for nontidal watercourses (without adjacent wetlands) is defined in 33 CFR 328.4(c)(1) as the *ordinary high water mark* (OHWM). The OHWM is defined as the "line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" approximation of the lateral limit of USACE jurisdiction. The upstream limits of other waters are defined as the point where the OHWM is no longer perceptible.

2.1.4.3 Jurisdictional Assessment

Pursuant to the USEPA and USACE memorandum regarding CWA jurisdiction, issued following the United States Supreme Court's decision in the consolidated cases Rapanos v. United States and Carabell v. United States (herein referred to as Rapanos), the agencies will assert jurisdiction over the following waters: *Traditional Navigable Waters* (TNW), all wetlands adjacent to TNW, nonnavigable tributaries of TNW that are *relatively permanent* waters (i.e., tributaries that typically flow year-round or have continuous flow at least seasonally), and wetlands that directly abut such tributaries (USEPA and USACE 2007).

Waters requiring a significant nexus determination by the USACE and USEPA to establish jurisdiction include nonnavigable tributaries that are not relatively permanent, wetlands adjacent to nonnavigable tributaries that are not relatively permanent, and wetlands adjacent to but do not directly abut a relatively permanent nonnavigable tributary (USEPA and USACE 2007). The jurisdictional determination is a fact-based evaluation to establish whether a water has a significant nexus with TNW. The significant nexus analysis will assess the flow characteristics and functions of the nonnavigable tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of downstream TNW (USEPA and USACE 2007).

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 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.

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 California 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. Furthermore, CDFW 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 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 California Fish and Game Code Special Protections for Birds

In addition to protections contained within the California ESA and California Fish and Game Code § 3511 described above, the California Fish and Game Code includes a number of sections that specifically protect certain birds.

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.

Section 3505 makes it unlawful to take, sell, or purchase egrets, ospreys, and several exotic nonnative species, or any part of these birds.

2.2.1.5 Lake or Streambed Alteration Notification/Agreement

Section 1600-1616 of the California Fish and Game Code requires individuals or agencies to provide a Notification of Lake or Streambed Alteration to 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, proposed measures to protect affected fish and wildlife resources. The final proposal mutually agreed upon by CDFW and the applicant is the Lake or Streambed Alternation Agreement. The SSHCP complies with Sections 1600-1616 of the California Fish and Game Code. The SSHCP is discussed further in Section 2.2.8.

2.2.2 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 Stormwater NPDES General Construction Permit for discharges of stormwater runoff associated with construction activities. General Construction Permits for projects that disturb one or more acres of land require development and implementation of a Stormwater Pollution Prevention Plan. Under the Porter-Cologne Water Quality Act, the RWQCB regulates actions that would involve "discharging waste, or proposing to discharge waste, with 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)]. The RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State, that are not regulated by USACE due to a lack of connectivity with a navigable water body. The RWQCB may require issuance of Waste Discharge Requirements for these activities. The SSHCP's ARP allows for streamlined permitting pursuant to the CWA and complies with the Porter-Cologne Water Quality Act. The SSHCP is discussed further in Section 2.2.8.

2.2.3 California Environmental Quality Act

In accordance with CEQA Guidelines § 15380, a species or subspecies not specifically protected under the federal or California ESAs or NPPA may be considered endangered, rare, or threatened for CEQA review purposes if the species meets certain criteria specified in the Guidelines. These criteria include definitions similar to definitions used in the federal ESA, California ESA, and NPPA. Section 15380 was included in the CEQA Guidelines primarily to address situations in which a project under review may have a significant effect on a species that has not been listed under the federal ESA, California ESA, or NPPA, but that may meet the definition of endangered, rare, or threatened. Animal species identified as SSC by CDFW, and plants identified by the CNPS as rare, threatened, or endangered may meet the CEQA definition of rare or endangered.

2.2.3.1 California Department of Fish and Wildlife Species of Special Concern

The CDFW defines SSC as a species, subspecies, or distinct population of an animal native to California that are not legally protected by 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 (noncyclical) 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; and
- SSC are typically associated with habitats that are threatened.

Depending on the policy of the lead agency, projects that result in substantial impacts to SSC may be considered significant under CEQA.

2.2.3.2 U.S. Fish and Wildlife Service Birds of Conservation Concern

The 1988 amendment to the Fish and Wildlife Conservation Act mandates USFWS "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under ESA." To meet this requirement, USFWS published a list of BCC (USFWS 2021) for the U.S. The list identifies the migratory and nonmigratory bird species (beyond those already designated as federally threatened or endangered) that represent USFWS' highest conservation priorities. Depending on the policy of the lead agency, projects that result in substantial impacts to BCC may be considered significant under CEQA.

2.2.3.3 Sensitive Natural Communities

Sensitive natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. The CDFW maintains the California Natural Community List (CDFW 2018), which provides a list of vegetation alliances, associations, and special stands as defined in *A Manual of California Vegetation* (Sawyer et al. 2009), along with their respective state and global rarity ranks. Natural communities with a state rarity rank of 1, 2, or 3 are considered sensitive natural communities. Depending on the policy of the lead agency, impacts to sensitive natural communities may be considered significant under CEQA.

2.2.3.4 Wildlife Movement/Corridors and Nursery Sites

As part of the California Essential Habitat Connectivity Project, the CDFW and the California Department of Transportation maintain data on Essential Habitat Connectivity areas. This data is available in the CNDDB. The goal of this project is to map large intact habitat or natural landscapes and potential linkages that could provide corridors for wildlife. For urban settings such as the Project, riparian vegetated stream corridors can also serve as wildlife movement corridors.

CDFW's Biogeographic Information and Observation System (BIOS) database identifies the CDFW Mule Deer Range, identifies winter range, migration corridors, critical range, or critical fawning areas for mule deer (CDFW 2021b).

For the purposes of this analysis, nursery sites include but are not limited to concentrations of nest or den sites such as heron rookeries, bat maternity roosts, and mule deer critical fawning areas. This data is available through CDFW's BIOS database or as occurrence records in the CNDDB and is supplemented with the results of the field reconnaissance.

2.2.3.5 California Rare Plant Ranks

The CNPS maintains the Inventory of Rare and Endangered Plants of California (CNPS 2021), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, and/or 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, non-governmental organizations, and private sector botanists, and is jointly managed by the CDFW and CNPS. The CRPRs are currently recognized in the CNDDB. 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, CNPS has defined Threat Ranks that are added to the CNPS 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 (over 80 percent of occurrences threatened/high degree and immediacy of threat)
- Threat Rank 0.2 – Moderately threatened in California (20-80 percent 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; and differences in Threat Ranks do not constitute additional or different protection (CNPS 2021).

Depending on the policy of the lead agency, substantial impacts to plants ranked 1A, 1B, or 2, and 3 are typically considered significant under CEQA Guidelines § 15380. Significance under CEQA is typically evaluated on a case-by-case basis for plants ranked 4 and at the discretion of the CEQA lead agency.

2.2.3.6 California Environmental Quality Act Significance Criteria

Sections 15063-15065 of the CEQA Guidelines address how an impact is identified as significant. Generally, impacts to listed (rare, threatened, or endangered) species are considered significant. 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, § 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. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Appendix G provides examples of impacts that would normally be considered significant.

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 under CEQA. The reason for this is that 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.

2.2.4 Madera County General Plan

The Madera County General Plan (General Plan), adopted October 24, 1995, provides an overall framework for development of the county and protection of its natural and cultural resources. The General Plan goals and policies that could be relevant to biological resources within the Study Area include the following:

"Goal 5.D: To protect wetland communities and related riparian areas throughout Madera County as valuable resources. (D. Wetland and Riparian Areas)

Policy 5.D.1. The County shall comply with the wetlands policies of the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the California Department of Fish and Wildlife. Coordination with these agencies at all levels of project review shall continue to ensure that appropriate mitigation measures and the concerns of these agencies are adequately addressed.

Policy 5.D.2. The County shall require new development to mitigate wetland loss in both regulated and non-regulated wetlands through any combination of avoidance, minimization, or compensation. The County shall support mitigation banking programs that can provide the opportunity to mitigate impacts to rare, threatened, and endangered species and/or the habitat which supports these species in wetland and riparian areas.

Policy 5.D.3. The County shall require development to be designed in such a manner that pollutants and siltation will not significantly adversely affect the value or function of wetlands.

Goal 5.E: To protect, restore, and enhance habitats that support fish and wildlife species so as to maintain populations at viable levels. (E. Fish and Wildlife Habitat)

Policy 5.E.1. The County shall identify and protect critical nesting and foraging areas, important spawning grounds, migratory routes, waterfowl resting areas, oak woodlands, wildlife movement corridors, and other unique wildlife habitats critical to protecting and sustaining wildlife populations.

Policy 5.E.4. The County shall support preservation of the habitats of rare, threatened, endangered, and/or other special status species. The County shall consider developing a formal habitat conservation plan in consultation with federal and state agencies, as well as other resource conservation organizations. Such a plan would provide a mechanism for the acquisition and management of lands supported by threatened and endangered species.

Goal 5.F: To preserve and protect the valuable vegetation resources of Madera County (F. Vegetation)

Policy 5.F.5. The County shall establish procedures for identifying and preserving rare, threatened, and endangered plant species that may be adversely affected by public or private development projects. The County shall consider developing a formal habitat conservation plan in consultation with federal and state agencies, as well as other resources conservation organizations. Such a plan would provide a mechanism for the acquisition and management of land supporting threatened and endangered species."

3.0 METHODS

3.1 Literature Review

The following resources were queried to determine the special-status species that had been documented within or in the vicinity of the Study Area:

- CDFW CNDDB data for the "Gregg, California" and the "Lanes Bridge, California"7.5-minute USGS quadrangles and the 10 surrounding USGS quadrangles (CDFW 2022).
- USFWS Information, Planning, and Consultation System Resource Report List for the Study Area (USFWS 2022a).

- CNPS electronic Inventory of Rare and Endangered Plants of California for the "Gregg, California" and "Lanes Bridge, California" 7.5-minute USGS quadrangles and the ten surrounding USGS quadrangles (CNPS 2022).
- National Oceanic and Atmospheric Administration (NOAA)/NMFS species list for the "Gregg, California" and "Lanes Bridge, California" 7.5-minute USGS quadrangles (NOAA 2016).

The results of the database queries are included in Attachment A.

3.2 Field Surveys Conducted

This BRA includes a reconnaissance site visit to generally characterize onsite resources including aquatic resources (including wetlands), plant communities, wildlife, special-status species, and sensitive natural communities. The field assessment was conducted by ECORP biologists Keith Kwan and Stephanie Castle on July 7, 2022. The purpose of this assessment was to identify potential biological resources constraints (e.g., aquatic resources, special-status species) onsite, identify regulatory requirements for development of the site, and assess potential mitigation needs.

3.3 Special-Status Species Considered for the Project

Based on species occurrence information from the literature review and field observations, a list of special-status species considered to have the potential to occur within the Study Area was generated (Table 4-2 in Section 4.6). Each of the species that were considered as potentially occurring within the Study Area or vicinity was evaluated based on the following criteria:

- **Present** - Species was observed during field surveys or is known to occur within the Study Area based on documented occurrences within the CNDDB or other literature.
- **Potential to Occur** - Habitat (including soils and elevation requirements) for the species occurs within the 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 Study Area based on CNDDB records and other available documentation.
- **Absent** - No suitable habitat (including soils and elevation requirements), or the species is not known to occur within the Study Area, or the vicinity of the Study Area based on CNDDB records and other documentation or determinate field surveys.

3.4 Sensitive Natural Communities

A Manual of California Vegetation, Second Edition (Sawyer et al. 2009) was used to describe vegetation communities onsite. Sensitive natural communities are those that are defined by CDFW and listed in the CNDDB.

4.0 RESULTS

4.1 Site Characteristics and Land Use

The Study Area is located in a residential and rural residential subdivision and is largely situated within existing paved road surfaces and the ruderal or weedy roadsides adjacent to the roadway. The private properties adjacent to the Study Area include private residences, commercial business, and undeveloped parcels.

The Study Area is situated at an elevation of approximately 350 feet above mean sea level in the San Joaquin Valley subregion of the Great Central Valley region of California (Baldwin et al. 2012). The average winter minimum temperature is 37.2 degrees Fahrenheit (˚F), and the average summer maximum temperature is 93.9˚F; the average annual precipitation is approximately 12.23 inches (NOAA 2022).

The surrounding lands include orchards, vineyards, fallow farmland, a middle school and high school, and rural residences.

Representative photographs of the Study Area are included as Attachment B.

4.2 Vegetation Communities

The vast majority of the Study Area is developed and heavily impacted with residential, rural residential and commercial development with the only vegetation present being ruderal or roadside weedy vegetation. There are small areas of annual grassland vegetation that are marginally located within the Project footprint. This vegetation community is dominated by nonnative grasses and is somewhat similar to the *Avena* spp.-*Bromus* spp. Herbaceous Semi-Natural Alliance (wild oats and annual brome grasslands) as described in *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009). Wetlands along Raccoon Creek are located in the annual grassland. Raccoon Creek supports wetland plant species that are commonly found in a seasonal wetland swale.

The developed areas support weedy roadside vegetation, hedgerows of shrubs and windrows of trees, or well-manicured landscaping ranging from unvegetated xeriscaping to lawns, shrubs, and trees. A list of plants observed onsite is included in Attachment C.

4.3 Wildlife Observations, Movement Corridors, and Nursery Sites

The Study Area is largely developed and lacks any significant wildlife habitat elements such as aquatic habitat, emergent wetlands, or woodlands. Wildlife observed onsite during the reconnaissance site visit included mourning dove (*Zenaida macroura*), Eurasian collared-dove (*Streptopelia decaocto*), western kingbird (*Tyrannus verticalis*), California ground squirrel (*Otospermophilus beecheyi*), and gray fox (*Urocyon cinereoargenteus*).

The Study Area is not located within an area mapped in the Essential Habitat Connectivity Project (Spencer et al. 2010).

4.4 Soils

According to the Web Soil Survey there are 17 soil units mapped within the Study Area. (Figure 4-1; NRCS 2022a). Of these, 11 are considered hydric and/or contain hydric components (Table 4-1; NRCS 2022b). Map unit descriptions of soils found within the Study Area are included in Attachment D (NRCS 2022a).

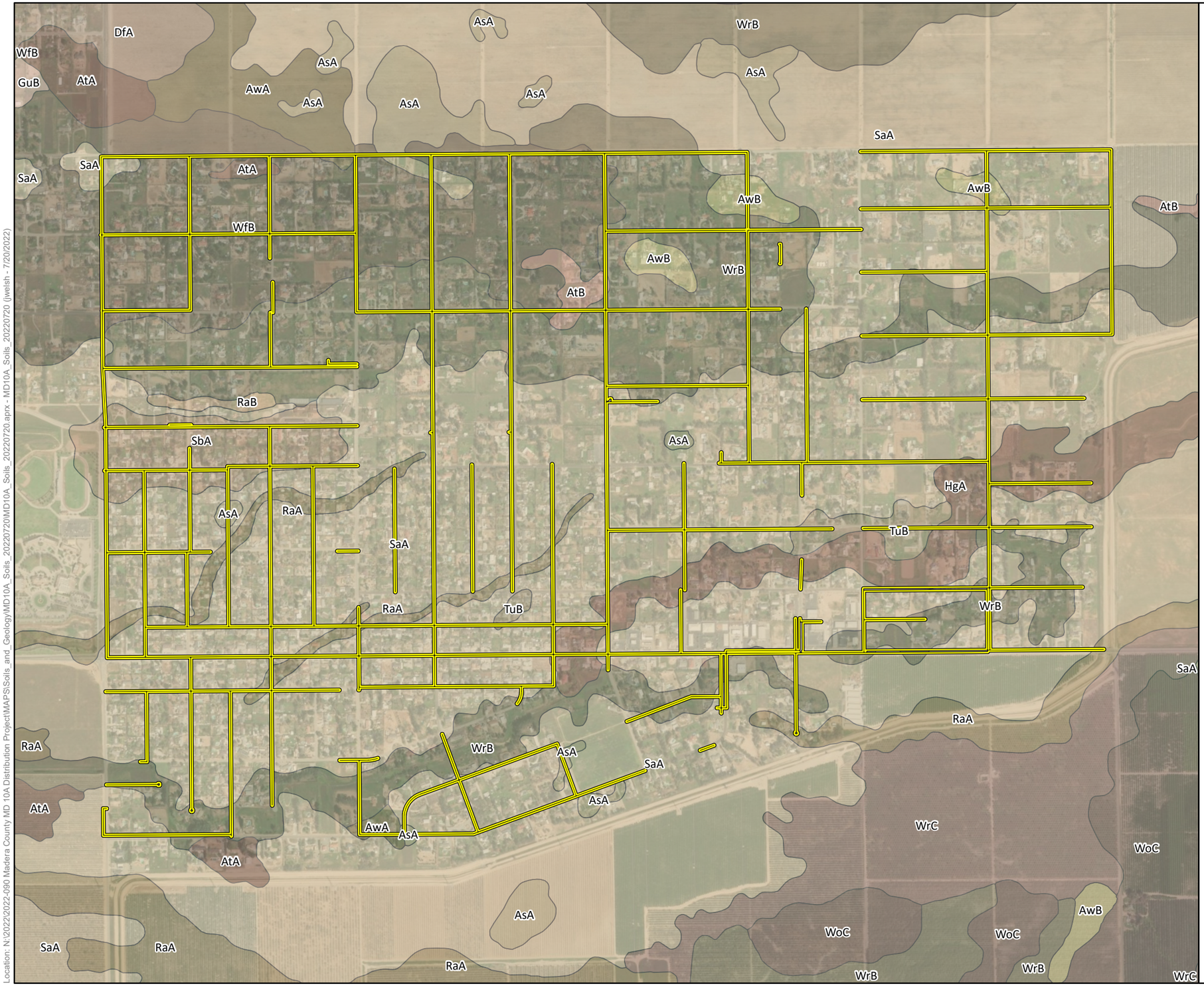
Table 4-1. Soil Units Occurring within the Study Area[1]

Soil Unit	Hydric Components[2]	Hydric Component Landform
AsA – Alamo clay, 0 to 1 percent slopes	Alamo	Fan remnants
AtA – Atwater loamy sand, 0 to 3 percent slopes	None	-
AtB – Atwater loamy sand, 3 to 8 percent slopes, MLRA 17	None	-
AwA – Atwater loamy sand, moderately deep and deep over hardpan, 0 to 3 percent slopes	Unnamed	Depressions
AwB – Atwater loamy sand, moderately deep and very deep over hardpan, 3 to 8 percent slopes	Unnamed	Depressions
HgA – Hanford sandy loam, moderately deep and deep over hardpan, 0 to 3 percent slopes	None	-
RaA – Ramona sandy loam, 0 to 3 percent slopes	Unnamed	Depressions
RaB – Ramona sandy loam, 3 to 8 percent slopes	Unnamed	Depressions
SaA – San Joaquin sandy loam, 0 to 3 percent slopes, MLRA 17	Unnamed, hydric	Fan remnants, open depressions
SbA – San Joaquin-Alamo complex, 0 to 3 percent slopes	Alamo Unnamed, ponded	Depressions Depressions
TuB – Trigo fine sandy loam, 3 to 8 percent slopes	None	-
WfB – Whitney fine sandy loam, 3 to 8 percent slopes	Unnamed, ponded	Depressions
WoC – Whitney and Rocklin gravelly sandy loams, 3 to 15 percent slopes	Unnamed, ponded	Depressions
WrB – Whitney and Rocklin sandy loams, 3 to 8 percent slopes	Unnamed, ponded	Depressions
WrC – Whitney and Rocklin sandy loams, 8 to 15 percent slopes	Unnamed, ponded	Depressions

[1]Source: NRCS 2022a
[2]Source: NRCS 2022b

4.5 Aquatic Resources

A preliminary aquatic resources assessment was performed to identify potential Waters of the U.S./State concurrent with the BRA site visit. Aquatic resources present in the Study Area included wetlands associated with Racoon Creek, which meanders from east to west through the southern portion of the Study Area (Figure 4-2). Raccoon Creek is geomorphologically a seasonal swale that lacks a distinct OHWM and supports uplands interspersed with pockets of wetlands in low-lying areas where seasonal rainfall can form pools.



Map Features

Study Area - 70.2 ac.

Soil Type

- AsA - Alamo clay, 0 to 1 percent slopes
- AtA - Atwater loamy sand, 0 to 3 percent slopes, MLRA 17
- AtB - Atwater loamy sand, 3 to 8 percent slopes, MLRA 17
- AwA - Atwater loamy sand, moderately deep and deep over hardpan, 0 to 3 percent slopes
- AwB - Atwater loamy sand, moderately deep and very deep over hardpan, 3 to 8 percent slopes
- DfA - Delhi sand, moderately deep and deep over hardpan, 0 to 3 percent slopes
- GuB - Greenfield sandy loam, 3 to 8 percent slopes
- HgA - Hanford sandy loam, moderately deep and deep over hardpan, 0 to 3 percent slopes
- RaA - Ramona sandy loam, 0 to 3 percent slopes
- RaB - Ramona sandy loam, 3 to 8 percent slopes
- SaA - San Joaquin sandy loam, 0 to 3 percent slopes, MLRA 17
- SbA - San Joaquin-Alamo complex, 0 to 3 percent slopes
- TuB - Trigo fine sandy loam, 3 to 8 percent slopes
- WfB - Whitney fine sandy loam, 3 to 8 percent slopes
- WoC - Whitney and Rocklin gravelly sandy loams, 3 to 15 percent slope
- WrB - Whitney and Rocklin sandy loams, 3 to 8 percent slopes
- WrC - Whitney and Rocklin sandy loams, 8 to 15 percent slopes

Natural Resources Conservation Service (NRCS) Soil Survey Geographic (SSURGO) Database for Madera, CA

Sources: ESRI

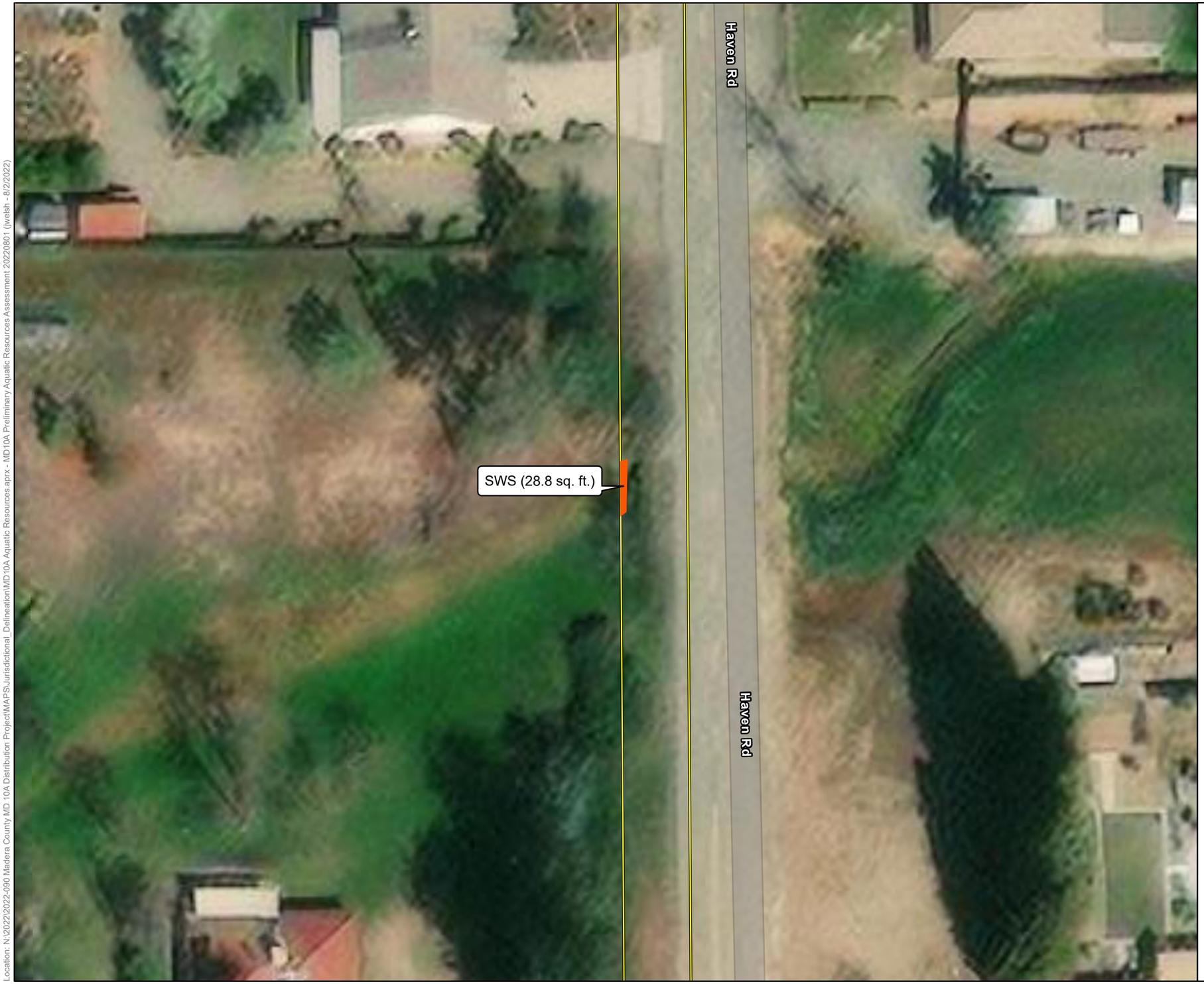
Location: N:\2022\2022-090 Madera County MD 10A Distribution Project\MAPS\Soils_and_Geology\MD10A_Soils_20220720\MD10A_Soils_20220720.aprx - MD10A_Soils_20220720 (jwelsh - 7/20/2022)

Map Date: 7/20/2022

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Miles
0 0.2

Figure 4-1. Natural Resources Conservation Service Soil Types
2022-090 Madera County MD 10A Distribution Project



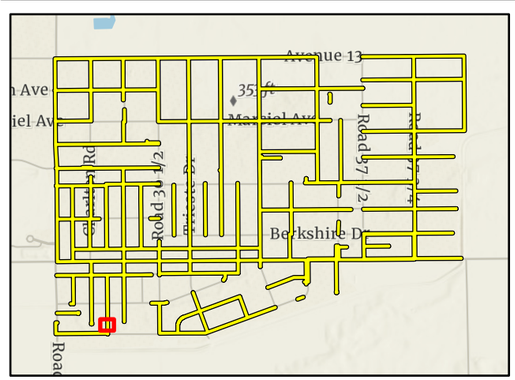
Map Contents

Study Area - 70.2 ac.

Seasonal Wetland Swale

[1] The information depicted on this graphic represents a preliminary wetland assessment. The assessment was not conducted in accordance with the Corps of Engineers Wetland Delineation Manual and Sacramento District Minimum Standards. The project boundaries, wetland boundaries, and acreage values are approximate.

Sources: Maxar (3/7/2022), ESRI



Location: N:\2022\2022-090 Madera County MD 10A Distribution Project\MAPS\Jurisdictional_Delineation\MD10A Aquatic Resources.aprx - MD10A Preliminary Aquatic Resources Assessment 20220801 (jwelsh - 8/2/2022)

Map Date: 8/2/2022

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 30

Figure 4-2. Preliminary Aquatic Resources Assessment
2022-090 Madera County MD 10A Distribution Project

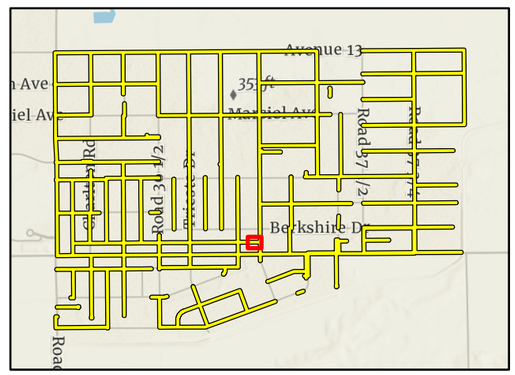
Map Contents

Study Area - 70.2 ac.

Seasonal Wetland Swale

[1] The information depicted on this graphic represents a preliminary wetland assessment. The assessment was not conducted in accordance with the Corps of Engineers Wetland Delineation Manual and Sacramento District Minimum Standards. The project boundaries, wetland boundaries, and acreage values are approximate.

Sources: Maxar (3/7/2022), ESRI



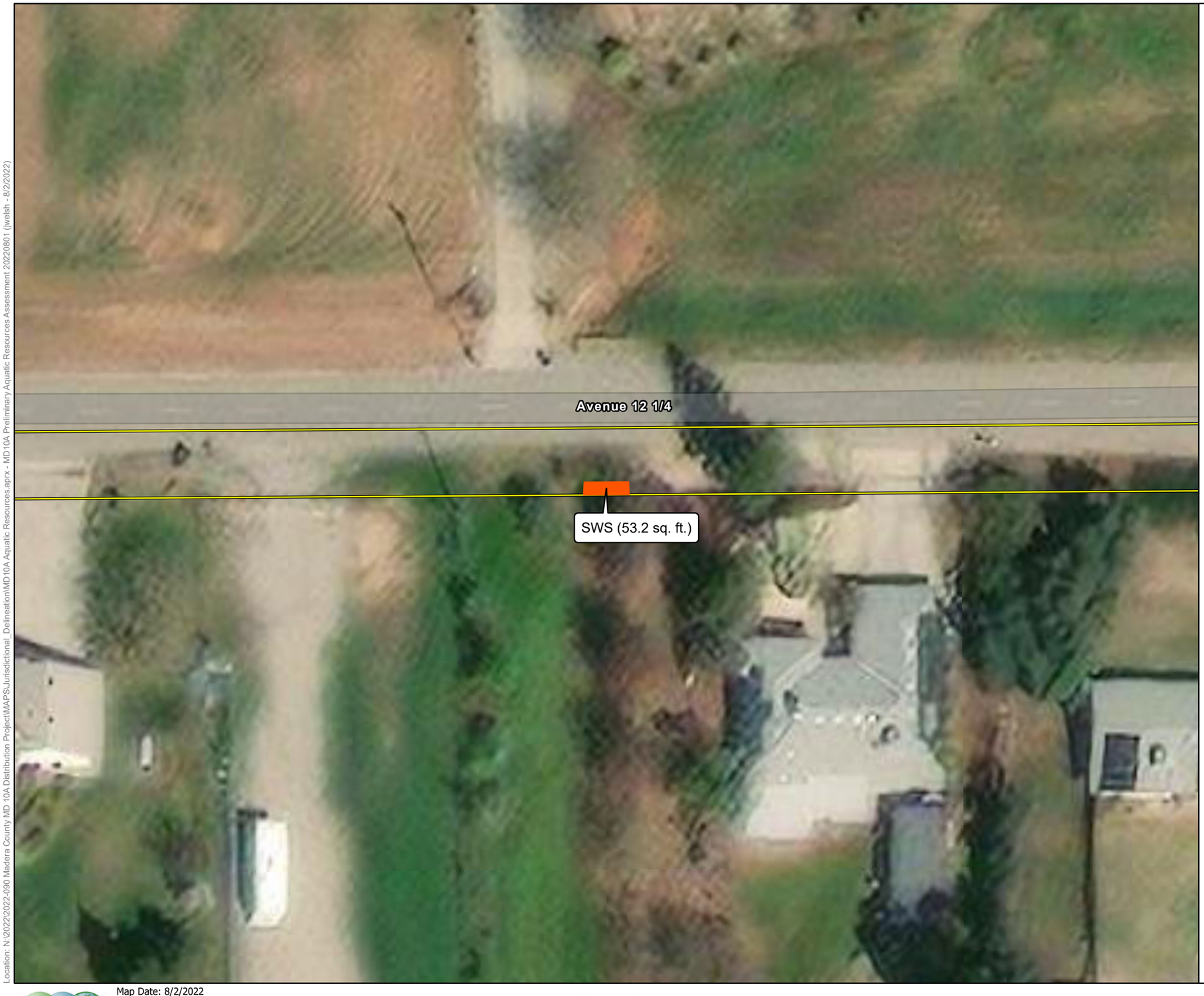
Location: N:\2022\2022-090 Madera County MD 10A Distribution Project\MAPS\Jurisdictional_Delineation\MD10A Aquatic Resources.aprx - MD10A Preliminary Aquatic Resources Assessment 20220801 (jwelsh - 8/2/2022)

Map Date: 8/2/2022

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 30

Figure 4-2. Preliminary Aquatic Resources Assessment
2022-090 Madera County MD 10A Distribution Project



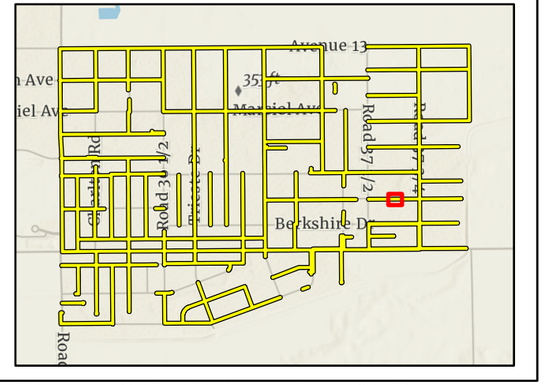
Map Contents

Study Area - 70.2 ac.

Seasonal Wetland Swale

[1] The information depicted on this graphic represents a preliminary wetland assessment. The assessment was not conducted in accordance with the Corps of Engineers Wetland Delineation Manual and Sacramento District Minimum Standards. The project boundaries, wetland boundaries, and acreage values are approximate.

Sources: Maxar (3/7/2022), ESRI



Location: N:\2022\2022-090 Madera County MD 10A Distribution Project\MAPS\Jurisdictional_Delineation\MD10A Aquatic Resources.aprx - MD10A Preliminary Aquatic Resources Assessment 20220801 (jwelsh - 8/2/2022)

Map Date: 8/2/2022

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 30

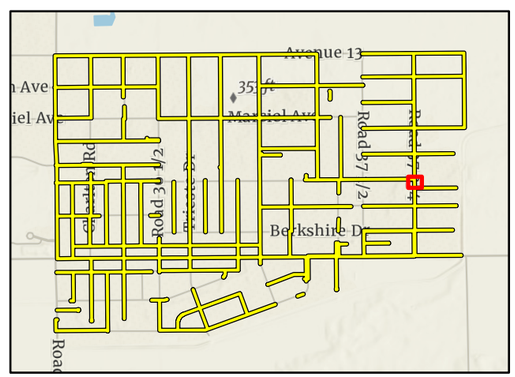
Figure 4-2. Preliminary Aquatic Resources Assessment
2022-090 Madera County MD 10A Distribution Project

Map Contents

- Study Area - 70.2 ac.
- Seasonal Wetland Swale

[1] The information depicted on this graphic represents a preliminary wetland assessment. The assessment was not conducted in accordance with the Corps of Engineers Wetland Delineation Manual and Sacramento District Minimum Standards. The project boundaries, wetland boundaries, and acreage values are approximate.

Sources: Maxar (3/7/2022), ESRI



Location: N:\2022\2022-090 Madera County MD 10A Distribution Project\MAPS\Jurisdictional_Delineation\MD10A Aquatic Resources.aprx - MD10A Preliminary Aquatic Resources Assessment 20220801 (jwelsh - 8/2/2022)

Map Date: 8/2/2022

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

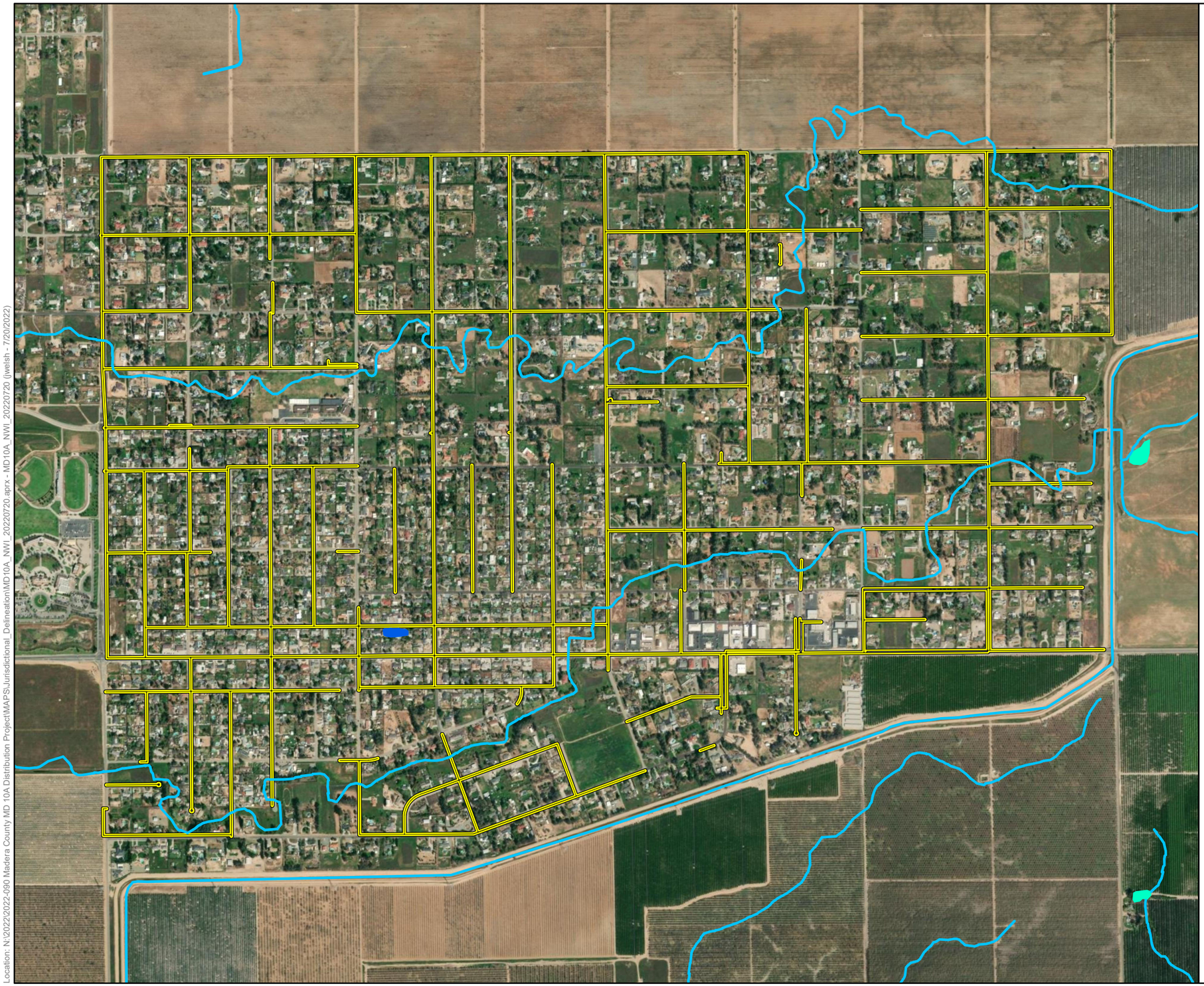
Scale in Feet
0 30

Figure 4-2. Preliminary Aquatic Resources Assessment
2022-090 Madera County MD 10A Distribution Project

The vast majority of the Study Area is heavily impacted and has been leveled, developed, and historically farmed, so there are no other wetland features present. According to the National Wetlands Inventory (NWI), two riverine and one freshwater emergent wetland have been previously mapped onsite (Figure 4-3; USFWS 2022b). One of the riverine NWI features corresponds to Raccoon Creek. The other riverine feature and the freshwater emergent wetland identified in the NWI are in an area that has been developed.

4.6 Evaluation of Potentially Occurring Special-Status Species

Table 4-2 lists all the special-status plant and wildlife species (as defined in Section 3.3) identified in the literature review as potentially occurring within the Study Area. Included in this table is the listing status for each species, a brief habitat description, and a determination on the potential to occur within the Study Area. Following the table is a brief description and discussion of each special-status species that is known to occur in the Study Area (from the literature review) or is considered to potentially occur within the Study Area.



Map Contents

Study Area - 70.2 ac.

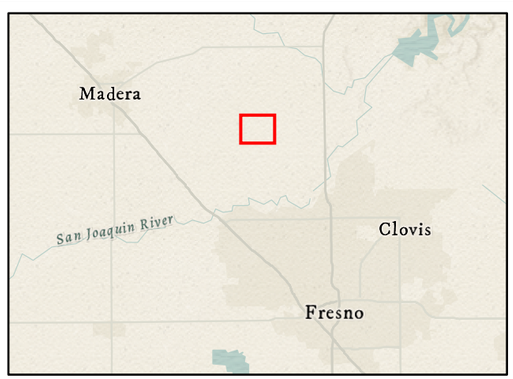
NWI Type

Freshwater Emergent Wetland

Freshwater Pond

Riverine

Sources: ESRI, USFWS



Location: N:\2022\2022-090 Madera County MD 10A Distribution Project\MAPS\Jurisdictional_Delineation\MD10A_NWI_20220720.aprx - MD10A_NWI_20220720 (jwelsh - 7/20/2022)

Map Date: 7/20/2022

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Miles
0 0.2

Figure 4-3. National Wetlands Inventory

2022-090 Madera County MD 10A Distribution Project

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						
Hoover's calycadenia *(Calycadenia hooveri)*	–	–	1B.3	Rocky soils in cismontane woodland and valley and foothill grassland (215'–985').	July–September	Absent-There is no suitable habitat onsite.
Succulent owl's clover *(Castilleja campestris* ssp. *succulenta)*	FT	CE	1B.2	Vernal pools, often in acidic environments (165'–2,460').	April–May	Low Potential-Marginal habitat is present onsite.
California jewelflower *(Caulanthus californicus)*	FE	CE	1B.1	Chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland (200'–3,280').	February–May	Absent-There is no suitable habitat onsite.
Hoover's cryptantha *(Cryptantha hooveri)*	–	–	1A	Inland dunes, sandy substrates in valley and foothill grassland (30'–490').	April–May	Absent-There is no suitable habitat onsite.
Ewan's larkspur *(Delphinium hansenii* ssp. *ewanianum)*	–	–	4.2	Rocky soils in cismontane woodland, and valley and foothill grassland (195'–1,970').	March–May	Absent-There is no suitable habitat onsite.
Dwarf downingia *(Downingia pusilla)*	–	–	2B.2	Mesic areas in valley and foothill grassland, and vernal pools. Species has also been found in disturbed areas such as tire ruts and scraped depressions (5'–1,460').	March–May	Low Potential-Marginal habitat is present onsite.
Spiny-sepaled button-celery *(Eryngium spinosepalum)*	–	–	1B.2	Swales, roadside ditches (Preston et al. 2012), vernal pools and valley and foothill grassland (260'–3,200').	April–June	Low Potential-Marginal habitat is 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			
Kings River monkeyflower *(Erythranthe acutidens)*	–	–	3	Cismontane woodland and lower montane coniferous forest (1,000'–4,005').	April–July	Absent-There is no suitable habitat onsite.
California satintail *(Imperata brevifolia)*	–	–	2B.1	Mesic areas in chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali) and riparian scrub (0'–3,985').	September–May	Absent-There is no suitable habitat onsite.
Munz's tidy tips *(Layia munzii)*	–	–	1B.2	Alkaline clay soils in chenopod scrub and valley and foothill grasslands (490'–2,295').	March–April	Absent-There is no suitable habitat onsite.
Madera leptosiphon (*Leptosiphon serrulatus)*	–	–	1B.2	Cismontane woodland and lower montane coniferous forest (985'–4,265').	April–May	Absent-There is no suitable habitat onsite.
Orange lupine (*Lupinus citrinus* var. *citrinus*)	–	–	1B.2	Granitic substrates in chaparral, cismontane woodland, and lower montane coniferous forest (1,245'–5,580').	April–July	Absent-There is no suitable habitat onsite.
Pincushion navarretia *(Navarretia myersii* ssp. *myersii)*	–	–	1B.1	Often acidic soils in vernal pools (65'–1,085').	April–May	Low Potential-Marginal habitat is present onsite.
Shining navarretia *(Navarretia nigelliformis* ssp. *radians)*	–	–	1B.2	Vernal pools within cismontane woodland and valley or foothill grassland (215'–3,280').	April–July	Low Potential-Marginal habitat is present onsite.
San Joaquin Valley Orcutt grass *(Orcuttia inaequalis)*	FT	CE	1B.1	Vernal pools (35'–2,475').	April–September	Absent-There is 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**			
Hairy Orcutt grass *(Orcuttia pilosa)*	FE	CE	1B.1	Vernal pools (150'–655').	May–September	Absent-There is no suitable habitat onsite.
Hartweg's Golden Sunburst *(Pseudobahia bahiifolia)*	FE	CE	1B.1	Clay, often acidic soils in cismontane woodland, valley and foothill grasslands (50'–490').	March–April	Absent-There is no suitable habitat onsite.
Sanford's arrowhead *(Sagittaria sanfordii)*	–	–	1B.2	Shallow marshes and freshwater swamps (0'–2,135').	May–October	Absent-There is no suitable habitat onsite.
Greene's tuctoria *(Tuctoria greenei)*	FE	CR	1B.1	Vernal pools (100'–3,510').	May–July	Absent-There is no suitable habitat onsite.
Invertebrates						
Conservancy fairy shrimp (*Branchinecta conservatio)*	FE	-	-	Vernal pools/wetlands.	November-April	Absent-There is no suitable habitat onsite.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	-	-	Vernal pools/wetlands.	November-April	Absent-There is no suitable habitat onsite.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	-	-	Elderberry shrubs.	Any season	Absent-The Study Area is outside of the known range of this species.
Fish						
Delta smelt (*Hypomesus transpacificus*)	FT	CE	-	Sacramento-San Joaquin Delta.	N/A	Absent-There is 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**			
Hardhead (*Mylopharodon conocephalus*)	-	-	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-There is no suitable habitat onsite.
Steelhead (CA Central Valley Distinct Population Segment [DPS]) (*Oncorhynchus mykiss irideus*)	FT	-	-	Fast-flowing, well-oxygenated rivers and streams below dams in the Sacramento and San Joaquin River systems.	N/A	Absent-There is no suitable habitat onsite.
Amphibians						
Foothill yellow-legged frog East/Southern Sierra Clade (*Rana boylii*)	-	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-There is 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**			
Western spadefoot (*Spea hammondii*)	-	-	SSC	California endemic species of vernal pools, swales, wetlands and adjacent grasslands throughout the Central Valley.	March-May	Low Potential-There is marginal aquatic and adjacent upland habitat onsite.
California tiger salamander (Central California DPS) (*Ambystoma californiense*)	FT	CT	CDFW WL	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	Low Potential-There is marginal aquatic and adjacent upland habitat onsite.
Reptiles						
Northern legless lizard (*Anniella pulchra*)	-	-	SSC	The most widespread of California's *Anniella* 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	Absent-There is no suitable habitat onsite.
Northwestern pond turtle (*Actinemys marmorata*)	-	-	SSC	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	April-September	Absent-There is no suitable aquatic habitat onsite or in the vicinity.

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**			
California glossy snake (*Arizona elegans occidentalis*)	-	-	SSC	Occurs from the eastern part of the San Francisco Bay Area south to northwestern Baja California. Inhabits arid scrub, rocky washes, grasslands, and chaparral (Stebbins and McGinnis 2012)	April-October	Absent-There is no suitable habitat onsite.
Blunt-nosed leopard lizard (*Gambelia silus*)	FE	CE	CFP	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-There is no suitable habitat onsite.
Blainville's ("Coast") horned lizard (*Phrynosoma blainvillii*)	-	-	SSC	Formerly a wide-spread horned lizard found in a wide variety of habitats, often in lower elevation areas with sandy washes and scattered low bushes. Also occurs in Sierra Nevada foothills. Requires open areas for basking, but with bushes or grass clumps for cover, patches of loamy soil or sand for burrowing and an abundance of ants (Stebbins and McGinnis 2012).	Apr-Oct	Absent-There is 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**			
Giant garter snake (*Thamnophis gigas*)	FT	CT	-	Freshwater ditches, sloughs, and marshes in the Central Valley. Almost extirpated from the southern parts of its range.	April-October	Absent-There is no suitable habitat onsite.
Birds						
Clark's grebe *(Aechmophorus clarkii)*	-	-	BCC	Winters on salt or brackish bays, estuaries, sheltered sea coasts, freshwater lakes, and rivers. Breeds on freshwater to brackish marshes, lakes, reservoirs and ponds, with a preference for large stretches of open water fringed with emergent vegetation.	June-August (breeding)	Absent-There is 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**			
Yellow-billed cuckoo (*Coccyzus americanus*)	FT	CE	BCC	Breeds in California, Arizona, Utah, Colorado, and Wyoming. In California, they nest along the upper Sacramento River and the South Fork Kern River from Isabella Reservoir to Canebrake Ecological Reserve. Other known nesting locations include Feather River (Butte, Yuba, Sutter counties), Prado Flood Control Basin (San Bernardino and Riverside counties), Amargosa River and Owens Valley (Inyo County), Santa Clara River (Los Angeles County), Mojave River and Colorado River (San Bernardino County). Nests in riparian woodland. Winters in South America.	June 15-August 15	Absent-There is 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**			
White-tailed kite (*Elanus leucurus*)	-	-	CFP	Nesting occurs within trees in low elevation grassland, agricultural, wetland, oak woodland, riparian, savannah, and urban habitats.	March-August	Potential-There is potential nesting habitat within or in close proximity to the Study Area.
Golden eagle (*Aquila chrysaetos*)	-	-	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, river banks, trees, and human-made structures (e.g., windmills, platforms, and transmission towers). Breeding occurs throughout California, except the immediate coast, Central Valley floor, Salton Sea region, and the Colorado River region, where they can be found during Winter.	Nest (February-August); winter CV (October-February)	Absent-There is no suitable habitat onsite.
Cooper's hawk *(Accipiter cooperii)*	-	-	CDFW WL	Nests in trees in riparian woodlands in deciduous, mixed and evergreen forests, as well as urban landscapes	March-July	Potential-There is potential nesting habitat within or in close proximity to the Study Area.

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**			
Bald eagle (*Haliaeetus leucocephalus*)	De-listed	CE	CFP	Typically nests in forested areas near large bodies of water in the northern half of California; nest 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)	Absent-There is no suitable habitat onsite.
Swainson's hawk (*Buteo swainsoni*)	-	CT	BCC	Nesting occurs in trees in agricultural, riparian, oak woodland, scrub, and urban landscapes. Forages over grassland, agricultural lands, particularly during discing/ harvesting, irrigated pastures	March-August	Potential-There is potential nesting habitat within or in close proximity to the Study Area.

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**			
Burrowing owl *(Athene cunicularia)*	-	-	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 human-made habitat such as agricultural fields, golf courses, cemeteries, roadside, airports, vacant urban lots, and fairgrounds.	February-August	Absent-There is no suitable habitat onsite.
Nuttall's woodpecker *(Dryobates nuttallii)*	-	-	BCC	Resident from northern California south to Baja California. Nests in tree cavities in oak woodlands and riparian woodlands.	April-July	Low Potential-There is marginal nesting habitat within or in close proximity to the Study Area.
Olive-sided flycatcher *(Contopus cooperi)*	-	-	SSC, BCC	Nests in montane and northern coniferous forests, in forest openings, forest edges, semiopen forest stands. In California, nests in coastal forests, Cascade and Sierra Nevada region. Winters in Central to South America.	May-August	Absent-There is 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**			
Least Bell's vireo (*Vireo bellii pusillus*)	FE	CE	-	In California, breeding range includes Ventura, Los Angeles, Riverside, Orange, San Diego, and San Bernardino counties, and rarely Stanislaus and Santa Clara counties. Nesting habitat includes dense, low shrubby vegetation in riparian areas, brushy fields, young second-growth woodland, scrub oak, coastal chaparral and mesquite brushland. Winters in southern Baja California Sur.	April 1-July 31	Absent-There is no suitable habitat onsite.
Yellow-billed magpie (*Pica nuttallii*)	-	-	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 in large expanses of open ground; also found in urban parklike settings.	April-June	Potential-There is potential nesting habitat within or in close proximity to the Study Area.

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**			
Oak titmouse (*Baeolophus inornatus*)			BCC	Nests in tree cavities within dry oak or oak-pine woodland and riparian; where oaks are absent, they nest in juniper woodland, open forests (gray, Jeffrey, Coulter, pinyon pines and Joshua tree)	March-July	Low Potential- There is marginal nesting habitat within or in close proximity to the Study Area.
California horned lark (*Eremophila alpestris actia*)	-	-	CDFW WL	San Joaquin Valley, coast range from Sonoma County south to Baja California; grassland, agricultural	March-July	Absent-There is no suitable habitat onsite.
Wrentit (*Chamaea fasciata*)	-	-	BCC	Coastal sage scrub, northern coastal scrub, chaparral, dense understory of riparian woodlands, riparian scrub, coyote brush and blackberry thickets, and dense thickets in suburban parks and gardens.	March-August	Absent-There is no suitable habitat onsite.
California thrasher (*Toxostoma redivivum*)	-	-	BCC	Resident and endemic to coastal and Sierra Nevada-Cascade foothill areas of California. Nests are usually well hidden in dense shrubs, including scrub oak, California lilac, and chamise.	February-July	Absent-There is 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**			
Lawrence's goldfinch (*Spinus lawrencei*)	-	-	BCC	Breeds in Sierra Nevada and inner Coast Range foothills surrounding the Central Valley and the southern Coast Range to Santa Barbara County east through southern California to the Mojave Desert and Colorado Desert into the Peninsular Range. Nests in arid and open woodlands with chaparral or other brushy areas, tall annual weed fields, and a water source (e.g., small stream, pond, lake), and to a lesser extent riparian woodland, coastal scrub, evergreen forests, pinyon-juniper woodland, planted conifers, and ranches or rural residences near weedy fields and water.	March-September	Absent-There is 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**			
Tricolored blackbird (*Agelaius tricolor*)	-	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 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 (mustard, mallow) fields, giant cane, safflower, stinging nettles, tamarisk, riparian scrublands and forests, fiddleneck, and fava bean fields.	March-August	Absent-There is no suitable habitat onsite.
Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	-	-	BCC, SSC	Breeds in salt marshes of San Francisco Bay; winters San Francisco south along coast to San Diego County.	March-July	Absent-There is 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**			
Mammals						
Pallid bat *(Antrozous pallidus)*	-	-	SSC	Crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of redwoods, cavities of oaks, exfoliating pine and oak bark, deciduous trees in riparian areas, and fruit trees in orchards). Also roosts in various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (Western Bat Working Group [WBWG] 2022).	April-September	Low Potential-There is marginal roosting habitat within and in close proximity to the Study Area.
Fresno kangaroo rat *(Dipodomys nitratoides exilis)*	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 forbes 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 (USFWS 2010).	Any season	Absent-There is 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**			
Spotted bat *(Euderma maculatum)*	-	-	SSC	Roost in cracks, crevices, and caves, usually high in fractured rock cliffs. Found in desert, sub-alpine meadows, desert-scrub, pinyon-juniper woodland, ponderosa pine, mixed conifer forest, canyon bottoms, rims of cliffs, riparian areas, fields, and open pastures (WBWG 2022).	April-September	Absent-There is no suitable roosting habitat onsite.
Greater mastiff bat (*Eumops perotis californicus*)	-	-	SSC	Primarily a cliff-dwelling species, found in similar crevices in large boulders and buildings (WBWG 2022).	April-September	Absent-There is no suitable roosting habitat onsite.
Hoary bat (*Lasiurus cinerus*)	-	-	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 (WBWG 2022).	April-September	Low Potential-There is marginal roosting habitat within and in close proximity to the Study Area.

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			
American badger *(Taxidea taxus)*	-	-	SSC	Drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Any season	Absent-There is no suitable habitat onsite.
San Joaquin kit fox *(Vulpes macrotis mutica)*	FE	CT	-	Grasslands, sagebrush scrub.	April 15 - July 15, September 1 - December 1	Absent-There is no suitable habitat onsite.

Status Codes:

FESA	Federal Endangered Species Act
CESA	California Endangered Species Act
FE	FESA listed, Endangered
FT	FESA listed, Threatened
BCC	USFWS Bird of Conservation Concern (USFWS 2021)
CR	CESA- or NPPA-listed, Rare
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
1A	CRPR/Presumed extinct
1B	CRPR/Rare or Endangered in California and elsewhere
2B	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% of occurrences threatened / high degree and immediacy of threat)
0.2	Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3	Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
Delisted	Formally Delisted (delisted species are monitored for 5 years)

4.6.1 Plants

Nineteen special-status plant species were identified as potentially occurring in the Study Area based on the initial literature review and database queries (Table 4-2). Upon further analysis and after the site visit, 14 of these species are considered absent due to a lack of suitable habitat within the Study Area, and five special-status plants were considered to have low potential due to the presence of marginally suitable habitat and the disturbed/developed nature of the Study Area. A brief discussion of the five special-status plants that have low potential to occur onsite follows.

4.6.1.1 Succulent Owl's Clover

Succulent owl's clover (*Castilleja campestris* ssp. *succulenta*) is listed as threatened pursuant to the federal ESA, endangered pursuant to the California ESA, and is designated as a CRPR 1B.2 species. This species is a hemiparasitic herbaceous annual that occurs in vernal pools that are often acidic. Succulent owl's clover blooms from April through May, and is known to occur at elevations ranging from 165 to 2,460 feet above MSL. Succulent owl's clover is endemic to California; the current range of this species includes Fresno, Madera, Merced, Mariposa, San Joaquin, and Stanislaus counties (CNPS 2022).

There are six CNDDB occurrences of succulent owl's clover within 5 miles of the Study Area (CDFW 2022a). The seasonal wetland swale, Raccoon Creek, onsite supports marginal habitat for this species. Succulent owl's clover has low potential to occur within the Study Area.

4.6.1.2 Dwarf Downingia

Dwarf downingia (*Downingia pusilla*) 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 annual that occurs in vernal pools and mesic areas of valley and foothill grasslands. Dwarf downingia has also been found in manmade features such as tire ruts, scraped depressions, stock ponds, and roadside ditches. This species blooms from March through May and is known to occur at elevations ranging from 5 to 1,460 feet above MSL. The current range of this species in California includes Fresno, Merced, Napa, Placer, Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties (CNPS 2022).

There are no CNDDB occurrences of dwarf downingia within 5 miles of the Study Area (CDFW 2022a). The seasonal wetland swale, Raccoon Creek, onsite supports marginal habitat for this species. Dwarf downingia has low potential to occur within the Study Area.

4.6.1.3 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. Spiny-sepaled button-celery blooms from April through June and is known to occur at elevations ranging from 260 to 3,200 feet above MSL. Spiny-sepaled button-celery is endemic to California; the current range of this species includes Calaveras, Contra Costa, Fresno, Kern, Madera, Mariposa, Merced, San Luis Obispo, Stanislaus, Tulare, and Tuolumne counties (CNPS 2022).

There are two CNDDB occurrences of spiny-sepaled button-celery within 5 miles of the Study Area (CDFW 2022a). The seasonal wetland swale, Raccoon Creek, onsite supports marginal habitat for this species. Spiny-sepaled button-celery has low potential to occur within the Study Area.

4.6.1.4 Pincushion Navarretia

Pincushion navarretia (*Navarretia myersii* ssp. *myersii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CNPS 1B.1 species. This species is an herbaceous annual that occurs

in vernal pools that are often acidic. Pincushion navarretia blooms from April through May and is known to occur at elevations ranging from 65 to 1,085 feet above MSL. Pincushion navarretia is endemic to California; the current range of this species includes Amador, Calaveras, Madera, Merced, Placer, and Sacramento counties (CNPS 2022).

There is one CNDDB occurrence of pincushion navarretia within 5 miles of the Study Area (CDFW 2022a). The seasonal wetland swale, Raccoon Creek, onsite supports marginal habitat for this species. Pincushion navarretia has low potential to occur within the Study Area.

4.6.1.5 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. Shining navarretia blooms from April through July and is known to occur at elevations ranging from 215 to 3,280 feet above MSL. 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).

4.6.2 Invertebrates

Three special-status invertebrate species were identified as potentially occurring in the Study Area based on the initial literature review (Table 4-2). However, upon further review and after the site visit, all of these species were absent due to a lack of suitable habitat within the Study Area or the Study Area is outside the known range of the species.

4.6.3 Fish

Three special-status fish were identified as having potential to occur in the Study Area based on the literature review (Table 4-2). However, upon further review and after the site visit all of these species are absent due to a lack of suitable habitat within the Study Area. No further discussion of these species is provided in this analysis.

4.6.4 Amphibians

Three special-status amphibian species were identified as having potential to occur in the Study Area based on the literature review (Table 4-2). Upon further analysis and after the site visit, one species was considered absent due to a lack of suitable habitat within the Study Area, and two species were considered to have low potential for occurrence due to the heavily impacted landscape. A brief discussion of the two special-status amphibians that have low potential to occur onsite follows.

4.6.4.1 Western Spadefoot

The western spadefoot (*Spea hammondii*) is not listed pursuant to either the California or federal Endangered Species Acts; however, it is designated as a CDFW species of special concern. 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 (Jennings and Hayes 1994). Spadefoots spend most of their adult life within underground burrows or other suitable refugia, such as rodent burrows. In California, western spadefoot toads are known to occur from the Redding area, Shasta County southward to northwestern Baja California, at elevations below 4,475 feet (Jennings and Hayes 1994).

There are numerous CNDDB occurrences of western spadefoot within 5 miles of the Study Area (CDFW 2022a). The wetlands associated with Raccoon Creek represent marginal habitat for this species. Western spadefoot has low potential to occur.

4.6.4.2 California Tiger Salamander

The Central Valley DPS of California tiger salamander (*Ambystoma californiense*) was listed as threatened by the U.S. Fish and Wildlife Service on August 4, 2004 (FR Vol. 69, No. 149: 47212). As of August 19, 2010, the California tiger salamander is listed as a threatened species under the California ESA throughout its range. This species is most commonly associated with intact annual grassland habitats and vernal pool landscapes but may also occur within open woodlands in low hills and valleys. 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 2003, 2015). Necessary habitat components for California tiger salamanders include intact open terrestrial landscapes used by adult 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 or Botta's pocket gopher (*Thomomys bottae*) burrows (Stebbins 1972; Loredo et al. 1996).

There are numerous CNDDB occurrences of California tiger salamander within 5 miles of the Study Area (CDFW 2022a). The wetlands associated with Raccoon Creek represent marginally suitable habitat for this species. However, the Study Area is located in the effective range for dispersing individuals. California tiger salamander has low potential to occur.

4.6.5 Reptiles

Six special-status reptile species were identified as having the potential to occur in the Study Area based on the literature review (Table 4-2). However, upon further analysis and after the site visit, all of these species are considered absent from the site due to the lack of suitable habitat within the Study Area. No further discussion of special-status reptiles is provided in this analysis.

4.6.6 Birds

Nineteen special-status bird species were identified as having the potential to occur within the Study Area based on the literature review (Table 4-2). However, upon further analysis and after the site visit, 13 of these species were considered absent from the site due to the lack of suitable habitat or the Study Area is outside the known breeding range of the species. No further discussion of these species is provided in this analysis. A brief discussion of the six special-status birds with potential or low potential to occur

onsite follows. Also, a discussion of potential effects on migratory bird species are discussed further in Sections 5.1 and 6.0.

4.6.6.1 White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is not listed pursuant to either the California or federal 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).

There are no CNDDB occurrences of white-tailed kite within 5 miles of the Study Area (CDFW 2022a). However, taller trees within and immediately adjacent to the Study Area represent potential nesting habitat for this species. White-tailed kite has potential to occur onsite.

4.6.6.2 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. Typical nesting and foraging habitats include riparian woodland, dense oak woodland, other woodlands near water, and urban/parkland settings. Cooper's hawk nest throughout California from Siskiyou County to San Diego County and includes the Central Valley (Rosenfield et al. 2020). Breeding occurs during March through July, with a peak from May through July.

There are no CNDDB occurrences of Cooper's hawk within 5 miles of the Study Area (CDFW 2022a). However, taller trees within and immediately adjacent to the Study Area represent potential nesting habitat for this species. Cooper's hawk has potential to occur onsite.

4.6.6.3 Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*) is listed as a threatened species and is protected 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, ring-necked pheasant (*Phasianus colchicus*), many passerine birds, and grasshoppers (*Melanopulus* sp.). Swainson's hawks are opportunistic foragers and will readily forage in

association with agricultural mowing, harvesting, disking, and irrigating (Estep 1989). The removal of vegetative cover by such farming activities results in more readily available prey items for this species.

There are two CNDDB occurrences of Swainson's hawk within 5 miles of the Study Area (CDFW 2022a). There is no suitable foraging habitat onsite, but taller mature trees within and adjacent to the Study Area represent potential nesting habitat for this species. Swainson's hawk has potential to occur onsite.

4.6.6.4 Nuttall's Woodpecker

The Nuttall's woodpecker (*Dryobates nuttallii*) is not listed and protected under either 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.

Nuttall's woodpecker is currently not tracked in the CNDDB. Taller trees supporting cavities within the Study Area provide marginal habitat for this species. Nuttall's woodpecker has low potential to occur onsite.

4.6.6.5 Yellow-Billed Magpie

The 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, which may take up to six to eight weeks to complete, with eggs laid during April to May, and fledging during May to 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).

There are currently no records of this species in the CNDDB (CDFW 2022a). However, taller trees within and immediately adjacent to the Study Area represent potential nesting habitat for this species. Yellow-billed magpie has potential to occur onsite.

4.6.6.6 Oak Titmouse

Oak titmouse (*Baeolophus inornatus*) are not listed or protected under either the California or federal ESAs but are considered a USFWS BCC. Oak titmouse breeding range includes southwestern Oregon south through California's Coast, Transverse, and Peninsular ranges, western foothills of the Sierra Nevada, into Baja California; they are absent from the humid northwestern coastal region and the San Joaquin Valley (Cicero and Patten 2020). They are found in dry oak or oak-pine woodlands but may also use scrub oaks or other brush near woodlands (Cicero and Patten 2020). Nesting occurs during March through July.

Oak titmouse is currently not tracked in the CNDDB. Trees supporting cavities within the Study Area provide marginal habitat for this species. Oak titmouse has low potential to occur onsite.

4.6.7 Mammals

Seven special-status mammal species were identified as having the potential to occur within the Study Area based on the literature review (Table 4-2). However, upon further analysis and after the site visit, five of these species are considered absent from the site due to the lack of suitable habitat within the Study Area. No further discussion of these species is provided in this analysis. A brief discussion of the two special-status mammals with low potential to occur onsite follows.

4.6.7.1 Pallid Bat

The pallid bat (*Antrozous pallidus*) is not listed pursuant to either the federal or California ESAs; however, this species is considered an SSC by CDFW. The pallid bat is a large, light-colored bat with long, prominent ears and pink, brown, or grey wing and tail membranes. This species ranges throughout North America from the interior of British Columbia, south to Mexico, and east to Texas. The pallid bat inhabits low elevation (below 6,000 feet) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forest (above 7,000 feet). This species roosts alone or in groups in the crevices of rocky outcrops and cliffs, caves, mines, trees, and in various human structures such as bridges, and barns. Pallid bats are feeding generalists that glean a variety of arthropod prey from surfaces as well as capturing insects on the wing. Foraging occurs over grasslands, oak savannahs, ponderosa pine forests, talus slopes, gravel roads, lava flows, fruit orchards, and vineyards. Although this species utilizes echolocation to locate prey, often they use only passive acoustic cues. This species is not thought to migrate long distances between summer and winter sites (WBWG 2022).

There are no CNDDB occurrences of pallid bat within 5 miles of the Study Area (CDFW 2022a). Trees within and adjacent to the Study Area represent marginal roosting habitat for this species. Pallid bat has low potential to occur onsite.

4.6.7.2 Hoary Bat

The 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).

There are no CNDDB occurrences of hoary bat within 5 miles of the Study Area (CDFW 2022a). Trees within and adjacent to the Study Area represent marginal roosting habitat for this species. Hoary bat has low potential to occur onsite.

4.7 Sensitive Natural Communities

Four sensitive natural communities were identified as having the potential to occur within or in the vicinity of the Study Area based on the literature review (CDFW 2022a). These are: Northern Hardpan Vernal Pool, Northern Claypan Vernal Pool, Great Valley Mixed Riparian Forest, and Sycamore Alluvial Woodland. However, upon further analysis and after the site visit, none of these nor any other sensitive natural communities are considered to be present within the Study Area. No further discussion of sensitive natural communities is provided within this assessment.

5.0 IMPACT ANALYSIS

This section specifically addresses the questions raised by the CEQA - Appendix G Environmental Checklist Form, IV. Biological Resources. This impact analysis assumes the Project will implement measures that fulfill the intent of recommended measures described in Section 6.0.

5.1 Special Status Species

Would the Project result in effects, either directly or through habitat modifications, to species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

No special-status species are known to occur within the Study Area; however, special-status plant and animal surveys have not been conducted. The Study Area supports potential habitat for special-status species within the potential impact area. Potential effects to special-status species are summarized in the following sections by taxonomic group or species.

5.1.1 Special-Status Plants

There is marginally suitable habitat for one federally or state-listed plant species in the Study Area, and there is low potential for four other nonlisted special-status plant species to occur. Project implementation could permanently remove or alter marginally suitable or suitable potential habitat for special-status plants, and if by chance special-status plant populations occur onsite they may be directly or indirectly impacted by Project implementation.

Implementation of recommendations BIO1, BIO2, BIO3, and BIO4 described in Section 6.0 would avoid, minimize, and/or compensate for potential effects to special-status plants. With implementation of these measures, the Project is not expected to significantly impact special-status plants.

5.1.2 Special-Status Amphibians

There is marginally suitable habitat for one federally or state-listed and one other nonlisted special-status amphibian species in the Study Area. Project development could permanently remove or alter suitable potential habitat for special-status amphibians, and if by chance special-status amphibians occur onsite they may be directly or indirectly impacted by development.

Implementation of recommendations BIO1, BIO2, BIO5, and BIO6 described in Section 6.0 would avoid, minimize, and/or compensate for potential effects to special-status amphibians. With implementation of these measures, the Project is not expected to significantly impact special-status amphibians.

5.1.3 Special-Status and Other Protected Birds

There is potential nesting habitat for one state-listed bird species (Swainson's hawk) in the Study Area, and there is low potential or potential for five nonlisted special-status bird species and a variety of other nonlisted birds that are protected under the MBTA and the California Fish and Game Code. Project development could permanently remove or alter suitable nesting habitat for special-status and other protected birds, and if by chance active nests occur onsite they may be directly or indirectly impacted by development.

Implementation of recommendations BIO2 and BIO7 described in Section 6.0 would avoid or minimize potential effects to special-status and other protected birds.

5.1.4 Special-Status Mammals

There is marginal roosting habitat for two special-status bat species in the Study Area. Project development could permanently remove or alter suitable potential roosting habitat for special-status bats, and if by chance special-status bats occur onsite they may be directly or indirectly impacted by development.

Implementation of recommendations BIO2, BIO8, and BIO9 described in Section 6.0 would avoid, minimize, and/or compensate for potential effects to special-status bats. With implementation of these measures, the Project is not expected to significantly impact special-status bats.

5.2 Riparian Habitat and Sensitive Natural Communities

Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS?

The Study Area is developed and supports weedy ruderal and nonnative annual grassland habitat. There are no sensitive natural communities as defined by CDFW, and there is no riparian habitat onsite. Therefore, the Project will not impact riparian habitat or sensitive natural communities.

5.3 Aquatic Resources, Including Waters of the U.S. and State

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

A formal aquatic resources delineation according to USACE standards has not been performed for the Study Area. However, potential aquatic resources were identified within the Study Area during the initial

site reconnaissance visit. Depending on final pipeline alignment within these portions of the Study Area, Project implementation would have the potential to result in fill of these aquatic features.

Implementation of recommendations WATER1 through WATER4 described in Section 6.0 would avoid, minimize, and/or compensate for potential effects to Waters of the U.S. or State

5.4 Wildlife Movement/Corridors

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

The Study Area provides limited migratory opportunities for terrestrial wildlife because of the developed nature of the site and surrounding lands, the absence of significant wildlife habitat elements onsite, and existing site perimeter fencing. Project construction is likely to temporarily disturb and displace some wildlife from the vicinity of the Study Area. Some wildlife such as birds or nocturnal species are likely to continue to use the habitats opportunistically for the duration of construction. Once construction is complete, wildlife movements are expected to resume but will likely be more limited through the Study Area. The Project is not expected to substantially interfere with wildlife movement.

There are no documented nursery sites and no nursery sites were observed within the Study Area during the site reconnaissance. Therefore, the Project is not expected to impact wildlife nursery sites.

5.5 Local Policies, Ordinances, and Other Plans

Does the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The Project would not conflict with local policies or ordinances protecting biological resources.

Does the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Study Area is not covered by any local, regional, or state conservation plan. Therefore, the Project would not conflict with a local, regional, or state conservation plan. There would be no impact.

6.0 RECOMMENDATIONS

The Study Area supports potential Waters of the U.S. or State and potential habitat for special-status species. This section summarizes recommended measures to avoid, minimize, or compensate for potential impacts to biological resources from the Proposed Project.

6.1 General Recommendations

The following general measures are recommended to avoid impacts to offsite and onsite biological resources:

- **BIO1:** The project should implement erosion control measures and Best Management Practices to reduce the potential for sediment or pollutants at the Project site. Examples of appropriate measures are included below.
    - Avoided aquatic resources should be clearly demarcated prior to construction. Avoidance buffers should be consistent with the Madera County requirements and/or requirements of regulatory permits. Erosion control measures should be placed between avoided aquatic resources and the outer edge of the impact limits prior to commencement of construction activities. Such identification and erosion control measures should be properly maintained until construction is completed and the soils have been stabilized.
    - Any fueling in the Study Area should use appropriate secondary containment techniques to prevent spills.
- **BIO2:** A qualified biologist should conduct a mandatory Worker Environmental Awareness Program for all contractors, work crews, and any onsite personnel to aid workers in recognizing special-status species and sensitive biological resources that may occur onsite. The program shall include identification of the special-status species and their habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and Mitigation Measures required to reduce impacts to biological resources within the work area.

6.2 Special-Status Species

Recommendations to minimize impacts to special status species or habitats are summarized below by species or taxonomic group.

6.2.1 Plants

There is low potential for five special-status plants to occur within the Study Area. The following measures are recommended to minimize potential impacts to special-status plants:

- **BIO3:** Where Project activities would involve disturbance of areas that are not currently paved, floristic plant surveys shall be conducted according to USFWS, CDFW, and CNPS protocols prior to construction. Surveys should be conducted by a qualified biologist and timed according to the appropriate phenological stage for identifying target species. Known reference populations should be visited and/or local herbaria records should be reviewed, if available, prior to surveys to confirm the phenological stage of the target species. If no special-status plants are found within the Project site, no further measures pertaining to special-status plants are necessary.
- **BIO4:** If special-status plants are identified within 25 feet of the Project impact area, implement the following measures:
    - If avoidance of special-status plants is feasible, establish and clearly demarcate avoidance zones for special-status plant occurrences prior to construction. Avoidance zones should include the extent of the special-status plants plus a 25-foot buffer, unless otherwise

determined by a qualified biologist, and should be maintained until the completion of construction. A qualified biologist/biological monitor should be present must occur within the avoidance buffer to ensure special-status plants are not impacted by the work.

- If avoidance of special-status plants is not feasible, mitigate for significant impacts to special-status plants. Mitigation measures should be developed in consultation with CDFW and/or USFWS. Mitigation measures may include permanent preservation of onsite or offsite habitat

6.2.2 Amphibians

Western spadefoot has low potential to occur within the Study Area. Implementation of recommendation BIO1, BIO2, and the following measure would avoid and/or minimize potential adverse effects to western spadefoot:

- **BIO5:** Final Project design pipeline alignments, meter locations, and construction activity areas shall avoid areas of potential western spadefoot habitat to the extent feasible. Where such areas cannot be avoided, a qualified biologist shall conduct surveys for western spadefoot in areas of potential habitat that would be eliminated by the Project. The surveys shall be conducted at the appropriate time of year to detect western spadefoot, generally the breeding season, according to methods approved by CDFW. If western spadefoot is found in habitat that will be eliminated or made unsuitable for western spadefoot, then a plan to collect and relocate adult and larval western spadefoot and egg masses to suitable habitat will be prepared in consultation with CDFW.

California tiger salamander has low potential to occur within the Study Area. Implementation of recommendation BIO1, BIO2, and the following measure would avoid and/or minimize potential adverse effects to California tiger salamander:

- **BIO6:** Final Project design pipeline alignments, meter locations, and construction activity areas shall avoid areas of potential California tiger salamander habitat to the extent feasible. Where such areas cannot be avoided qualified biologist shall conduct a California tiger salamander site assessment according to the *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander* (USFWS 2003) and submit report to USFWS and CDFW. Based on the information provided from the site assessment, USFWS and CDFW will provide recommendations as to the appropriateness of field surveys.

6.2.3 Special-Status Birds and Migratory Bird Treaty Act-Protected Birds (Including Nesting Raptors)

Six special-status birds and various other protected birds have the potential to nest within and immediately adjacent the Study Area. Since there are several distinct construction activities that will occur in areas of vehicle traffic and other human activities typical of semi-rural residential land uses, a qualified biologist will review the proposed construction activity and determine if impacts could occur to nesting birds. If the qualified biologist determines there could be potential impacts, the following measure is recommended to minimize potential impacts to nesting birds:

- **BIO7:** If construction is to be initiated during the nesting season (generally February 1 through August 31), conduct a preconstruction nesting bird survey of all suitable nesting habitat on the Project within 14 days of the commencement of construction. The survey shall be conducted within a 500-foot radius of Project work areas for raptors and within a 100-foot radius for other nesting birds. If any active nests are observed, these nests shall be designated a sensitive area and protected by an avoidance buffer established in coordination with CDFW until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival or the nest is otherwise no longer occupied.

6.2.4 Mammals

Two special-status bats have low potential to occur within the Study Area. Implementation of recommendation BIO2, and the following measure would avoid and/or minimize potential adverse effects to special-status bats:

- **BIO8:** Bat roost surveys shall be conducted by a qualified wildlife biologist within 14 days before removal of any tree having the potential to provide bat roosting habitat. Locations of vegetation and tree removal or excavation will be examined for potential bat roosts. Specific survey methodologies will be determined by a qualified biologist and consistent with any applicable recommendations or requirements of CDFW, and may include visual surveys of bats (e.g., observation of bats during foraging period), inspection for suitable habitat, bat sign (e.g., guano), or use of ultrasonic detectors (e.g., SonoBat, Anabat). Removal of any significant roost sites located will be avoided to the extent feasible.
- **BIO9:** If it is determined that an active roost site cannot be avoided and will be affected, bats will be excluded from the roost site before the tree is removed. The biologist shall first notify and consult with CDFW on appropriate bat exclusion methods and roost removal procedures. Once it is confirmed that all bats have left the roost, crews will be allowed to continue work in the area.

6.3 Waters of the U.S./State

The Study Area contains four areas totaling 0.003 acre (130.9 square feet) of potential Waters of the U.S. and/or Waters of the State. Final Project design shall avoid potential disturbance or placement of fill within areas identified as potential Waters of the U.S. and/or Waters of the State to the extent feasible. Even if the potential Water of the U.S. and/or Water of the State are avoided, BIO1 and BIO 2 are recommended. If avoidance is not possible, the following measures are recommended:

- **WATERS1:** Final Project design shall avoid potential disturbance or placement of fill within areas identified as potential Waters of the U.S. and/or Waters of the State to the extent feasible. If avoidance is not possible, the County shall prepare and submit an Aquatic Resources Delineation for the Project to the USACE and obtain a verification or Preliminary Jurisdictional Determination.
- **WATERS2:** If necessary, file a request for authorization to fill Waters of the U.S. under Section 404 of the federal CWA (Section 404 Permit) prior to discharging any dredged or fill materials into any Waters of the U.S. Mitigation measures will be developed as part of the Section 404 Permit

process to ensure no net loss of wetland function and values. To facilitate such authorization, an application for a Section 404 Nationwide Permit (0.5 acre or less of impacts for Nationwide Permit 58-Utility Line Activities for Water and Other Substances) or an Individual Permit for the Project should be prepared and submitted to USACE. Mitigation for impacts to Waters of the U.S. typically consists of a minimum of a 1:1 ratio for direct impacts; however final mitigation requirements will be developed in consultation with USACE.

- **WATERS3:** If necessary, file a request for a Water Quality Certification or waiver pursuant to Section 401 of the CWA must be obtained from the RWQCB for Section 404 permit actions.
- **WATERS4:** Pursuant to the Porter-Cologne Water Quality Act, a permit authorization from the RWQCB is required prior to the discharge of material in an area that could affect Waters of the State. Mitigation requirements for discharge to Waters of the State within the Project site will be developed in consultation with the RWQCB.

7.0 REFERENCES

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. *The Jepson Manual; Vascular Plants of California*, Second Edition. University of California Press, Berkeley, California.

Barr, C.B. 1991. The distribution, habitat and status of the valley elderberry longhorn beetle *Desmocerus californicus dimorphus* Fisher (Coleoptera: Cerambycidae). U.S. Fish and Wildlife Service, Sacramento, California.

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

California Department of Fish and Wildlife (CDFW). 2022. Rarefind 5. Online Version, commercial version dated January 1, 2022. California Natural Diversity Database. The Resources Agency, Sacramento.

_____. 2020. California Natural Community List. Version dated; September 9, 2020. Available online: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline.

California Native Plant Society (CNPS). 2022. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Available online: http://www.rareplants.cnps.org. Accessed June 2022.

Cicero, C., P. Pyle, and M.A. Patten. 2020. Oak Titmouse (Baeolophus inornatus), version 1.0. In Birds of the World (P. G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.oaktit.01.

Dunk, J. R. 2020. White-tailed Kite (Elanus leucurus), version 1.0. In Birds of the World (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.whtkit.01.

Estep, J.A. 1989. Biology, movements, and habitat relationships of the Swainson's hawk in the Central Valley of California, 1986-1987. California Department of Fish and Game, Nongame Bird and Mammal Section Report.

Jennings, M.R. and M.P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. Final report to California Department of Fish and Game, Inland Fisheries Branch. Rancho Cordova, CA.

Koenig, W.D. and M.D. Reynolds. 2020. Yellow-billed Magpie (Pica nuttalli), version 1.0. In Birds of the World (A.F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.yebmag.01.

Loredo, I., D. Van Vuren, and M.L. Morrison. 1996. Habitat use and migration behavior of the California tiger salamander. Journal of Herpetology 30: 282 – 285.

Lowther, P.E., P. Pyle, and M.A. Patten. 2020. Nuttall's Woodpecker (Dryobates nuttallii), version 1.0. In Birds of the World (P. G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.nutwoo.01.

National Oceanic and Atmospheric Administration (NOAA). 2022. Climate Data Online, Data Tools: 1981-2010 Normals. Available online: https://www.ncdc.noaa.gov/cdo-web/datatools/normals. Accessed June 2022.

_____. 2016. National Marine Fisheries Service, West Coast Region, Species List December 2016. Intersection of USGS 7.5" Topographic Quadrangles with NOAA Fisheries ESA Listed Species, Critical Habitat, Essential Fish Habitat, and MMPA Species Data Within California.

Natural Resources Conservation Service (NRCS). 2022a. Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/. Accessed June 2022.

_____. 2022b. Soil Data Access Hydric Soils List. https://www.nrcs.usda.gov/wps/portal/nrcs/mail/soils/use/hydric/. Accessed June 2022.

Natural Resources Conservation Service (NRCS), U.S. Geological Survey (USGS), and U.S. Environmental Protection Agency (USEPA). 2016. Watershed Boundary Dataset for California. Available online: https://datagateway.nrcs.usda.gov [Dated 09/21/2016].

Rosenfield, R.N., K.K. Madden, J. Bielefeldt, and O.E. Curtis. 2020. Cooper's Hawk (Accipiter cooperii), version 1.0. In Birds of the World (P G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.coohaw.01.

Sawyer, J., Keeler-Wolf T., Evens J.M. 2009. *A Manual of California Vegetation, Second Edition*. Sacramento, California: California Native Plant Society.

Spencer, W.D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration. Available online: https://wildlife.ca.gov/Conservation/Planning/Connectivity/CEHC.

Stebbins, R.C. 1972. California amphibians and reptiles. University of California Press. Berkeley, California. 152 pp.

Stebbins, R.C. and S.M. McGinnis. 2012. Field Guide to Amphibians and Reptiles of California (revised edition). University of California Press, Berkeley.

Talley, T.S., E. Fleishman, M. Holyoak, D.D. Murphy, and A. Ballard. 2007. Rethinking a rare-species conservation strategy in an urban landscape: The case of the valley elderberry longhorn beetle. Biological Conservation 135(2007): 21-32.

U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (USACE). 2007. Memorandum Re: CWA Jurisdiction Following U.S. Supreme Court discussion in Rapanos v. United States.

U.S. Fish and Wildlife Service (USFWS). 2022a. Information, Planning, and Consultation System (IPaC) Resource Report List for the Study Area. Available online: https://ipac.ecosphere.fws.gov/location/AS3MDYY7R5FMLPYCFJFEBKMGNE/resources.

_____. 2022b. National Wetlands Inventory. NWI Wetlands Mapper. Last modified May 1, 2021. Available online: https://fws.gov/wetlands/data/Mapper.html.

_____. 2021. Birds of Conservation Concern 2021. U.S. Fish and Wildlife Service, Migratory Birds, Falls Church. Online version available at: https://www.fws.gov/migratorybirds/pdf/management/birds-of-conservation-concern-2021.pdf.

_____. 2017. Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*). U.S. Fish and Wildlife Service; Sacramento, California. 28 pp.

_____. 2015. Draft recovery plan for the Central California distinct population segment of the California tiger salamander (Ambystoma californiense). U. S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 53 pp.

____. 2010. Fresno Kangaroo Rat (Dipodomys nitratoides exilis) 5-Year Review: Summary and Evaluation. Sacramento Fish and Wildlife Office. Sacramento, California. p. 22. https://ecos.fws.gov/docs/five_year_review/doc3214.pdf. February 2010.

_____. 2003. Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander. October 2003.

_____. 1999. Conservation Guidelines for the Valley Elderberry Longhorn Beetle. Sacramento Fish and Wildlife Office. Dated July 9, 1999.

_____. 1980. Listing the Valley Elderberry Longhorn Beetle as a Threatened Species with Critical Habitat; Final Rule. Federal Register Volume 45, Number 155 (August 8, 1980).

U.S. Geological Survey (USGS). 1965. "Gregg, California" 7.5-minute Quadrangle. Geological Survey. Denver, Colorado.

_____. 1964. "Lanes Bridge, California" 7.5-minute Quadrangle. Geological Survey. Denver, Colorado.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds). 1990. California's Wildlife, Volume III, Mammals. California Statewide Wildlife Habitat Relationships System. California Department of Fish and Game, Sacramento, California.

Western Bat Working Group (WBWG). 2022. Western Bat Species Accounts. http://wbwg.org/western-bat-species/. Accessed July 2022.

LIST OF ATTACHMENTS

Attachment A – Results of Database Queries

Attachment B – Representative Site Photos

Attachment C – Plants Observed Onsite

Attachment D – Natural Resources Conservation Service Soil Descriptions

ATTACHMENT A

Results of Database Queries

California Native Plant Society

Search Results

20 matches found. Click on scientific name for details

Search Criteria: Quad is one of [**3611987:3611988:3712011:3612081:3612071:3611978:3611977:3611976:3611986:3711916:3711917:3711918**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Bryum chryseum	brassy bryum	Bryaceae	moss		None	None	G5	S3	4.3	No Photo Available
Calycadenia hooveri	Hoover's calycadenia	Asteraceae	annual herb	Jul-Sep	None	None	G2	S2	1B.3	No Photo Available
Castilleja campestris var. *succulenta*	succulent owl's-clover	Orobanchaceae	annual herb (hemiparasitic)	(Mar)Apr-May	FT	CE	G4? T2T3	S2S3	1B.2	No Photo Available
Caulanthus californicus	California jewelflower	Brassicaceae	annual herb	Feb-May	FE	CE	G1	S1	1B.1	No Photo Available
Cryptantha hooveri	Hoover's cryptantha	Boraginaceae	annual herb	Apr-May	None	None	GH	SH	1A	No Photo Available
Delphinium hansenii ssp. *ewanianum*	Ewan's larkspur	Ranunculaceae	perennial herb	Mar-May	None	None	G4T3	S3	4.2	No Photo Available
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2	No Photo Available
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	1B.2	No Photo Available
Erythranthe acutidens	Kings River monkeyflower	Phrymaceae	annual herb	Apr-Jul	None	None	G2G3	S2S3	3	 Barry Breckling
Imperata brevifolia	California satintail	Poaceae	perennial rhizomatous herb	Sep-May	None	None	G4	S3	2B.1	 © 2020 Matt C. Berger
Layia munzii	Munz's tidy-tips	Asteraceae	annual herb	Mar-Apr	None	None	G2	S2	1B.2	 © 2017 Neal Kramer

Leptosiphon serrulatus	Madera leptosiphon	Polemoniaceae	annual herb	Apr-May	None	None	G3	S3	1B.2	 © 2008 Chris Winchell
Lupinus citrinus var. *citrinus*	orange lupine	Fabaceae	annual herb	Apr-Jul	None	None	G2T2	S2	1B.2	No Photo Available
Navarretia myersii ssp. *myersii*	pincushion navarretia	Polemoniaceae	annual herb	Apr-May	None	None	G2T2	S2	1B.1	 © 2020 Leigh Johnson
Navarretia nigelliformis ssp. *radians*	shining navarretia	Polemoniaceae	annual herb	(Mar)Apr-Jul	None	None	G4T2	S2	1B.2	No Photo Available
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	FT	CE	G1	S1	1B.1	No Photo Available
Orcuttia pilosa	hairy Orcutt grass	Poaceae	annual herb	May-Sep	FE	CE	G1	S1	1B.1	 © 2003 George W. Hartwell
Pseudobahia bahiifolia	Hartweg's golden sunburst	Asteraceae	annual herb	Mar-Apr	FE	CE	G1	S1	1B.1	No Photo Available
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	 ©2013 Debra L. Cook
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	FE	CR	G1	S1	1B.1	 ©2008 F. Gauna

Showing 1 to 20 of 20 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website https://www.rareplants.cnps.org [accessed 21 July 2022].

The Jepson Flora Project

The Consortium of California Herbaria

CalPhotos

Developed by
Rincon Consultants, Inc.

Selected Elements by Element Code

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Gregg (3611988) OR Lanes Bridge (3611987) OR Little Table Mtn. (3711917) OR Daulton (3711918) OR Kismet (3712011) OR Madera (3612081) OR Biola (3612071) OR Herndon (3611978) OR Fresno North (3611977) OR Clovis (3611976) OR Friant (3611986) OR Millerton Lake West (3711916))

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AAAAA01181	***Ambystoma californiense pop. 1*** California tiger salamander - central California DPS	Threatened	Threatened	G2G3T3	S3	WL
AAABF02020	***Spea hammondii*** western spadefoot	None	None	G2G3	S3	SSC
AAABH01050	***Rana boylii*** foothill yellow-legged frog	None	Endangered	G3	S3	SSC
ABNFD01020	***Nannopterum auritum*** double-crested cormorant	None	None	G5	S4	WL
ABNGA04040	***Ardea alba*** great egret	None	None	G5	S4	
ABNGA06030	***Egretta thula*** snowy egret	None	None	G5	S4	
ABNGA11010	***Nycticorax nycticorax*** black-crowned night heron	None	None	G5	S4	
ABNKC19070	***Buteo swainsoni*** Swainson's hawk	None	Threatened	G5	S3	
ABNRB02022	***Coccyzus americanus occidentalis*** western yellow-billed cuckoo	Threatened	Endangered	G5T2T3	S1	
ABNSB10010	***Athene cunicularia*** burrowing owl	None	None	G4	S3	SSC
ABPAT02011	***Eremophila alpestris actia*** California horned lark	None	None	G5T4Q	S4	WL
ABPBW01114	***Vireo bellii pusillus*** least Bell's vireo	Endangered	Endangered	G5T2	S2	
ABPBXB0020	***Agelaius tricolor*** tricolored blackbird	None	Threatened	G1G2	S1S2	SSC
AFCJB25010	***Mylopharodon conocephalus*** hardhead	None	None	G3	S3	SSC
AMACC05030	***Lasiurus cinereus*** hoary bat	None	None	G3G4	S4	
AMACC07010	***Euderma maculatum*** spotted bat	None	None	G4	S3	SSC
AMACC10010	***Antrozous pallidus*** pallid bat	None	None	G4	S3	SSC
AMACD02011	***Eumops perotis californicus*** western mastiff bat	None	None	G4G5T4	S3S4	SSC

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AMAFD01060	***Perognathus inornatus*** San Joaquin pocket mouse	None	None	G2G3	S2S3	
AMAFD03151	***Dipodomys nitratoides exilis*** Fresno kangaroo rat	Endangered	Endangered	G3TH	SH	
AMAJA03041	***Vulpes macrotis mutica*** San Joaquin kit fox	Endangered	Threatened	G4T2	S2	
AMAJF04010	***Taxidea taxus*** American badger	None	None	G5	S3	SSC
ARAAD02030	***Emys marmorata*** western pond turtle	None	None	G3G4	S3	SSC
ARACC01020	***Anniella pulchra*** Northern California legless lizard	None	None	G3	S3	SSC
ARACF07010	***Gambelia sila*** blunt-nosed leopard lizard	Endangered	Endangered	G1	S1	FP
ARACF12100	***Phrynosoma blainvillii*** coast horned lizard	None	None	G3G4	S3S4	SSC
ARADB01017	***Arizona elegans occidentalis*** California glossy snake	None	None	G5T2	S2	SSC
CTT44110CA	***Northern Hardpan Vernal Pool*** Northern Hardpan Vernal Pool	None	None	G3	S3.1	
CTT44120CA	***Northern Claypan Vernal Pool*** Northern Claypan Vernal Pool	None	None	G1	S1.1	
CTT61420CA	***Great Valley Mixed Riparian Forest*** Great Valley Mixed Riparian Forest	None	None	G2	S2.2	
CTT62100CA	***Sycamore Alluvial Woodland*** Sycamore Alluvial Woodland	None	None	G1	S1.1	
ICBRA03030	***Branchinecta lynchi*** vernal pool fairy shrimp	Threatened	None	G3	S3	
ICBRA03150	***Branchinecta mesovallensis*** midvalley fairy shrimp	None	None	G2	S2S3	
ICBRA06010	***Linderiella occidentalis*** California linderiella	None	None	G2G3	S2S3	
IICOL48011	***Desmocerus californicus dimorphus*** valley elderberry longhorn beetle	Threatened	None	G3T2T3	S3	
IICOL4C020	***Lytta moesta*** moestan blister beetle	None	None	G2	S2	
IICOL4C030	***Lytta molesta*** molestan blister beetle	None	None	G2	S2	
IIDIP07010	***Efferia antiochi*** Antioch efferian robberfly	None	None	G1G2	S1S2	
IIDIP08010	***Metapogon hurdi*** Hurd's metapogon robberfly	None	None	G1G2	S1S2	

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
IIHYM24480	***Bombus crotchii*** Crotch bumble bee	None	None	G2	S1S2	
ILARAU8070	***Calicina mesaensis*** Table Mountain harvestman	None	None	G1	S1	
IMBIV19010	***Gonidea angulata*** western ridged mussel	None	None	G3	S1S2	
PDAPI0Z0Y0	***Eryngium spinosepalum*** spiny-sepaled button-celery	None	None	G2	S2	1B.2
PDAST1P040	***Calycadenia hooveri*** Hoover's calycadenia	None	None	G2	S2	1B.3
PDAST5N0B0	***Layia munzii*** Munz's tidy-tips	None	None	G2	S2	1B.2
PDAST7P010	***Pseudobahia bahiifolia*** Hartweg's golden sunburst	Endangered	Endangered	G1	S1	1B.1
PDBOR0A190	***Cryptantha hooveri*** Hoover's cryptantha	None	None	GH	SH	1A
PDBRA31010	***Caulanthus californicus*** California jewelflower	Endangered	Endangered	G1	S1	1B.1
PDCAM060C0	***Downingia pusilla*** dwarf downingia	None	None	GU	S2	2B.2
PDFAB2B103	***Lupinus citrinus var. citrinus*** orange lupine	None	None	G2T2	S2	1B.2
PDPLM09130	***Leptosiphon serrulatus*** Madera leptosiphon	None	None	G3	S3	1B.2
PDPLM0C0J2	***Navarretia nigelliformis ssp. radians*** shining navarretia	None	None	G4T2	S2	1B.2
PDPLM0C0X1	***Navarretia myersii ssp. myersii*** pincushion navarretia	None	None	G2T2	S2	1B.1
PDSCR0D3Z1	***Castilleja campestris var. succulenta*** succulent owl's-clover	Threatened	Endangered	G4?T2T3	S2S3	1B.2
PMALI040Q0	***Sagittaria sanfordii*** Sanford's arrowhead	None	None	G3	S3	1B.2
PMPOA3D020	***Imperata brevifolia*** California satintail	None	None	G4	S3	2B.1
PMPOA4G040	***Orcuttia pilosa*** hairy Orcutt grass	Endangered	Endangered	G1	S1	1B.1
PMPOA4G060	***Orcuttia inaequalis*** San Joaquin Valley Orcutt grass	Threatened	Endangered	G1	S1	1B.1
PMPOA6N010	***Tuctoria greenei*** Greene's tuctoria	Endangered	Rare	G1	S1	1B.1

Record Count: 59

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

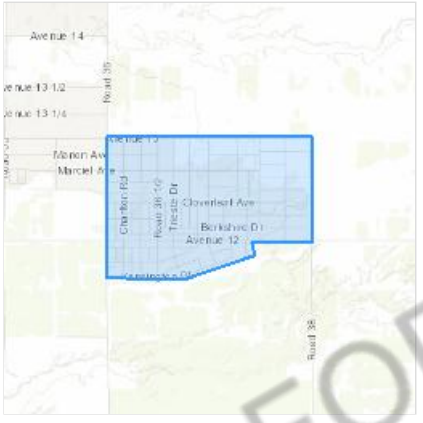
IPaC resource list

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

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

Location

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

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

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

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

Mammals

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

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard Gambelia silus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/625	Endangered
Giant Garter Snake Thamnophis gigas Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus 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	Threatened

Insects

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

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio 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/8246	Endangered

Vernal Pool Fairy Shrimp Branchinecta lynchi 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

Flowering Plants

NAME	STATUS
Fleshy Owl's-clover Castilleja campestris ssp. succulenta 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/8095	Threatened
Hairy Orcutt Grass Orcuttia pilosa 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/2262	Endangered
San Joaquin Orcutt Grass Orcuttia inaequalis Wherever found There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/5506	Threatened

Critical habitats

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

This location overlaps the critical habitat for the following species:

NAME	TYPE
San Joaquin Orcutt Grass Orcuttia inaequalis https://ecos.fws.gov/ecp/species/5506#crithab	Final

Migratory birds

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

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats 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 https://www.fws.gov/program/migratory-birds/species

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

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.	Breeds Jan 1 to Aug 31
California Thrasher *Toxostoma redivivum* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat *Geothlypis trichas sinuosa* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
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

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
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

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

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

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

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

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

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.

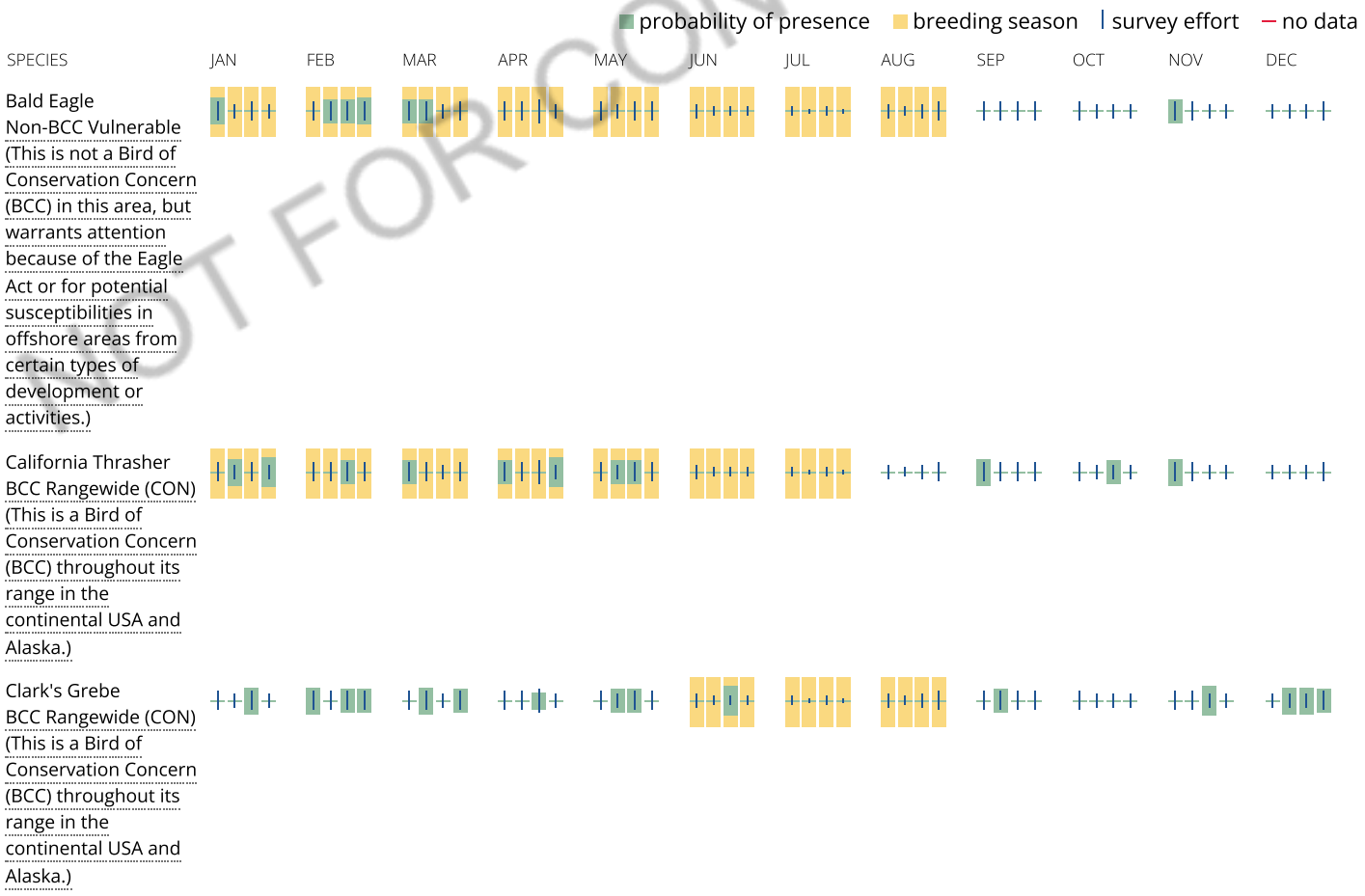
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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.

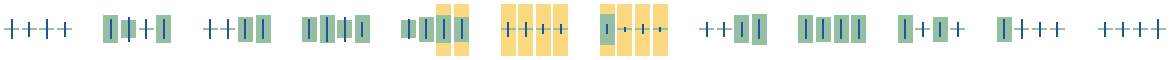
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

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

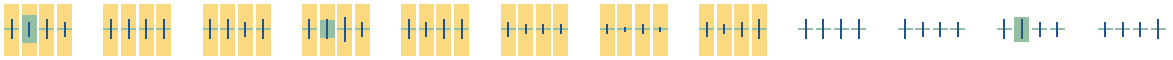
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



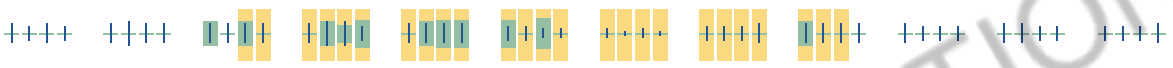
Common Yellowthroat BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



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.)

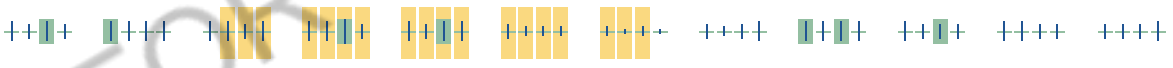


Lawrence's Goldfinch BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

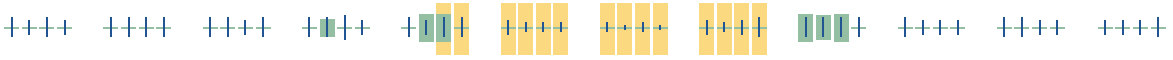


Nuttall's Woodpecker BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

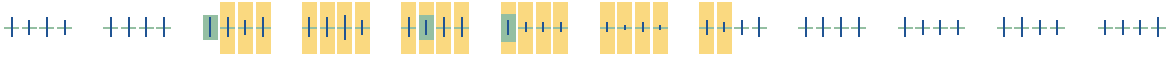
Oak Titmouse BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



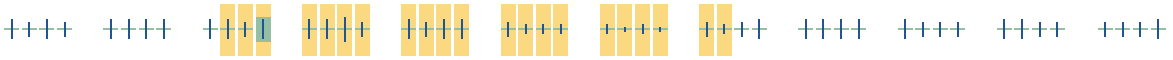
Olive-sided Flycatcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



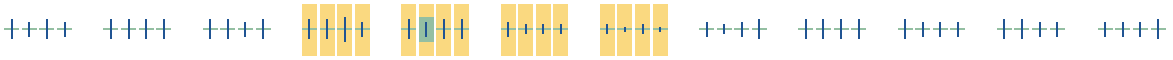
Tricolored Blackbird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Wrentit
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.

Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

THERE ARE NO KNOWN COASTAL BARRIERS AT THIS LOCATION.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

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
Palustrine

RIVERINE
Riverine

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 tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

National Marine Fisheries Service Species List (NOAA 2016)

Quad Name: **Gregg**
Quad Number: **36119-H8**

ESA Anadromous Fish

CCV Steelhead DPS (T) - **X**

ESA Anadromous Fish Critical Habitat

None

ESA Marine Invertebrates

None

ESA Marine Invertebrates Critical Habitat

None

ESA Sea Turtles

None

ESA Whales

None

ESA Pinnipeds

None

Essential Fish Habitat

Chinook Salmon EFH - **X**

Quad Name **Lanes Bridge**
Quad Number **36119-H7**

ESA Anadromous Fish

CCV Steelhead DPS (T) - **X**

ESA Anadromous Fish Critical Habitat

None

ESA Marine Invertebrates

None

ESA Marine Invertebrates Critical Habitat

None

ESA Sea Turtles

None

ESA Whales

None

ESA Pinnipeds

None

Essential Fish Habitat

Chinook Salmon EFH - **X**

Accessed July 2022
(https://archive.fisheries.noaa.gov/wcr/maps_data/california_species_list_tools.html)

ATTACHMENT B

Representative Site Photos

Photo 1. Avenue 13 near Road 36, facing E, July 7, 2022

Photo 2. Road 38 near Dublin Drive, facing S, July 7, 2022

Photo 3. Raccoon Creek at Trieste Drive, facing N, July 7, 2022

Photo 4. Raccoon Creek at Road 36.5, facing E, July 7, 2022

ATTACHMENT C

Plants Observed Onsite

Attachment C. Plant Observed Onsite (July 7, 2022)

Family Name	Family Common Name	Scientific Name	Common Name
AGAVACEAE	**AGAVE FAMILY**	Agave americana*	American century plant
ANACARDIACEAE	**SUMAC FAMILY**	*Pistacia chinensis**	Chinese pistache
APOCYNACEAE	**DOGBANE FAMILY**	*Nerium oleander**	Oleander
ARECACEAE	**PALM FAMILY**	*Washingtonia* spp.*	Palm
ASTERACEAE	**SUNFLOWER FAMILY**	*Centaurea solstitialis**	Yellow star-thistle
ASTERACEAE	**SUNFLOWER FAMILY**	*Erigeron bonariensis**	Flax-leaved horseweed
ASTERACEAE	**SUNFLOWER FAMILY**	*Helianthus annuus*	Common sunflower
ASTERACEAE	**SUNFLOWER FAMILY**	*Lactuca serriola**	Prickly lettuce
ASTERACEAE	**SUNFLOWER FAMILY**	*Taraxacum officinale**	Common dandelion
BIGNONIACEAE	**TRUMPET-CREEPER FAMILY**	*Campsis radicans*	Trumpet vine
BRASSICACEAE	**MUSTARD FAMILY**	*Brassica nigra**	Black mustard
CACTACEAE	**CACTUS FAMILY**	*Opuntia sp.**	Prickly pear cactus
CANABACEAE	**HEMP FAMILY**	*Celtis* sp.*	Hackberry
CUPRESSACEA	**CYPRESS FAMILY**	*Cupressus sempervirens**	Italian cypress
EUPHORBIACEAE	**SPURGE FAMILY**	*Croton setiger*	Turkey mullein
FABACEAE	**LEGUME FAMILY**	*Acmispon americanus*	Spanish clover
FAGACEAE	**OAK FAMILY**	*Quercus wislizeni*	Interior live oak
GERANIACEAE	**GERANIUM FAMILY**	*Erodium* spp.	Filaree
IRIDACEAE	**IRIS FAMILY**	*Iris pseudacorus**	Yellow iris
JUGLANDACEAE	**WALNUT FAMILY**	*Juglans hindsii*	Black walnut
LAMIACEAE	**MINT FAMILY**	*Salvia rosmarianus*	Rosemary
LAMIACEAE	**MINT FAMILY**	*Trichostema lanceolatum*	Vinegar weed
LYTHRACEAE	**LOOSESTRIFE FAMILY**	*Lagerstroemia indica**	Crape mytle
MAGNOLIACEAE	**MAGNOLIA FAMILY**	*Magnolia* sp.	Magnolia
MYRTACEAE	**MYRTLE FAMILY**	*Eucalyptus globulus**	Blue gum
OLEACEAE	**OLIVE FAMILY**	*Olea europaea**	European olive
PINACEAE	**PINE FAMILY**	*Pinus sabiniana*	Gray pine
PLANTAGINACEAE	**PLANTAIN FAMILY**	*Plantago lanceolata**	English plantain
PLATANACEAE	**PLANE-TREE FAMILY**	*Platanus racemosa*	California sycamore
PLATANACEAE	**PLANE-TREE FAMILY**	*Platanus x acerifolia**	London planetree
POACEAE	**GRASS FAMILY**	*Avena sp.**	Wild oat
POACEAE	**GRASS FAMILY**	*Bromus diandrus**	Ripgut brome
POACEAE	**GRASS FAMILY**	*Bromus hordeaceus**	Soft brome
POACEAE	**GRASS FAMILY**	*Cortaderia jubata**	Pampas grass
POACEAE	**GRASS FAMILY**	*Distichlis spicata*	Saltgrass
POACEAE	**GRASS FAMILY**	*Elymus caput-medusae**	Medusahead grass
POACEAE	**GRASS FAMILY**	*Festuca perennis**	Italian ryegrass
POLYGONACEAE	**KNOTWEED FAMILY**	*Polygonum aviculare**	Prostrate knotweed
POLYGONACEAE	**BUCKWHEAT FAMILY**	*Rumex acetosella**	Sheep sorrel
POLYGONACEAE	**BUCKWHEAT FAMILY**	*Rumex crispus**	Curly dock
ROSACEAE	**ROSE FAMILY**	*Prunus sp.**	Cherry (cultivated)
ROSACEAE	**ROSE FAMILY**	*Prunus cerasifera**	Cherry plumb
ROSACEAE	**ROSE FAMILY**	*Prunus domestica**	Plum (cultivated)
ROSACEAE	**ROSE FAMILY**	*Prunus persica**	Peach (cultivated)

Attachment C. Plant Observed Onsite (July 7, 2022)

Family Name	Family Common Name	Scientific Name	Common Name
ROSACEAE	**ROSE FAMILY**	*Rosa sp.**	Rose (cultivated)
RUTACEAE	**RUE FAMILY**	*Citrus sinensis**	Orange
SALICACEAE	**WILLOW FAMILY**	*Salix babylonica**	Weeping willow
ULMACEAE	**ELM FAMILY**	*Ulmus parvifolia**	Siberian Elm
VITACEAE	**GRAPE FAMILY**	*Vitis vinifera**	Cultivated grape

*** - Non-native species (including species native to California but not native to the Study Area vicinity).**

ATTACHMENT D

Natural Resources Conservation Service Soil Descriptions

Madera Area, California

AsA—Alamo clay, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hk3w
Elevation: 50 to 500 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition

Alamo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alamo

Setting

Landform: Fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

H1 - 0 to 12 inches: clay
H2 - 12 to 22 inches: clay
H3 - 22 to 30 inches: indurated
H4 - 30 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 22 to 30 inches to duripan
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: D
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: Yes

Minor Components

Madera
Percent of map unit: 5 percent
Hydric soil rating: No

Cometa
Percent of map unit: 5 percent
Hydric soil rating: No

San joaquin
Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

AtA—Atwater loamy sand, 0 to 3 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2vnd0
Elevation: 110 to 430 feet
Mean annual precipitation: 11 to 14 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 297 to 328 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Atwater and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Atwater

Setting

Landform: Dunes
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits derived from alluvium derived from granite

Typical profile

Ap - 0 to 24 inches: loamy sand
Bt - 24 to 55 inches: sandy loam
C - 55 to 73 inches: loamy sand
2Bqm - 73 to 79 inches: cemented loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 60 to 79 inches to cemented horizon
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.02 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Sodium adsorption ratio, maximum: 3.0
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A

Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Delhi
Percent of map unit: 5 percent
Landform: Sand sheets
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rocklin
Percent of map unit: 4 percent
Landform: Fan remnants
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

San joaquin
Percent of map unit: 4 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Whitney
Percent of map unit: 2 percent
Landform: Fan remnants
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

AtB—Atwater loamy sand, 3 to 8 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2vnd4
Elevation: 120 to 460 feet
Mean annual precipitation: 11 to 14 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Atwater and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Atwater

Setting

Landform: Dunes
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits derived from alluvium derived from granite

Typical profile

Ap - 0 to 24 inches: loamy sand
Bt - 24 to 39 inches: sandy loam
C - 39 to 73 inches: sandy loam
2Bq - 73 to 79 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 60 to 79 inches to cemented horizon
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.02 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Sodium adsorption ratio, maximum: 3.0
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: R017XY902CA - Duripan Vernal Pools

Hydric soil rating: No

Minor Components

Delhi

Percent of map unit: 5 percent
Landform: Dunes
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rocklin

Percent of map unit: 4 percent
Landform: Terraces, fan remnants
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

San joaquin

Percent of map unit: 4 percent
Landform: Terraces, fan remnants
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Whitney

Percent of map unit: 2 percent
Landform: Fan remnants, terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

AwA—Atwater loamy sand, moderately deep and deep over hardpan, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hk3z
Elevation: 500 feet
Mean annual precipitation: 15 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Atwater and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Atwater

Setting

Landform: Dunes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from granite

Typical profile

H1 - 0 to 24 inches: loamy sand
H2 - 24 to 42 inches: sandy loam
H3 - 42 to 60 inches: cemented

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 42 to 60 inches to duripan
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

San joaquin
Percent of map unit: 5 percent
Hydric soil rating: No

Delhi
Percent of map unit: 5 percent
Hydric soil rating: No

Whitney
Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

AwB—Atwater loamy sand, moderately deep and very deep over hardpan, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hk40
Elevation: 500 feet
Mean annual precipitation: 15 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Atwater and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Atwater

Setting

Landform: Dunes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from granite

Typical profile

H1 - 0 to 24 inches: loamy sand
H2 - 24 to 42 inches: sandy loam
H3 - 42 to 60 inches: cemented

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 42 to 60 inches to duripan
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Delhi
Percent of map unit: 5 percent
Hydric soil rating: No

San joaquin
Percent of map unit: 5 percent
Hydric soil rating: No

Whitney
Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

HgA—Hanford sandy loam, moderately deep and deep over hardpan, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hk7v
Elevation: 150 to 900 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous rock

Typical profile

H1 - 0 to 12 inches: sandy loam
H2 - 12 to 36 inches: fine sandy loam
H3 - 36 to 60 inches: cemented

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 36 to 60 inches to duripan
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: B
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

San joaquin
Percent of map unit: 5 percent
Hydric soil rating: No

Greenfield
Percent of map unit: 5 percent
Hydric soil rating: No

Madera
Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

RaA—Ramona sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hk99
Elevation: 250 to 3,500 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ramona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramona

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 8 inches: sandy loam
H2 - 8 to 42 inches: sandy loam
H3 - 42 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Madera
Percent of map unit: 10 percent
Hydric soil rating: No

San joaquin
Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

RaB—Ramona sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hk9b
Elevation: 250 to 3,500 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ramona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramona

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 8 inches: sandy loam
H2 - 8 to 42 inches: sandy loam
H3 - 42 to 60 inches: sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Madera
Percent of map unit: 10 percent
Hydric soil rating: No

San joaquin
Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

SaA—San Joaquin sandy loam, 0 to 3 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2vncw
Elevation: 90 to 520 feet
Mean annual precipitation: 9 to 17 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

San joaquin and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Terraces, fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 9 inches: sandy loam
Bt1 - 9 to 15 inches: sandy clay loam
2Bt2 - 15 to 21 inches: clay
2Bkqm - 21 to 37 inches: cemented material
2C - 37 to 79 inches: loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches; 19 to 25 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 8 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Snelling

Percent of map unit: 5 percent
Landform: Terraces, fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Interfluve, tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Alamo

Percent of map unit: 4 percent
Landform: Terraces, fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Interfluve, tread
Microfeatures of landform position: Open depressions, open depressions
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Unnamed, hydric

Percent of map unit: 1 percent
Landform: Terraces, open depressions on fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Interfluve, tread
Microfeatures of landform position: Open depressions
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

SbA—San Joaquin-Alamo complex, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hk9x
Elevation: 50 to 500 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition

San joaquin and similar soils: 60 percent
Alamo and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 11 inches: sandy loam
H2 - 11 to 19 inches: clay
H3 - 19 to 23 inches: indurated
H4 - 23 to 60 inches: stratified sandy loam to loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches; 19 to 23 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: D

Hydric soil rating: No

Description of Alamo

Setting

Landform: Fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

H1 - 0 to 12 inches: clay
H2 - 12 to 22 inches: clay
H3 - 22 to 30 inches: indurated
H4 - 30 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 22 to 30 inches to duripan
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Cometa

Percent of map unit: 5 percent
Hydric soil rating: No

Rocklin

Percent of map unit: 5 percent
Hydric soil rating: No

Alamo

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed, ponded

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

TuB—Trigo fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hkbp
Elevation: 200 to 2,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 225 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition

Trigo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Trigo

Setting

Landform: Fan remnants
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 3 inches: fine sandy loam
H2 - 3 to 16 inches: fine sandy loam
Cr - 16 to 60 inches: weathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 16 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Rocklin
Percent of map unit: 5 percent
Hydric soil rating: No

Whitney
Percent of map unit: 5 percent
Hydric soil rating: No

Cometa
Percent of map unit: 5 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

WfB—Whitney fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hkc7
Elevation: 200 to 500 feet
Mean annual precipitation: 15 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Whitney and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitney

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 19 inches: fine sandy loam
H2 - 19 to 28 inches: fine sandy loam
Cr - 28 to 60 inches: weathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 28 to 32 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Cometa
Percent of map unit: 5 percent
Hydric soil rating: No

Rocklin
Percent of map unit: 5 percent
Hydric soil rating: No

San joaquin
Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed, ponded
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

WfB—Whitney fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hkc7
Elevation: 200 to 500 feet
Mean annual precipitation: 15 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Whitney and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitney

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 19 inches: fine sandy loam
H2 - 19 to 28 inches: fine sandy loam
Cr - 28 to 60 inches: weathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 28 to 32 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Cometa
Percent of map unit: 5 percent
Hydric soil rating: No

Rocklin
Percent of map unit: 5 percent
Hydric soil rating: No

San joaquin
Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed, ponded
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

WrB—Whitney and Rocklin sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hkcg
Elevation: 200 to 1,500 feet
Mean annual precipitation: 15 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Whitney and similar soils: 41 percent
Rocklin and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitney

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 19 inches: sandy loam
H2 - 19 to 28 inches: fine sandy loam
Cr - 28 to 60 inches: weathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 28 to 32 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Rocklin

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 18 inches: sandy loam
H2 - 18 to 31 inches: loam
H3 - 31 to 32 inches: indurated
H4 - 32 to 60 inches: stratified coarse sandy loam to fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 31 to 32 inches to duripan
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Cometa

Percent of map unit: 10 percent
Hydric soil rating: No

San joaquin

Percent of map unit: 9 percent
Hydric soil rating: No

Unnamed, ponded

Percent of map unit: 1 percent
Landform: Depressions

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021

Madera Area, California

WrC—Whitney and Rocklin sandy loams, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: hkch
Elevation: 200 to 1,500 feet
Mean annual precipitation: 15 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Whitney and similar soils: 41 percent
Rocklin and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitney

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 19 inches: sandy loam
H2 - 19 to 28 inches: fine sandy loam
Cr - 28 to 60 inches: weathered bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 28 to 32 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Rocklin

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 18 inches: sandy loam
H2 - 18 to 31 inches: loam
H3 - 31 to 32 inches: indurated
H4 - 32 to 60 inches: stratified coarse sandy loam to fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 31 to 32 inches to duripan
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Cometa

Percent of map unit: 10 percent
Hydric soil rating: No

San joaquin

Percent of map unit: 9 percent
Hydric soil rating: No

Unnamed, ponded

Percent of map unit: 1 percent
Landform: Depressions

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Madera Area, California
Survey Area Data: Version 15, Sep 7, 2021