

MADERA SUBBASIN RECHARGE PROJECT 1

Initial Study/Mitigated Negative Declaration

Prepared for
Madera County Groundwater Sustainability Agency

April 2026



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Prepared for
Madera County Groundwater Sustainability Agency
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April 2026

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- B. Madera Subbasin Recharge Project 1: Biological Constraints Report
- C. Madera Subbasin Recharge Project 1: Aquatic Resources Delineation Report

CHAPTER 1

Introduction

This Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared to evaluate the potential environmental impacts of the proposed Madera Subbasin Recharge Project 1 (Project) in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the CEQA Guidelines (Title 14 of the California Code of Regulations Section 15000 et seq.). The Project proposes to provide groundwater recharge on certain properties within the Madera Groundwater Subbasin. The Project is located in Madera County within the eastern portion of the Madera Subbasin, and requires approval from Madera County, which is the CEQA lead agency for the purposes of CEQA compliance. With incorporation of mitigation measures identified in this IS/MND, the Project would not result in any significant impacts. Thus, CEQA compliance through adoption of an MND and implementation of recommended mitigation measures through a mitigation monitoring and reporting program (MMRP) is appropriate CEQA compliance for the Project. This IS/MND will be circulated for a 30-day public review period and the County will consider comments received prior to adopting this IS/MND and making approval decisions for the Project.

Groundwater overdraft and land subsidence have been occurring in the eastern part of Madera County for many years, and the need for groundwater recharge projects to address the problem has been formally identified at least as far back as 2014. The use of floodwater as a source for recharge has also been noted and encouraged by numerous local and state planning documents. The Madera Subbasin Groundwater Sustainability Plan (GSP) (2023) details existing overdraft conditions and identifies areas in the Subbasin where undesirable results associated with overdraft conditions (i.e., land subsidence, lowering groundwater levels) have affected beneficial uses of groundwater. In particular, subsidence, lowering of groundwater levels in the eastern portion of the County has led to establishing measurable objectives and minimum thresholds in the GSP that are designed to resolve and avoid or reduce undesirable results in the future. Conditions have also led to the development of projects focused on achieving the measurable objectives and minimum thresholds in this area and across the Madera Subbasin as a whole.

To contribute to sustainable groundwater management in the Madera Subbasin, the Madera County Groundwater Sustainability Agency (GSA) is implementing a phased floodwater recharge program to utilize flood flows available as Section 215 water from the U.S. Bureau of Reclamation's (Reclamation) Central Valley Project Friant Division. Section 215 water is defined under Section 215 of the Reclamation Reform Act of 1982 (RRA), as unstorable irrigation water to be released due to flood-control criteria or unmanaged flood flows. Section 215 water obtained from Reclamation will be recharged on lands in the Madera Subbasin. There is no fixed calendar date when Section 215 water becomes available for purchase. Its availability is highly variable and weather-dependent as it only occurs in wet years with significant runoff or flood flows that exceed storage capacity.

The Madera Subbasin Recharge Project 1 (Project) consists of a group of four agricultural properties that would be used for groundwater recharge sites that, individually and collectively, would provide for recharge of Section 215 floodwater when available. The Project recharge sites would provide for a combination of recharge basins and flood managed aquifer recharge (Flood-MAR). Flood-MAR provides recharge capacity while also retaining farmland for productive use when water is not being applied for recharge. The four Project sites are considered together in this IS/MND because they are grant funded by a single source and are listed under a single project umbrella in the GSP based on their same source of recharge water. Additionally, the four sites would utilize the same Project concept and would be implemented sequentially within the same overall time period. The sites were chosen based on survey responses from landowners located near Reclamation-owned laterals (operated by Madera Irrigation District [MID]) who were interested in groundwater recharge and were willing to participate in the Project.

1.1 Document Organization

Chapter 1 – Introduction. This chapter provides an introduction to the Project, organization and purpose of this document, and summary of findings.

Chapter 2 – Project Description. This chapter describes the Project, including Project location, Project objectives, activities to be conducted under the Project, and potential permits and/or approvals that may be required for implementation of the Project.

Chapter 3 – Initial Study and Environmental Checklist. This chapter presents an analysis of implementation of the Project for the resource topics included in the CEQA Environmental Checklist (Appendix G of the CEQA Guidelines). For each resource topic question, the following is provided: (1) environmental setting; (2) discussion of the potential effects of implementing the Project; (3) finding of significance; and (4) any mitigation measures to be recommended for incorporation into the Project to reduce identified significant impacts to a less-than-significant level. This chapter also lists the references used in preparation of the analyses for each resource topic.

This IS/MND will be circulated for public review and comment for a minimum period of 30 days. Following completion of the required 30-day public comment period for this IS/MND, and before approving the Project, the County will consider the IS/MND together with any comments provided during the public comment period and will adopt the MND if, based on the whole of the record: (1) there is no substantial evidence that the Project will have a significant effect on the environment; and (2) that the MND represents the County's independent judgment and analysis. The County will also prepare and adopt an MMRP as part of the approval process as required under Public Resources Code Section 21081.6(c) for mitigation measures identified in this IS/MND.

1.2 Purpose of the Initial Study

This Initial Study was prepared in accordance with Public Resources Code Section 21000 et seq. (CEQA) and Title 14 of the California Code of Regulations Section 15000 et seq. (CEQA Guidelines). The purpose of this Initial Study is to: (1) determine whether Project implementation would result in potentially significant or

significant effects to the environment; and (2) identify mitigation measures as necessary, to eliminate the Project's potentially significant or significant Project effects or reduce them to a less-than-significant level.

1.3 Summary of Findings

Based on the analysis included in Chapter 3, implementation of the Project would result in:

No impact associated with the following resource topics:

- Land Use and Planning
- Mineral Resources
- Population and Housing
- Recreation
- Wildfire

Less-than-significant impacts associated with the following resource topics:

- Aesthetics
- Air Quality
- Agriculture and Forestry Resources
- Energy
- Hazards and Hazardous Materials
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Public Services
- Noise
- Transportation
- Utilities and Service Systems

Less-than-significant impacts with incorporation of mitigation measures associated with the following resource topics:

- Biological Resources
- Cultural Resources
- Geology and Soils
- Tribal Cultural Resources

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CHAPTER 2

Project Description

2.1 Project Information

2.1.1 Project Location and Existing Facilities

The Project involves direct aquifer recharge and Flood-MAR on four properties (collectively referred to in this document as the Study Area or Project sites): Brock Moore, Root Creek, Waterlands, and Wine Group. These four Project sites are located in the eastern part of the Madera Subbasin in unincorporated Madera County, northeast of State Route 99 and west of State Route 41 (**Figure 2-1**).

The approximately 1,469-acre Waterlands site is located north and northeast of the community of Madera Ranchos and approximately 9 miles southeast of the City of Madera. The approximately 209-acre Brock Moore site is located east of Madera Ranchos and approximately 11 miles southeast of the City of Madera. The approximately 81-acre Root Creek site is located north of Avenue 10 and east of Road 36 approximately 8 miles southeast of the City of Madera. The approximately 558-acre Wine Group site is approximately 8 miles north of the City of Madera, north of Avenue 22 and between Roads 23 and 24. **Figure 2-2** shows the four Project sites and **Figures 2-3a, 2-3b, 2-3c, and 2-3d** show each of the sites individually with additional detail.

Table 2-1 summarizes the proposed recharge Project site properties involved in the Project, including the site name, assessor's parcel number, and acreage of each, as well as the method(s) and acreage of each site to be used for recharge through either recharge basin or Flood-MAR.

TABLE 2-1
PROPOSED GROUNDWATER RECHARGE PROPERTIES

Project Site	Assessor's Parcel Number	Site Area (acres)	Recharge Basin Area (acres)	Flood-MAR Area (acres)
Brock Moore	049-650-017	209	8.5	67.5
Root Creek	047-272-005	81	25	N/A
Waterlands	049-010-002 and 049-650-021	1,469	N/A	1,469
Wine Group	030-301-002	558	N/A	558
Total Area of Project Recharge		2,317	33.5	2,094.5

Source: Davids Engineering 2026

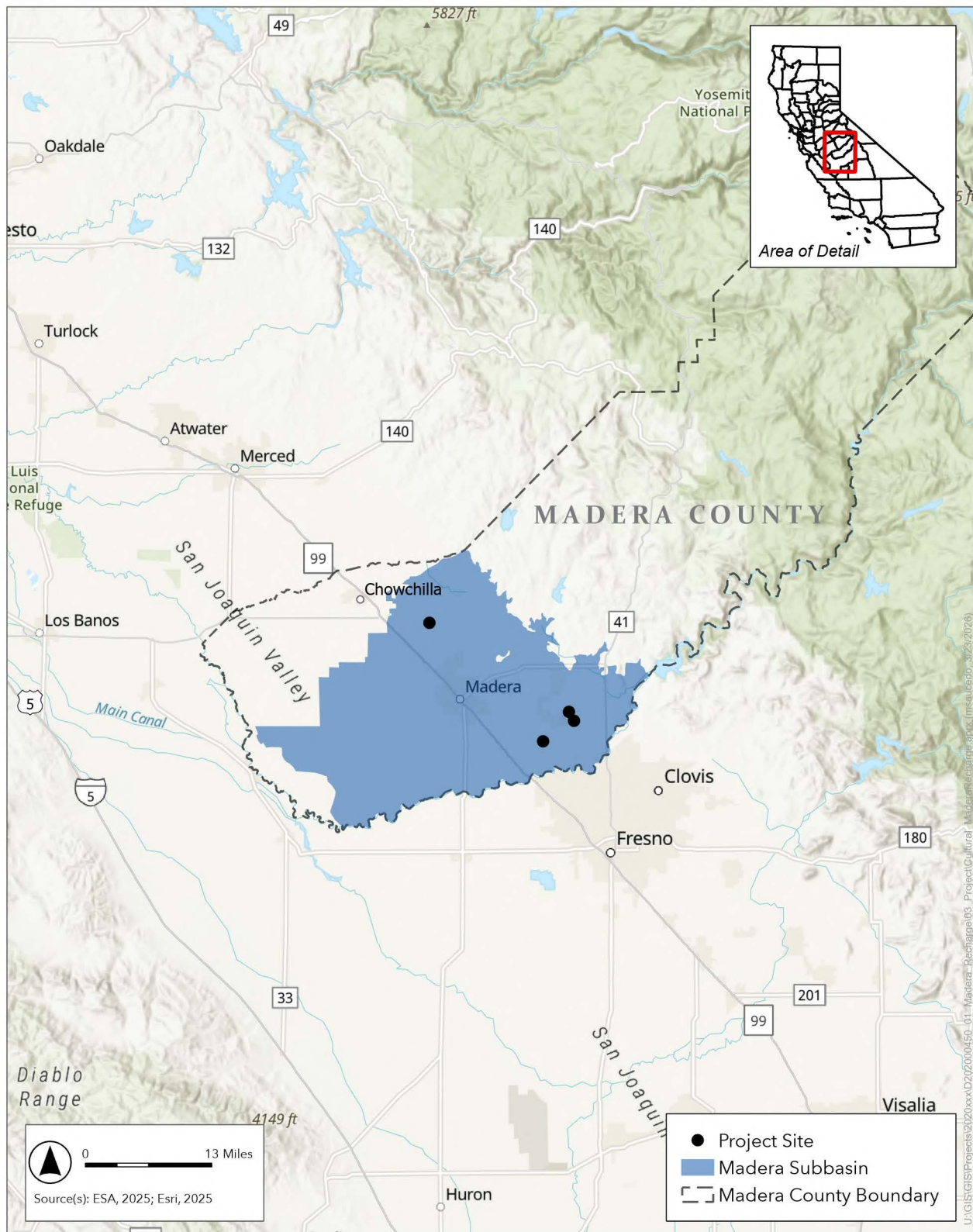


Figure 2-1
Regional Location

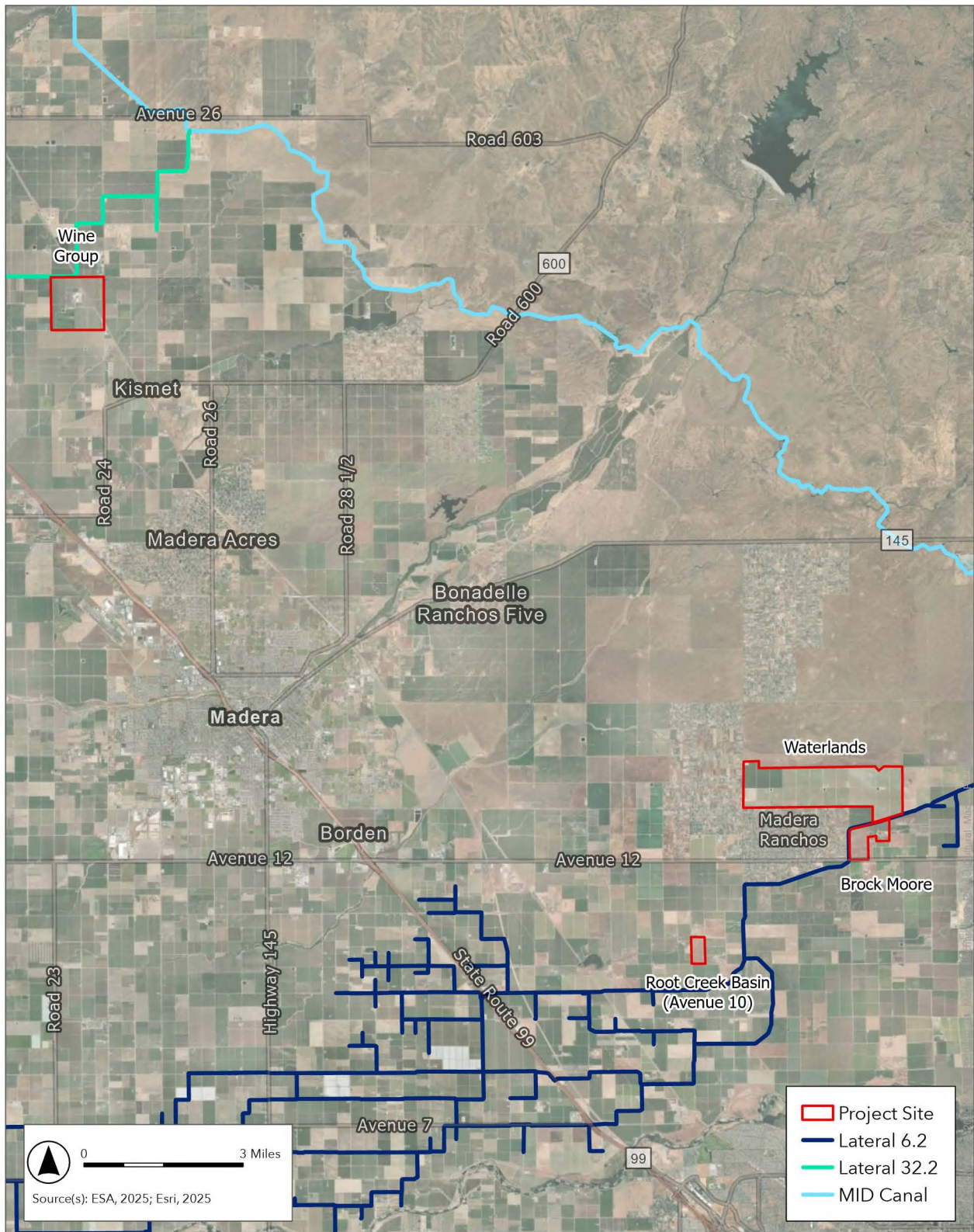


Figure 2-2
Project Study Area

2.1.2 Project Objectives

The objectives of the Project include:

- Provide for the diversion, conveyance, and recharge of Section 215 floodwater flows for groundwater recharge in the Madera Subbasin;
- Increase groundwater levels;
- Increase groundwater storage;
- Reduce subsidence potential; and
- Improve water supply reliability.

2.2 Project Construction

2.2.1 Infrastructure Components

Overview

The Project is the first phase of implementation of the Madera County GSA Section 215 and purchased water recharge program described in the Madera Subbasin GSP. The Project includes:

- one dedicated recharge basin at the Root Creek site, sized at 25 acres (potentially up to 40 acres), capable of capturing flood flows that would be conveyed through an existing MID-operated lateral.
- approximately 2,095 acres of Flood-MAR at the Brock Moore site, Waterlands site, and Wine Group site with flood flows conveyed through turnouts off the MID-operated lateral. The landowner of the Brock Moore site may utilize an existing low-lying area of approximately 8.5 acres as a recharge basin. If any construction is needed for the recharge basin, it would be completed by the landowner.

The Project would involve the construction of three turnouts along MID's Lateral 6.2, including one for the permanent Root Creek recharge basin, and two for Flood-MAR at the Brock Moore and Waterlands sites. An additional turnout would be constructed along MID's Lateral 32.2 for Flood-MAR at the Wine Group site.

For the Brock Moore, Waterlands and Wine Group sites, the Project would include construction of the delivery infrastructure for Flood-MAR, and landowners would facilitate the connection to existing on-farm irrigation systems for land application.

The Project would involve permanently removing approximately 0.1 acres of grape vines at the Waterlands site to allow for installation of a pump sump and a turnout. Development of the Root Creek recharge basin would require approximately 40-60 acres of clearing and grubbing. No land disturbing activities would take place on the Brock Moore or Wine Group sites. The remainder of the Project footprint consists of pipelines that would be routed down existing private unimproved (dirt) roads and one County public road (Avenue 10) with little to no existing vegetation.

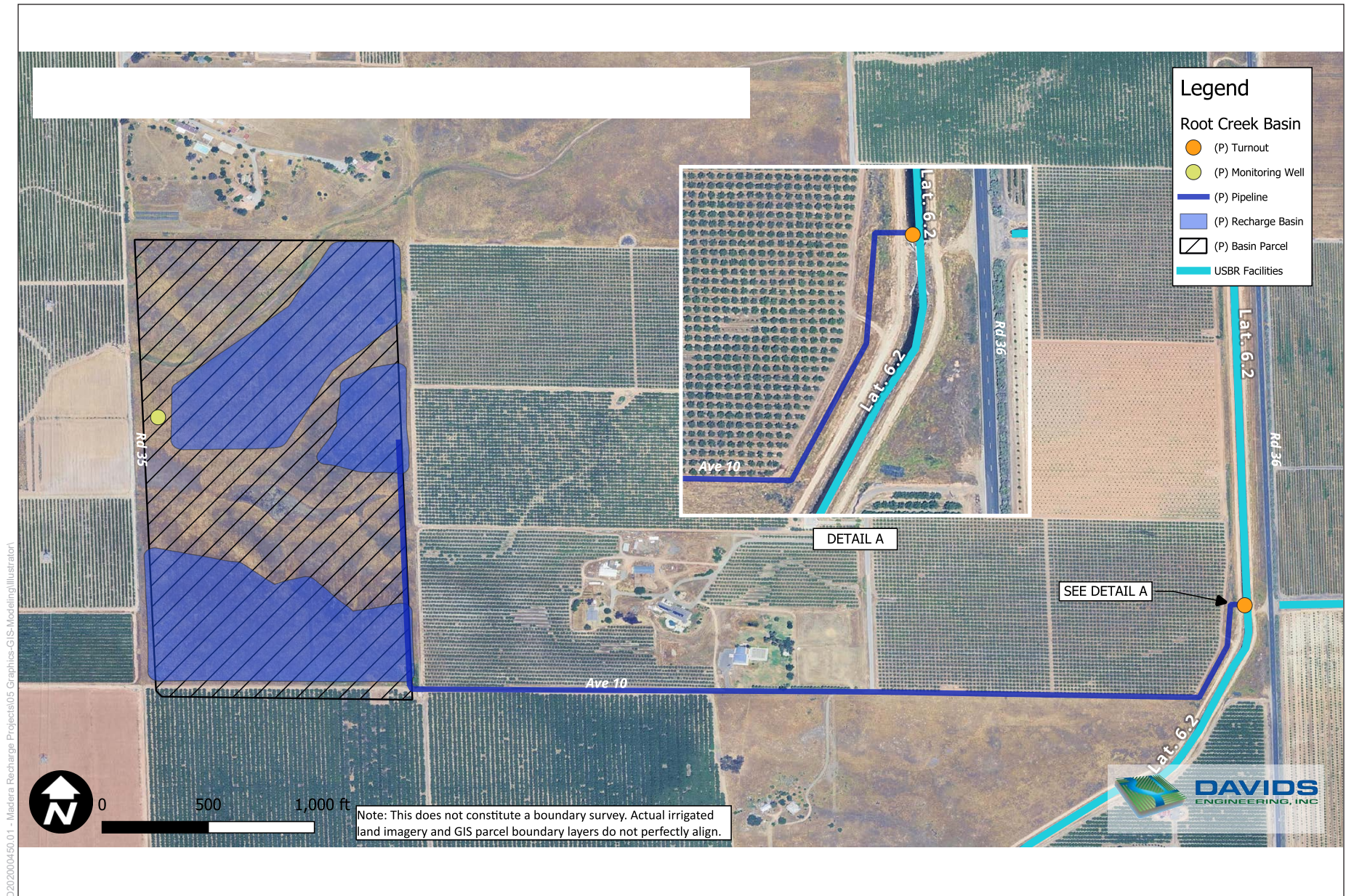
Figures 2-3a, 2-3b, 2-3c and 2-3d show the proposed facilities at the four Project sites. Monitoring wells are proposed at the Root Creek, Waterlands and Wine Group sites to monitor Project performance and to augment the County's groundwater monitoring network. These monitoring wells would be constructed by the County as funding becomes available.



SOURCE: Davids Engineering, Inc.

Madera Recharge Projects

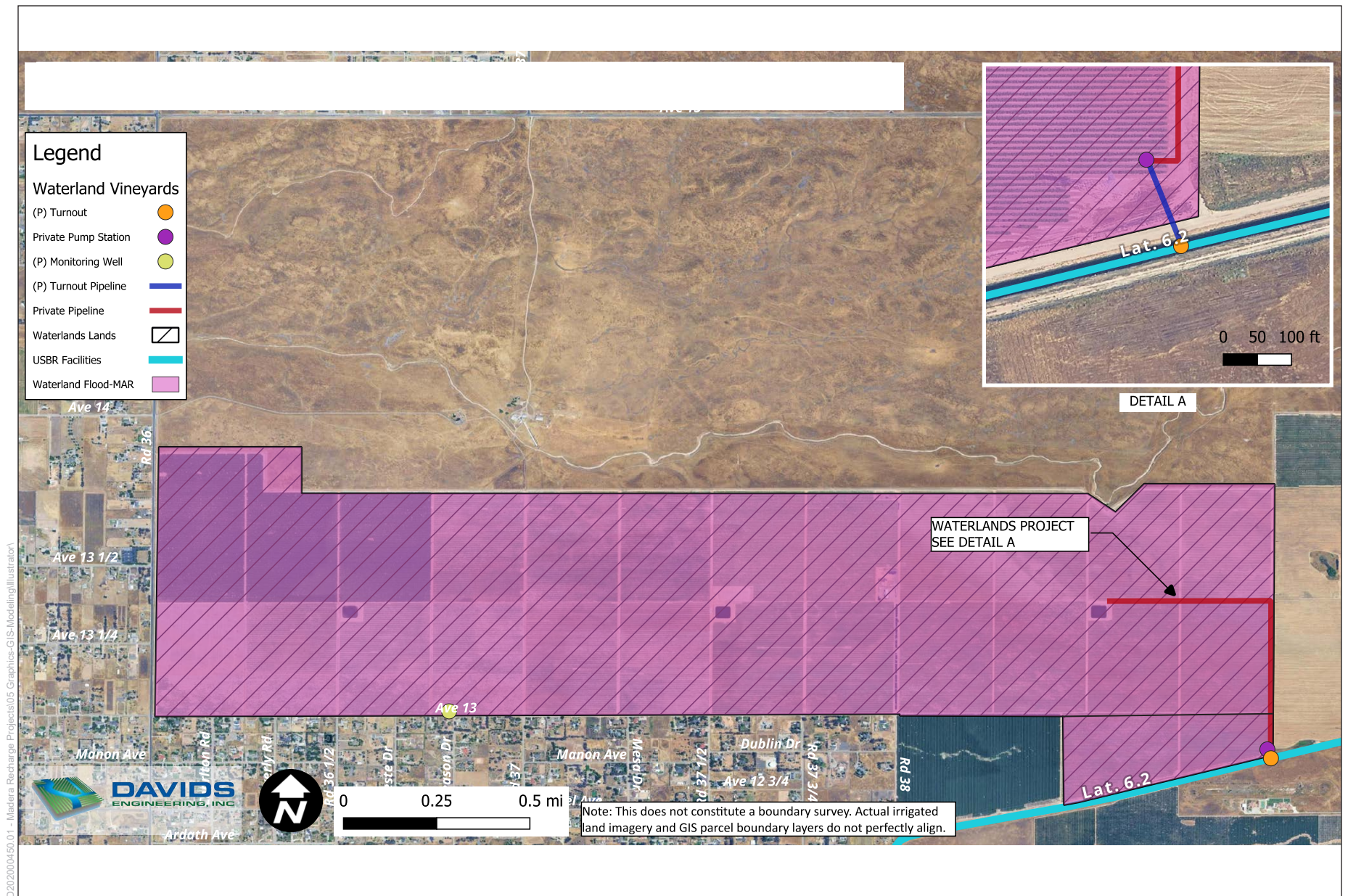
Figure 2-3a
Brock Moore Site



SOURCE: Davids Engineering, Inc.

Madera Recharge Projects

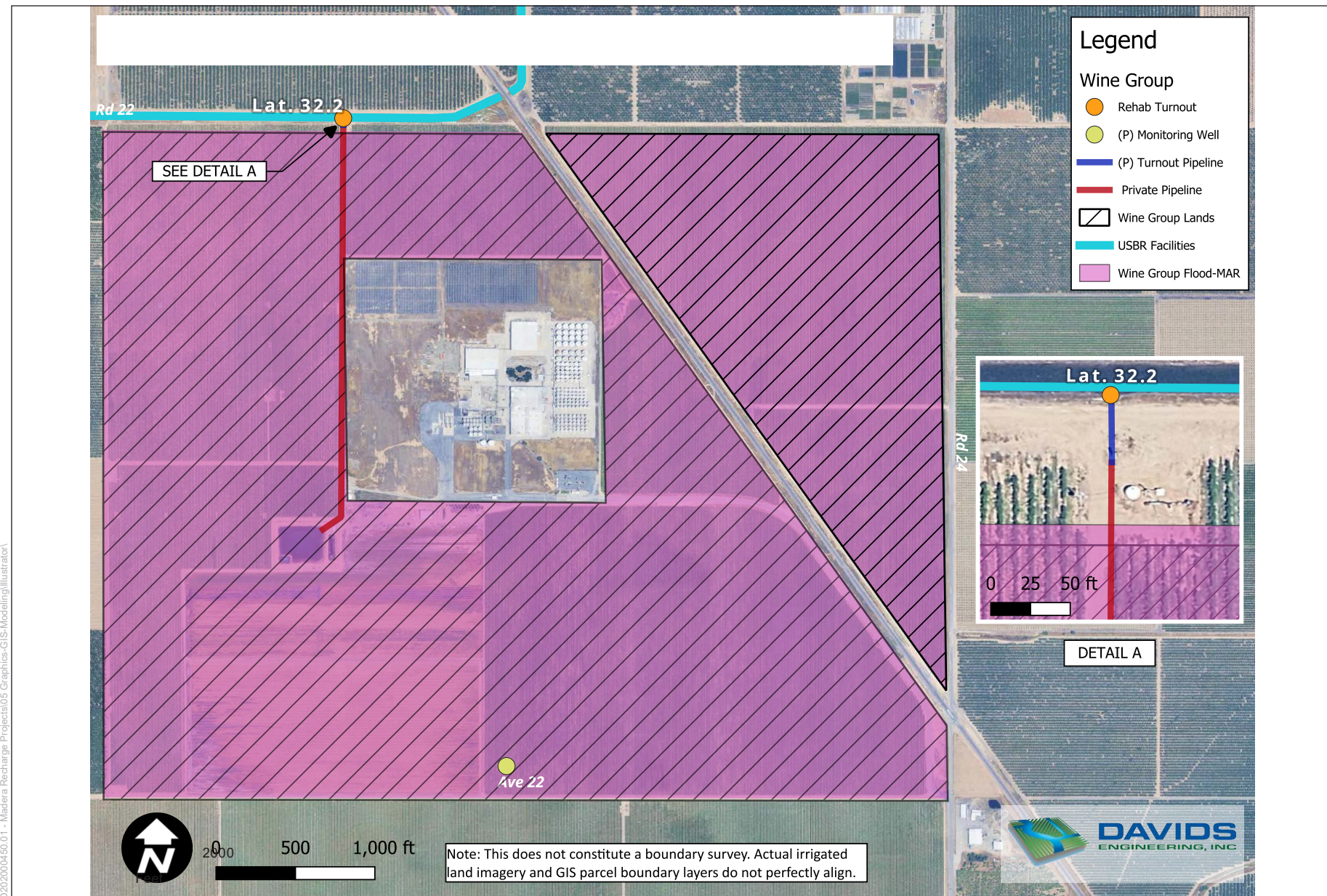
Figure 2-3b
Root Creek Site



SOURCE: Davids Engineering, Inc.

Madera Recharge Projects

Figure 2-3c
Waterlands Site



SOURCE: Davids Engineering, Inc.

Madera Recharge Projects

Figure 2-3d
Wine Group Site

Turnouts and Conveyance Pipelines

The Project sites would be connected to existing MID laterals by constructing or rehabilitating “turnouts” (**Figure 2-4**). The turnouts consist of buried reinforced concrete pipe and reinforced concrete structures which extend from the invert of the pipe to the ground surface and consist of a reinforced concrete structure with a trash rack, a slide gate and flow meters that would be battery powered. Above-ground features would include a headwall, air vent, and a pump sump that comes to the surface as a concrete vault. A 27-inch polyvinyl chloride (PVC) pipe would connect the turnout to the landowners existing on-farm irrigation systems for application. The PVC pipe would have a 4-inch PVC pipe air vent.

No pumps are included as part of the Project; the Wine Group site has an existing pump, and the Brock Moore and Root Creek sites would operate via gravity flow. The Waterlands site would require a new pump that would be installed by the landowner.

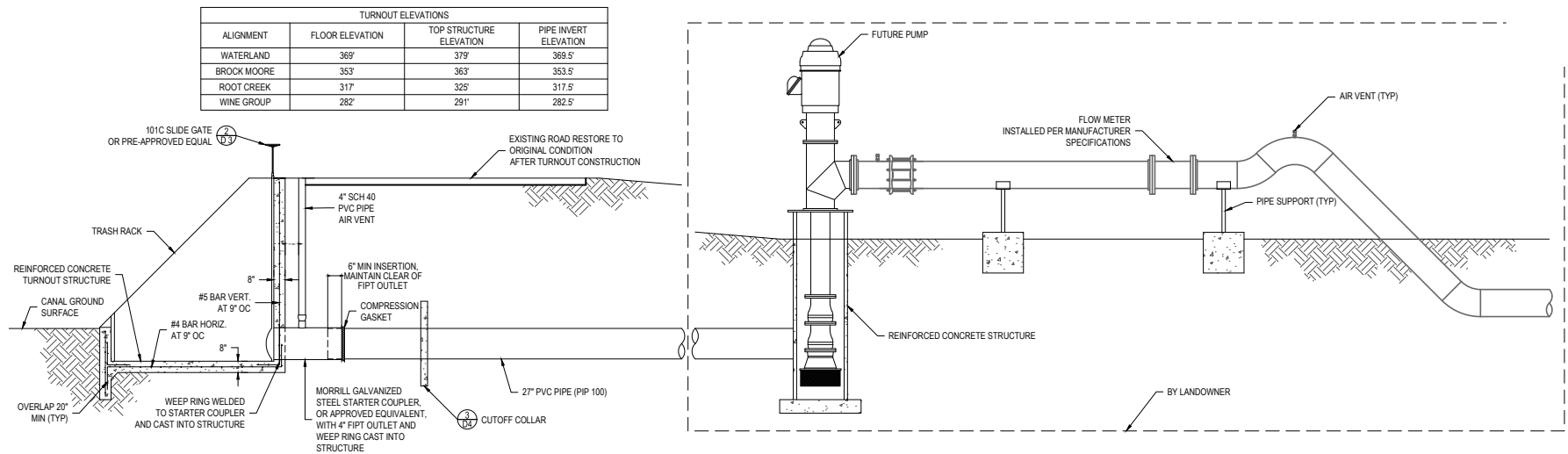
During periods when Reclamation makes Section 215 flood flows available for recharge (refer to discussion in the *Introduction* section of this IS/MND), deliveries would be made to Project sites through the turnouts. The Project would construct four (4) turnouts along MID Laterals 6.2 and 32.2. Two (2) turnouts would have a maximum capacity of 20 cubic feet per second (cfs) (approximately 40 acre-feet [AF] per day each), and two (2) turnouts would have a maximum capacity of 15 cfs (approximately 30 AF per day each). The Root Creek turnout would have a maximum capacity of 15 cfs (30 AF per day capacity) and would serve a recharge basin, while the remaining turnouts would supply water across several parcels for Flood-MAR. Turnout capacities were determined based on estimated receiving ground recharge capacity and existing private infrastructure, and are summarized in **Table 2-2**.

TABLE 2-2
TURNOUT AND PIPELINE DESIGN

Project Site	Pipe Size	Pipe Material	Pipe Length	Design Flow Rate
Waterlands	27 in	PVC	200 ft	20 cfs
Brock Moore	27 in	PVC	200 ft	20 cfs
Wine Group -Segment 1 (existing)	30 in	CONCRETE	1,445 ft	15 cfs
Wine Group -Segment 2	27 in	PVC	1,855 ft	15 cfs
Root Creek	27 in	PVC	6,000 ft	15 cfs

The 27-inch PVC pipeline from the various turnouts would have lengths varying from 200 feet to 6,000 feet, as shown in Table 2-2. Minimum depth of cover for the pipelines would be 30 inches.

It is anticipated that excavated soils for trenching of the pipelines would be reused for trench backfill, that earthwork would be balanced at each site, and that no soil import or export would be needed.



SOURCE: Davids Engineering, Inc.

Madera Recharge Projects

Figure 2-4
Turnout Design

Recharge Basins

Dedicated recharge basins are considered permanent features and vary in size (area and volume) depending on land availability, water availability, site soil conditions, topography, and other criteria to be identified during the preliminary design phases. For the proposed Project, recharge basin construction at the Root Creek site would be coordinated with the private landowner and would employ metered turnouts to track recharge volumes. The Root Creek recharge basin would include an impoundment (25 acres, potentially up to 40 acres) constructed from site-sourced earth that would be excavated and compacted to create the embankments. It is anticipated that excavated soils would be reused with the Project for the recharge basin embankments, and earthwork is expected to be balanced on-site, although there could be a need for minor soil hauling if deeper excavation should be needed. Water diversion and conveyance infrastructure would be constructed to fill the basin and enable recharge through gravity percolation. At the Brock Moore site, the existing low-lying area forms a basin (8.5 acres) that would be available for direct recharge by the private landowner. If any construction at the Brock Moore site is needed for the recharge basin, it would be completed by the landowner.

Recharge rates in the basins are estimated to average 10 AF per day with water available for recharge between 50 and 150 days per year. **Table 2-3** provides the estimated daily and annual recharge potential for the Project recharge basins.

TABLE 2-3
PROJECT RECHARGE BASINS DAILY AND ANNUAL RECHARGE POTENTIAL

Project Site	Recharge Basin Area (acres)	Daily Recharge Potential (acre-feet/day) ¹	Annual Recharge Potential (acre-feet/year) ²
Brock Moore	8.5	2.5	125-375
Root Creek	25	7.5	375-1,125
Waterlands	N/A	N/A	N/A
Wine Group	N/A	N/A	N/A
Total	33.5	10	500-1,500

Notes:

1. Estimated potential daily recharge rate: 0.3 acre-feet per acre per day.
2. Estimated period of annual recharge: 50–150 days per year.

Flood-MAR

The Brock Moore, Waterlands and Wine Group sites would be utilized for a total of approximately 2,095 acres of Flood-MAR. Flood-MAR involves the diversion of flood flows and distribution infrastructure, including interconnection with existing irrigation systems to deliver surface water to lands for direct application and continuous aquifer recharge for defined periods of time. No earthwork other than that necessary for construction of the turnouts and conveyance pipelines is anticipated. Excavated soils for the pipelines would be reused as trench backfill; and no soil import or export is anticipated for any of the three Flood-MAR sites.

Flood-MAR lands and water diversions at each Project site would be managed so that no more than 25 percent of the Flood-MAR area is needed for recharge in any year. This allows for 75 percent of the

land to not be available for recharge water application in some years due to cropping, farming practices, landowner preference, or other constraints. Recharge rates are anticipated to average 0.3 AF per acre per day and range from 0.2–0.5 AF per acre per day based on preliminary and historic data. As shown in **Table 2-4**, total annual groundwater recharge potential of the Project Flood-MAR sites is estimated at up to 23,565 AF per year.

TABLE 2-4
PROJECT FLOOD-MAR LANDS DAILY AND ANNUAL RECHARGE POTENTIAL

Project Site	Total Flood-MAR Area (acres)	Annual Flood-MAR Area Utilization¹	Daily Recharge Potential (acre-feet/day)²	Annual Recharge Potential (acre-feet/year)³
Brock Moore	67.5	16.9	5.1	255-765
Root Creek	N/A	N/A	N/A	N/A
Waterlands	1,469	367	110.1	5,505-16,515
Wine Group	558	140	42	2,100-6,300
Total	2,094.5	523.8	157.1	7,855-23,565

Notes:

1. Annual utilization calculated as 25 percent of total site Flood-MAR area.
2. Estimated average daily recharge rate: 0.3 acre-feet per acre per day.
3. Estimated period of annual recharge: 50–150 days per year.

The estimated annual groundwater recharge potential of the Flood-MAR sites combined with the estimated annual ground recharge potential of the recharge basins (shown in Table 2-3) is 25,065 AF per year for the Project.

2.2.2 Construction Equipment and Schedule

Project construction activities would last up to 1 year following Project approvals. Work would typically be performed on non-holiday weekdays and between 7 a.m. and 7 p.m. Project work in the MID Laterals right of way would occur between the months of October and March during the non-irrigation season. Work for all Project sites would be completed sequentially as decided by the contractor.

A peak construction crew would consist of a maximum of 20 workers, following the approximate assignments: eight earthwork crew, five concrete crew, and five inspection crew. The Brock Moore, Waterlands and Wine Group sites would require concrete and pipe crew of approximately five workers. Only the Root Creek site would require an earthwork crew, consisting of approximately eight workers plus a concrete and pipe crew of approximately five workers. Project construction is expected to require the following equipment:

- Excavators
- Earthwork scrapers
- Road grader/blade
- Backhoes
- Sheepsfoot compactors
- Smooth drum rollers
- Water trucks
- Loaders
- Skip loaders
- Bull dozers

2.2.3 Project Operations and Maintenance

When turnouts release at their maximum capacity for 50 to 150 days in a year with available flood flows, the resulting maximum diversion volume would range between approximately 7,000 and 21,000 AF. Diversions would be monitored and quantified by Madera County GSA in accordance with the Madera Subbasin GSP.

The new pump at the Waterlands site would be owned, operated, and maintained by the landowner including maintenance of mechanical equipment such as fueling, lubrication, etc. The flow meters would be electromagnetic (mag meters) and would require minimal maintenance.

The Root Creek recharge basin would be operated and maintained by the Root Creek Water District. The Brock Moore recharge basin would be operated and maintained by the landowner. Each recharge basin would require periodic discing and sediment removal to maintain infiltration rates.

Madera County GSA would coordinate the generally infrequent operations and maintenance of the turnouts and electromagnetic flow meters, working with landowners through landowner agreements. Inspections would occur annually and be conducted by Madera County GSA staff or representatives hired by the County. Ongoing vegetation/weed control conducted by the landowners would continue.

2.2.4 Responsible Agencies, Permits, and Approvals

Table 2-5 summarizes permits and/or approvals that may be required before Project construction.

**TABLE 2-5
REGULATORY REQUIREMENTS, PERMITS, AND AUTHORIZATIONS FOR PROJECT FACILITIES**

Jurisdiction	Agency	Type of Approval
Federal	U.S. Bureau of Reclamation	Review and approval of Project plans including coordination with Madera Irrigation District Modification to the service area map exhibit of the Madera County Central Valley Project contract Authorization to construct turnouts
	State Water Resources Control Board	NPDES General Permit for Stormwater Discharge Associated with Construction
State Agencies	Cal/OSHA	Construction or Excavation Permit
	Madera County	Approval of clearing and grubbing plans
Local Agencies	Madera County Groundwater Sustainability Agency	Landowner Agreements
	Madera Irrigation District	Approval of operating agreement and memorandum of understanding

Notes: Cal/OSHA = California Division of Occupational Safety and Health; N/A = not applicable; NPDES = National Pollutant Discharge Elimination System

Source: Data compiled by Environmental Science Associates in 2026

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CHAPTER 3

Initial Study and Environmental Checklist

1. **Project Title:** Madera Subbasin Recharge Project 1
2. **Lead Agency Name and Address:** Madera County
200 W. 4th Street, Suite 3100
Madera, CA 93637
3. **Contact Person and Phone Number:** Stephanie Anagnoson
559-598-0362
4. **Project Location:** Unincorporated Madera County
5. **Project Sponsor's Name and Address:** Madera County Water and Natural Resources
200 W. 4th Street, Suite 3100
Madera, CA 93637
6. **General Plan Designation(s):** AE (Agriculture Exclusive)
7. **Zoning:** ARE-40 (Agricultural, Rural, Exclusive (40 acre) District)
8. **Description of Project:**

The Project would provide for groundwater recharge in the Madera Subbasin utilizing flood flows available as Section 215 water from the Reclamation's Friant Division for direct aquifer recharge and Flood-MAR on four properties. The Project would include one 40-acre dedicated recharge basin, at the Root Creek site, that would receive flood flows conveyed through the existing MID laterals; and a combined total of approximately 2,317 acres of Flood-MAR at the Brock Moore, Waterlands, and Wine Group sites with flood flows conveyed through turnouts off the MID canal system. The Brock Moore site may also utilize an existing low-lying area of approximately 8.5 acres as a recharge basin; if any construction at the Brock Moore site is needed for the recharge basin, it would be completed by the landowner.

Three turnouts would be constructed on MID's Lateral 6.2, including one for the Root Creek recharge basin and one each for the Brock Moore and Waterlands Flood-MAR areas. One additional turnout would be constructed on MID's Lateral 32.2 to serve the Wine Group site. Pipeline connections in mostly private unimproved (dirt) roads and one public road (Avenue 10) would be installed for delivery of floodwater to the recharge sites. See Chapter 2 of this IS/MND for a detailed description of the Project components, construction activities, and operation and maintenance.

9. Surrounding Land Uses and Setting:

The areas within which the Project sites are located are largely rural and undeveloped except for agricultural production uses. The Wine Group site consists of a vineyard that surrounds an existing processing facility and is bisected by a railway. Existing irrigation lines bored under the railroad would be utilized for this Project site. The Waterlands and Brock Moore sites are adjacent to a rural residential area.

10. Other public agencies whose approval is required:

U.S. Bureau of Reclamation; State Water Resources Control Board; Cal/OSHA; Madera County; Madera County Groundwater Sustainability Agency; Madera Irrigation District.

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 Madera County regarding the Project within 30 days of receiving the notification letters. Notification letters were sent to representatives of the following tribes on February 26, 2026:

- 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, no tribal representatives have requested consultation. For further discussion, see Section 3.2, *Environmental Checklist - Tribal Cultural Resources*, for details on tribal consultation.

3.1 Environmental Factors Potentially Affected

The environmental factors checked below include impacts that are “Less Than Significant with Mitigation Incorporated.” There are no environmental factors that have an impact that is identified as a “Potentially Significant Impact” as all potential significant impacts can be reduced to less than significant with the incorporation of mitigation measures.

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

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial study:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Name

Title

Signature

Date

3.2 Environmental Checklist

3.2.1 Aesthetics

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than-Significant Impact</i>	<i>No Impact</i>
I. AESTHETICS — Except as provided in Public Resources Code Section 21099, would the project:				
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 daytime or nighttime views in the area?	☐	☐	☒	☐

Environmental Setting

The geographic scope for the analysis of impacts on aesthetics and visual resources reflects public views of the Project components associated with each of the Project sites. Generally, the study area for aesthetics and scenic resources encompasses public locations from which the public typically would view a component of the Project.

The Project sites are in rural areas predominated by agricultural land uses. The nearest public through roads to each site are Avenue 10 (Root Creek site), Avenue 12 (Brock Moore site), Avenue 13 (Waterlands site), and Avenue 22 (Wine Group site) each of which run east–west. Other public roads within the vicinity of the Project sites are local farm roads with very low traffic volumes. No residences or other public use areas are identified within areas from which Project activities or components would be readily visible.

U.S. Census Bureau Urban Area maps were reviewed to determine which of the Project components would be located in urbanized areas, as defined in CEQA Guidelines Section 15387 (U.S. Census Bureau 2023). The results of this review indicate that the Project components are within non-urbanized areas. Therefore, consistent with the CEQA Guidelines Appendix G Checklist and Criterion c, potential visual impacts consider the potential for the Project to degrade visual character or quality of public views.

Discussion

- a) **No Impact.** A substantial adverse effect on a scenic vista would typically occur if the Project would result in permanent changes to the visual landscape as viewed from a scenic vista. No designated scenic vistas or notable geographic features have been identified near the Project sites

in the Madera County General Plan (Madera County 1995). Additionally, the Project includes primarily underground or at-grade turnout facilities and underground conveyance pipelines. The above-ground components would be the recharge basin with earth embankments at the Root Creek site and the application areas used for Flood-MAR as well as turnout features such as a headwall, air vent, and a pump sump that comes to the surface as a concrete vault. The Root Creek site recharge basin and its associated earth embankments are located in an area without elevated vantage point locations, surrounded by flat agricultural land, and would blend with the surrounding landscape. Above-ground components would not be visible from a scenic viewpoint and therefore would not have the potential to result in a substantial adverse effect on scenic vistas. Conveyance of flood waters through the Project turnouts and pipelines and application of the flood waters to agricultural lands in either recharge basins or Flood-MAR would not be readily apparent or dissimilar from typical farming and agricultural land irrigation methods, and any visible water conveyance or application would neither be adverse nor visible or noticeable to a substantial number of people. Therefore, there would be no impact on scenic vistas in the Project area.

- b) **No Impact.** There are no officially Designated State Scenic Highways within Madera County (Caltrans 2018). The nearest Designated State Scenic Highway is Interstate 5 and State Route 152, which is located more than 45 miles west of the nearest Project site (Wine Group). State Route 168 that runs near the City of Clovis (in Fresno County) is an “Eligible” Designated State Scenic Highway and is over 10 miles southeast from the Waterlands, Brock Moore, and Root Creek sites, and farther from the Wine Group site. The Project components would not be visible from these or any other eligible or officially designated state scenic highway. Therefore, the Project would not have an adverse impact associated with views from an eligible or officially designated scenic highway.
- c) **Less-Than-Significant Impact.** Scenic resources generally include scenic landscapes, scenic highways, or scenic areas, as well as historic structures, trees, or other resources that contribute to the scenic values of an area. There are no designated scenic resources in the Madera County General Plan, and recreational trails and parks that offer scenic value are located over 3 miles or more from the four Project sites.

Construction equipment and activities would temporarily introduce visually unappealing elements to the visual landscape. These activities would have limited visibility, and most noticeable to nearby motorists on roads immediately adjacent to construction areas. However, the visibility would be of short duration as motorists move past construction activities. Construction activities for the Project would last approximately 1 year, varying at individual Project sites and varying in visibility. Upon completion of construction, any remaining equipment would be removed and staging areas would be restored to their original condition. Therefore, visual impacts due to Project construction would be less than significant.

For each Project site, one metered turnout would be constructed within the MID laterals to deliver water from the main conveyance system. These turnouts would include valves, meters, and associated hardware and would be installed below grade within the existing lateral. Thus, the turnouts would not be visible from adjacent roads nor to the surrounding area. Each site would

also require an underground conveyance pipeline connecting the turnout to the designated recharge basin or Flood-MAR location and would not be visible after construction.

The recharge basin at the Root Creek site would be constructed from site-sourced earth that would be excavated and compacted to create the embankments. This basin would be a permanent feature and would appear as an excavated depression with raised embankments; when filled, it would resemble a shallow pond, and when empty, it would look like a dry basin with exposed soil. The embankments would alter the natural topography and remain visible from nearby roads. When ponded and when dry, the basin would be consistent with agricultural lands character and would not conflict or adversely affect scenic quality. No other substantial earthwork or permanent surface changes are required for the Project.

The Project includes primarily underground infrastructure, with all conveyance pipelines designed to be buried and turnouts below grade. The only above-ground components would be the recharge basin with earthen embankments at the Root Creek site. These components would be consistent with the surrounding agricultural landscape and would not introduce visually prominent or incompatible features. Public views from nearby roads or vantage points would remain largely unchanged, and the Project would not result in a substantial adverse effect on scenic resources. Therefore, the Project would not substantially degrade the existing visual character or quality of public views in a non-urbanized area. The impact would be less than significant.

- d) **Less-Than-Significant Impact.** The Project sites are located in a predominantly agricultural areas with minimal development. Existing sources of light or glare are limited to vehicle headlights from nearby roadways and the residential neighborhood adjacent to the Waterlands and Brock Moore sites.

The Project would not involve nighttime construction and would not result in the installation of any temporary or permanent lighting. Some of the permanent above-ground Project elements may have minimally reflective surfaces such as steel or metal, however, these features would have minimal visibility and would not have the potential to result in substantial glare. Therefore, potential impacts related to light and glare would be less than significant.

References

- California Department of Transportation (Caltrans), 2018. California State Scenic Highways, 2018. Available online: <https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aaca>. Accessed December 11, 2025.
- Madera County, 1995. Madera County General Plan Policy Document. Adopted October 24, 1995. Available online: <https://www.maderacounty.com/home/showpublisheddocument/40825/638615574804870000>. Accessed December 11, 2025.
- U.S. Census Bureau, 2023. 2020 Census Urban Areas of the United States and Puerto Rico Map. Available online: https://www2.census.gov/geo/maps/DC2020/UA20/UA_2020_WallMap.pdf. Accessed December 11, 2025.

3.2.2 Agriculture and Forestry Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than- Significant Impact</i>	<i>No Impact</i>
II. AGRICULTURE AND FORESTRY RESOURCES —				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
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?	☐	☐	☐	☒

Environmental Setting

According to the Farmland Mapping and Monitoring Program (DOC 2022a), the Project sites include the following land classifications:

- **Waterlands:** Prime Farmland and Unique Farmland.
- **Brock Moore:** Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Grazing Land, and Vacant or Disturbed Land.
- **Root Creek:** Prime Farmland, Unique Farmland, Grazing Land, Semi-Agricultural and Rural Commercial Land.
- **Wine Group:** Prime Farmland, Unique Farmland, Grazing Land, Vacant or Disturbed Land, Semi-Agricultural and Rural Commercial Land.

According to the California Department of Conservation's Williamson Act Enrollment Finder (DOC 2022b), the Wine Group and Root Creek sites contain lands enrolled under a Williamson Act contract, whereas the Waterlands and Brock Moore sites do not. The Project sites are not zoned as forest land or

timberland, as defined by Public Resources Code Section 12220(g),¹ Section 4526,² or Government Code Section 51104(g)³.

Discussion

- a) **Less-Than-Significant Impact.** The Project would involve infrastructure and pipeline installation with minimal disturbances to agricultural lands. The Project consists of a group of recharge areas that, taken together, can recharge large amounts of water when it is available. Flood-MAR allows for groundwater recharge capacity while maintaining productive farmland when water is not being applied for recharge. The Project would involve removing approximately 0.1 acres of grape vines at the Waterlands site for installation of the conveyance pipeline which would represent a minimal loss of designated important farmland. The Root Creek recharge basin would be located within approximately 40 acres of land designated as grazing land and would not result the loss of any designated important farmland. The low-lying area of the Brock Moore site that may be utilized as a recharge basin is not designated as important farmland. The remainder of the Project disturbance would be associated with pipelines that would be routed down existing unimproved private roads and one public road, with little to no existing vegetation and would not result in the conversion of farmland.

For these reasons, the Project would have a less-than-significant impact associated with conversion of designated important farmland.

- b) **No Impact.** The Wine Group and Root Creek sites are enrolled in Williamson Act contracts. The Project is consistent with allowable uses under the Agriculture Exclusive (AE) General Plan land use designation and ARE-40 (Agricultural, Rural, Exclusive (40 acre) District) zoning applicable to these Project sites, and the Project would support long-term agricultural viability by enhancing groundwater availability for agriculture irrigation. As the Project would not convert the land to non-agricultural use or facilitate urban development, the Project would not conflict with existing zoning or Williamson Act contracts and no impact would occur.
- c, d) **No Impact.** The Project sites are not zoned as forest land or timberland and is not “forest land” as defined by Public Resources Code Section 12220(g)1 or “timberland” as defined in Public Resources Code Section 45262 or Government Code Section 51104(g)3. Therefore, the Project would not result in loss of forest land or conversion of forest land to non-forest use and no impact would occur.

¹ “Forest land” is land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.

² “Timberland” means land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the board on a district basis.

³ “Timberland production zone” or “TPZ” means an area which has been zoned pursuant to [Section 51112](#) or [51113](#) and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, as defined in subdivision (h). With respect to the general plans of cities and counties, “timberland preserve zone” means “timberland production zone.”

- e) **No Impact.** As discussed above, although the Project sites and surrounding areas are designated and zoned as farmland, the Project would not conflict with these uses or result in the conversion of farmland to a non-agricultural use. Therefore, the Project would not involve any other changes in the existing environment due to its location or nature, which could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. Thus, there would be no impact under this criterion.

References

California Department of Conservation (DOC), 2022a. California Important Farmland Finder. Available online: <https://maps.conservation.ca.gov/DLRP/CIFF/>. Accessed November 4, 2025.

California Department of Conservation (DOC), 2022b. California Williamson Act Enrollment Finder. Available online: <https://maps.conservation.ca.gov/dlrp/WilliamsonAct/>. Accessed November 4, 2025.

California Department of Conservation (DOC), 2022c. *The Williamson Act Status Report 2020-21*. Division of Land Resource Protection, Sacramento, CA. May 2022.

3.2.3 Air Quality

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than-Significant Impact</i>	<i>No Impact</i>
III. AIR QUALITY —				
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
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?	☐	☐	☒	☐

Environmental Setting

Climate and meteorological conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The Project is located within the San Joaquin Valley Air Basin (SJVAB) which consists of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare counties and the western and central portions of Kern County. The SJVAB is bordered by the Sierra Nevada in the east, the Coast Ranges in the west, and the Tehachapi mountains in the south. The bowl-shaped topography of the basin inhibits movement of pollutants out of the Valley.

Criteria Air Pollutants

Criteria air pollutants are a group of six common air pollutants for which the United States Environmental Protection Agency (U.S. EPA) has set ambient air quality standards. Criteria air pollutants include ground-level ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM), and lead. PM is classified by particle size. PM₁₀ consists of particulate matter that is 10 microns⁴ or less in diameter, while PM_{2.5} refers to the subset of PM₁₀ that is 2.5 microns or less in diameter. Most of the criteria air pollutants are directly emitted; however, ozone is a secondary pollutant that is formed in the atmosphere by chemical reactions between oxides of nitrogen (NO_x) and reactive organic gases (ROG) in the presence of sunlight as discussed below.

Ozone

Ozone (O₃) is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NO_x, including NO₂ in the presence of sunlight. ROG and NO_x are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately 3 hours.

⁴ A micron is one-millionth of a meter.

Ozone is a regional air pollutant because it is not emitted directly by sources but is formed downwind of sources of ROG and NO_x under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when long sunny days combined with regional subsidence inversions create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

Particulate Matter

Respirable particulate matter (PM₁₀) and fine particulate matter (PM_{2.5}) represent fractions of particulate matter that can be inhaled into air passages and the lungs and cause adverse health effects. PM in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of PM, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates can also damage materials and reduce visibility.

Toxic Air Contaminants

Toxic air contaminants (TACs) are a diverse group of air pollutants that can cause chronic and acute adverse effects on human health, including birth defects, neurological damage, cancer, and death. There are over 200 TACs with varying degrees of toxicity identified by the state of California (CARB 2026). Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

The primary TAC of concern is diesel particulate matter (DPM) which is emitted as diesel exhaust. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. The California Air Resources Board (CARB) classified DPM as a TAC in 1998, citing its potential to cause cancer and other health problems (CARB 1998). The U.S. EPA concluded that long-term exposure to diesel engine exhaust is likely to pose a lung cancer risk to humans and can also contribute to other acute and chronic health effects (U.S. EPA 2022). Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways.

Sensitive Receptors

Air quality does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. More sensitive population groups include the elderly and the young; those with respiratory disease, such as asthma and chronic obstructive pulmonary disease; and those with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory diseases. The San Joaquin Valley Air Pollution Control District (SJVAPCD) defines sensitive land uses as schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling units (SJVAPCD 2015). Workers are not considered sensitive receptors because they have other legal protections; specifically, employers must follow regulations set forth by the Occupation Safety and Health Administration (OSHA) to ensure the health and well-being of their employees (OSHA 2011).

The Project consists of four different sites located in areas with land uses consisting of rural, agricultural, and grazing areas. The nearest sensitive receptor to the Root Creek recharge basin site is a residence

approximately 470 feet north of the pipeline. All other sites do not have a sensitive receptor located within 1,000 feet of the construction area.

Valley Fever

Valley Fever (formally known as Coccidioidomycosis) is an infectious disease caused by the fungus *Coccidioides immitis*. Valley Fever is also known as San Joaquin Valley Fever, Desert Fever, or Cocci. Infection is caused by inhalation of *Coccidioides immitis* and *Coccidioides posadasii* spores that have become airborne when dry, dusty soil or dirt is disturbed by natural processes such as wind or earthquakes, or by human induced ground-disturbing activities such as construction and farming. High winds can carry dust that contains the spores over long distances.

Most people infected with Valley Fever have no symptoms; however, if symptoms develop, they usually develop in the lung and initially resemble the flu or pneumonia (e.g., fatigue, cough, shortness of breath, chest pain, fever, rash, headache, and joint aches). Valley Fever is not contagious, and secondary infections are rare. On average, there were approximately 200 Valley Fever-associated deaths each year (deaths in which Valley Fever was listed as a primary or contributing cause on a death certificate) in the United States between 1999 and 2023. Those most at risk of developing severe symptoms include Hispanics, African Americans, Filipinos, pregnant women, adults of older age groups, and people with weakened immune systems (DOC 2024).

Coccidioidomycosis is highly endemic (consistently present and has a high prevalence) in the San Joaquin Valley and remains an important public health problem in California. As a population with more than 20 cases per year of San Joaquin Valley Fever per 100,000 people are considered high endemic. The Centers for Disease Control and Prevention (CDC) and Madera County report that farm workers, construction workers, others who engage in soil-disturbing activities, and anyone spending time outdoors are at risk for Valley Fever.

Regulatory Framework

Air quality within the SJVAB is addressed through the efforts of various federal, state, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policymaking, education, and a variety of programs. The air pollutants of concern and agencies primarily responsible for improving the air quality within the SJVAB and the pertinent regulations are discussed below. The SJVAPCD is the jurisdictional entity in the SJVAB.

Federal

Clean Air Act and National Ambient Air Quality Standards

The federal Clean Air Act (CAA) requires the U.S. EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment. The U.S. EPA has set NAAQS for criteria air pollutants: ozone, NO₂, SO₂, CO, PM (PM₁₀ and PM_{2.5}), and lead. The U.S. EPA classifies geographic areas as either attainment or non-attainment for each criteria air pollutant, based on whether the NAAQS have been achieved. Air districts in areas that are designated non-attainment must prepare regional air quality plans, discussed in further detail below, to be included in the overall State Implementation Plan. Areas that have a “maintenance” designation have been non-attainment for a certain criteria pollutant but have been re-designated as attainment. The SJVAB is currently classified as non-attainment for the federal 8-hour ozone and the federal PM_{2.5} standards.

State

California Clean Air Act and California Ambient Air Quality Standards

At the state level, the CARB oversees California air quality policies and regulations. California has adopted its own air quality standards, known as the California Ambient Air Quality Standards (CAAQS), which are at least as protective as the NAAQS and are often more stringent, although for some pollutants—such as the annual $PM_{2.5}$ standard—the current federal standard is more stringent. The California CAA calls for the designation of areas as attainment or non-attainment based on state ambient air quality standards (i.e., the CAAQS), rather than the federal standards. The California CAA requires each air district in which CAAQS are exceeded to prepare a plan that documents reasonable progress toward attainment. If an air basin (or portion thereof) exceeds the CAAQS for a particular criteria air pollutant, it is considered to be in non-attainment for that criteria air pollutant until the area can demonstrate compliance. The SJVAPCD is designated non-attainment for the state 1-hour ozone, 8-hour ozone, PM_{10} , and $PM_{2.5}$ standards.

Regional

SJVAPCD Air Quality Plans

As discussed above, the SJVAB is designated as a non-attainment area for the federal 8-hour ozone, federal $PM_{2.5}$, state 1-hour ozone, state 8-hour ozone, state PM_{10} , and state $PM_{2.5}$ standards. As a result, the SJVAPCD is required to prepare air quality plans under the federal and California CAA to meet the federal and state air quality standards for these pollutants. Maintenance plans are required for attainment areas that had previously been designated non-attainment to ensure continued attainment of the standards.

Current air quality plans for the SJVAB include:

- 2024 Plan for the Annual $PM_{2.5}$ Standard (SJVAPCD 2024);
- 2007 PM_{10} Maintenance Plan and Request for Redesignation (SJVAPCD 2007);
- 2020 Reasonably Available Control Technology Demonstration for the 8-Hour Ozone State Implementation Plan (SJVACPD 2020); and
- 2022 Plan for the 2015 8-Hour Ozone Standard (SJVAPCD 2022).

The air quality plans include emissions inventories that identify sources of air pollutants, evaluations for feasibility of implementing potential opportunities to reduce emissions, sophisticated computer modeling to estimate future levels of pollution, and a strategy for how air pollution will be further reduced.

SJVAPCD CEQA Thresholds of Significance

The SJVAPCD published its *Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI)* in March 2015 (SJVAPCD 2015). The GAMAQI is an advisory document that provides lead agencies, consultants, and project proponents with procedures for assessing air quality impacts and preparing environmental review documents. The document describes the criteria that the SJVAPCD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for use in determining whether projects would have significant adverse environmental impacts, identifies methods for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts (SJVAPCD 2015).

SJVAPCD Rules and Regulations

Emissions sources associated with the Project would be subject to the regulatory requirements in the SJVAPCD rules and regulations. The SJVAPCD rules that would be applicable to construction activities associated with the Project include those under Regulation VIII, *Fugitive PM₁₀ Prohibitions*. Specifically, SJVAPCD Rule 8021 (Construction, Demolition, Excavation, Extraction, and other Earthmoving Activities) would require implementation of measures during Project construction to prevent, reduce, or mitigate anthropogenic fugitive dust emissions.

Regulation VIII (Fugitive PM₁₀ Prohibitions)

Regulation VIII contains rules developed pursuant to U.S. EPA guidance for serious PM₁₀ non-attainment areas. Rule 8021 limits fugitive dust PM₁₀ emissions from the following sources: construction, demolition, excavation, extraction, and other earthmoving activities, bulk materials handling, carryout and track-out, open areas, paved and unpaved roads, unpaved vehicle/equipment traffic areas, and agricultural sources. **Table 3-1, SJVAPCD Rule 8021 Non-Administrative Measures and Notification Requirements Applicable to the Project**, contains the Rule 8021 requirements that would apply during construction of the Project's infrastructure components. Control measures that must be implemented during Project construction activities pursuant to Rule 8021 include use of water, barriers, or chemical stabilizers sufficient to limit visible dust emissions to 20 percent opacity.

TABLE 3-1
SJVAPCD RULE 8021 NON-ADMINISTRATIVE MEASURES
AND NOTIFICATION REQUIREMENTS POTENTIALLY APPLICABLE TO THE PROJECT

No.	Measure
5.2	A person shall control the fugitive dust emissions to meet the requirements in [SJVAPCD] Table 8021-1
5.3.1	An owner/operator shall limit the speed of vehicles traveling on uncontrolled unpaved access/haul roads within construction sites to a maximum of 15 miles per hour.
5.3.2	An owner/operator shall post speed limit signs that meet state and federal Department of Transportation standards at each construction site's uncontrolled unpaved access/haul road entrance. At a minimum, speed limit signs shall also be posted at least every 500 feet and shall be readable in both directions of travel along uncontrolled unpaved access/haul roads.
5.4.1	Cease outdoor construction, excavation, extraction, and other earthmoving activities that disturb the soil whenever visible dust emissions exceeds 20 percent opacity. Indoor activities such as electrical, plumbing, dry wall installation, painting, and any other activity that does not cause any disturbances to the soil are not subject to this requirement.
5.4.2	Continue operation of water trucks/devices when outdoor construction excavation, extraction, and other earthmoving activities cease, unless unsafe to do so.
6.3.1	An owner/operator shall submit a Dust Control Plan to the Air Pollution Control Officer (APCO) prior to the start of any construction activity on any site that will include ten acres or more of disturbed surface area for residential developments, or five acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. Construction activities shall not commence until the APCO has approved or conditionally approved the Dust Control Plan. An owner/operator shall provide written notification to the APCO within 10 days prior to the commencement of earthmoving activities via fax or mail. The requirement to submit a dust control plan shall apply to all such activities conducted for residential and non-residential (e.g., commercial, industrial, or institutional) purposes or conducted by any governmental entity.
6.3.3	The Dust Control Plan shall describe all fugitive dust control measures to be implemented before, during, and after any dust-generating activity.
6.3.4	A Dust Control Plan shall contain all the [administrative] information described in Section 6.3.6 of this rule. The APCO shall approve, disapprove, or conditionally approve the Dust Control Plan within 30 days of plan submittal. A Dust Control Plan is deemed automatically approved if, after 30 days following receipt by the District, the District does not provide any comments to the owner/operator regarding the Dust Control Plan.

Source: SJVAPCD 2004

Local

Madera County Air Quality General Plan Element

The Madera County General Plan (General Plan) is a long-term comprehensive plan for the development of Madera County. The General Plan Air Quality Element contains goals, policies, standards, and programs directly related to the Project, which are listed below (Madera County 2010).

AQ Goal C1: Use Air Quality Assessment and Mitigation programs and resources of the SJVAPCD and other agencies to minimize air pollution, related public health effects, and potential climate change impacts within the County.

AQ Policy C1.1.1: Assess and mitigate project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD and require that projects do not exceed established SJVAPCD thresholds.

AQ Policy C1.1.3: Ensure that air quality and climate change impacts identified during CEQA review are minimized and consistently and fairly mitigated at a minimum, to levels as required by CEQA.

AQ Policy C1.1.5: Assess and reduce the air quality and potential climate change impacts of new development projects that may be insignificant by themselves but taken together, may be cumulatively significant for the County as a whole.

AQ Policy C1.1.6: Encourage and support the development of innovative and effective mitigation measures and programs to reduce air quality and climate change impacts through proactive coordination with the SJVAPCD, project applicants, and other knowledgeable and interested parties.

Discussion

- a) **Less-Than-Significant Impact.** As discussed previously, the SJVAB is currently designated as a non-attainment area for federal and state standards with regard to $PM_{2.5}$ and ozone. It is also designated as a non-attainment area for state PM_{10} standards. The SJVAPCD is responsible for implementing programs and regulations required by the federal CAA and the California CAA within the SJVAB. In this capacity, the SJVAPCD has prepared plans to attain federal and state ambient air quality standards for which it has been designated as non-attainment including the 2024 Plan for the 2012 Annual $PM_{2.5}$ standards; 2007 PM_{10} Maintenance Plan and Request for Redesignation; 2020 Reasonably Available Control Technology Demonstration for the 8-Hour Ozone State Implementation Plan; and 2022 Plan for the 2015 8-Hour Ozone Standard.

The SJVAPCD's GAMAQI provides recommended procedures for evaluating potential air quality impacts during the environmental review process consistent with CEQA requirements and also includes assessment methodologies for air toxics, odors, and GHG emissions. Based on the GAMAQI, the Project's air quality impacts during construction or operations would be considered significant if emissions generated exceed the thresholds of significance presented in the GAMAQI. These thresholds of significance are based on the SJVAPCD's New Source Review (NSR) offset requirements for stationary sources and are applicable to both stationary and non-stationary emissions sources, including project-level sources of criteria air pollutants (SJVAPCD 2015). As discussed in the GAMAQI, "the District's [SJVAPCD's] attainment plans demonstrate that

project-specific emissions below the District's [SJVAPCD's] offset thresholds would have a less-than-significant impact on air quality. Thus, the [SJVAPCD's] concludes that use of NSR Offset thresholds as thresholds of significance for criteria air pollutants under CCR Section 15064.7 is an appropriate and effective means of promoting consistency in significance determinations within the environmental review process" (SJVAPCD 2015). Therefore, projects with emissions below the thresholds of significance for criteria pollutants would be determined to not conflict with or obstruct implementation of the SJVAPCD's air quality plans. As discussed under criterion (b) and presented in **Table 3-2** below, the Project would not generate emissions from either construction or operation that would exceed the SJVAPCD thresholds of significance; therefore, the Project would not conflict with or obstruct the implementation of the SJVAPCD's air quality plans and the impact would be less than significant.

- b) **Less-Than-Significant Impact.** A project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development within the SJVAB. The non-attainment status of the SJVAB with respect to regional pollutants is a result of past and present development. Future attainment of state and federal ambient air quality standards is a function of successful implementation of SJVAPCD's attainment plans. Consequently, the SJVAPCD's application of thresholds of significance for criteria pollutants is a relevant way to determine whether a project's individual emissions would have a cumulatively significant impact on air quality.

Air pollutant emissions that would be related to the construction and operations of the Project were calculated using the California Emissions Estimator Model (CalEEMod) (version 2022.1.1) for comparison to the SJVAPCD thresholds of significance that are considered appropriate for this evaluation. CalEEMod contains default data specific to each California air basin and quantifies direct emissions from construction and operation (including off-road equipment and on-road vehicle use). CalEEMod uses EMFAC and OFFROAD emission factors to estimate emissions from on-road vehicles and off-road equipment, respectively.

Construction Emissions

Construction activities associated with the Project would require the use of trucks/vehicles and heavy construction equipment listed in the Project Description. Construction of the Project was modeled over a year long period assuming construction would be performed in January 2027. Construction was assumed to occur 5 days per week occurring on the sites in a sequential order.

Results of the construction emissions modeling are summarized in **Table 3-2, Project Construction Emissions Summary**. As shown, the total emissions that would be generated from construction of the Project would not exceed the applicable SJVAPCD thresholds of significance. Therefore, the Project would have a less-than-significant impact with respect to construction emissions of criteria air pollutants. Refer to **Appendix A** of this Initial Study for CalEEMod input assumptions and emissions estimates.

TABLE 3-2
PROJECT CONSTRUCTION EMISSIONS SUMMARY

Construction Year/ Significance Criteria	Construction Emissions (tons per year)					
	CO	NOx	ROG	SOx	PM ₁₀	PM _{2.5}
2027	7.13	5.70	0.71	0.01	1.09	0.34
Total Project Construction Emissions	7.13	5.70	0.71	0.01	1.09	0.34
SJVAPCD Threshold	100	10	10	27	15	15
Significant?	No	No	No	No	No	No

Source: ESA 2025. Included in Appendix A of this Initial Study.

Fugitive PM₁₀ emissions come from the following sources: construction, excavation, extraction and other earthmoving activities, bulk materials handling, carryout, and track-out, open areas, paved and unpaved roads, unpaved vehicle/equipment traffic areas, and agricultural sources. Table 3-1 lists the control measures that the Project would be required to implement during construction, operations and maintenance activities that involve ground disturbance pursuant to SJVAPCD Rule 8021, *Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities*. The Project would be subject to this regulation and construction activities would be required to comply with measures listed in Table 3-1 to reduce fugitive dust emissions.

Operational Emissions

Once operational, the Project would generate minimal direct emissions from occasional vehicle trips to the sites for maintenance activities as well as operation of pumps associated with distribution of Section 215 water to Project properties for recharge. It is anticipated that vehicle trips would be made by light-duty vehicles. The new pump associated with the Waterlands site would be powered by either diesel engines or electric motors. If using diesel power, the pump would be driven using power take off units or trailer mounted pumps that are powered by a diesel engine. These operational activities would occur infrequently and the vehicle that would power the pump would be pre-existing equipment already in operation by the landowner. The expected air pollutant emissions from these operational activities would be nominal and would not generate emissions that would exceed the applicable SJVAPCD thresholds of significance.

Conclusion

As discussed above, construction and operation of the Project would generate emissions of criteria air pollutants that would be less than the SJVAPCD recommended thresholds of significance. Therefore, the Project would not result in a cumulatively considerable net increase of any criteria air pollutant for which the Project region is designated as a non-attainment area under an applicable federal or state ambient air quality standard, and this impact would be less than significant.

- c) **Less-Than-Significant Impact.** Sensitive land uses are those where sensitive population groups are located and include residences, schools, hospitals, convalescent homes, and other facilities where people spend significant amounts of time. Air pollutant impacts related to increased

community health risk can occur by introducing new sources of criteria air pollutants or TACs with the potential to adversely affect existing sensitive receptors in the Project vicinity.

Diesel Particulate Matter

When evaluating health risk impacts, a 1,000-foot zone of influence is generally recommended, outside of which health risks to sensitive receptors would be considered less than significant. For example, studies show that DPM concentrations at 1,000 feet from the source are reduced by more than 80 percent compared to concentrations directly at the source (CARB 2005). The Project consists of four different sites located in areas with land uses consisting of rural, agricultural, and grazing areas. The nearest sensitive receptor to the Root Creek recharge basin site is a residence approximately 470 feet north of the proposed pipeline. All other sites do not have a sensitive receptor located within 1,00 feet of the construction area.

Project construction activities would generate TACs in the form of DPM from the use of heavy-duty, diesel-fueled construction equipment and diesel-fueled haul trucks. The majority of construction activities would be linear, along the excavation path for the proposed pipelines and conveyance channel, and take place at the four Project sites during the year of construction. Therefore, no one receptor would be exposed to DPM emissions for the full construction duration. Given the short construction duration of 1 year in comparison to the 30-year exposure assumed in health risk assessments (OEHHA 2015), the linear nature of the majority of the construction activity, and the distance between the proposed Project sites and sensitive receptors, DPM emissions during construction would not result in substantial pollutant concentrations at the nearest sensitive receptor location. Furthermore, Project construction would comply with applicable SJVAPVD requirements and control strategies intended to reduce emissions from construction equipment and activities. The Project would also comply with the CARB Air Toxics Control Measure that limits diesel-powered equipment and vehicle idling to no more than 5 minutes at a location, and the CARB In-Use Off-Road Diesel Vehicle Regulation; compliance with these regulations would minimize emissions of TACs during construction.

Operational emissions of TACs would be nominal, as operational activities would be limited to occasional vehicle trips to the site for maintenance activities as well as operation of the pump station associated with the floodwater recharge of existing farmlands. It is likely that vehicle trips would be made by light-duty vehicles that are unlikely to be diesel-fueled. The new operational water pump associated with the proposed Project at the Waterlands site would be powered by either diesel engines or electric motors. Due to the limited use of Project operations equipment, the temporary and periodic use of diesel-powered equipment would not result in substantial pollutant concentrations or adverse health impacts to sensitive receptors associated with diesel particulate emissions.

Health Effects of Criteria Air Pollutants

Health effects associated with emissions of criteria pollutants are discussed in the Environmental Setting section above.

As discussed under criterion (b), above, construction and operation of the Project would not result in emissions that exceed the SJVAPCD's annual emissions thresholds for criteria pollutants.

Therefore, criteria pollutant emissions from Project-related activities would not be reasonably anticipated to cause or contribute to the exposure of sensitive receptors to ground-level ozone concentrations in excess of health-protective levels nor would the Project criteria pollutant emissions be anticipated to cause other adverse health effects.

Valley Fever

As discussed above, the Central Valley is the region of California considered to be of highest risk for the development of Valley Fever (CDPH 2020); therefore, Valley Fever is a health risk of concern in relation to the Project. While Valley Fever is a risk for anyone living or working in the Project vicinity, dust that may be generated during ground disturbance activities associated with the Project would not be expected to increase this risk to areas residents due to the low levels of emissions and linear nature of construction.

Project construction activities generating dust could pose an increased risk of exposure to the *Coccidioides immitis* fungus spores for Project construction workers involved in or otherwise present during excavation such as grading and trenching and transport of soils. According to the California Department of Public Health (CDPH) and the CDC, avoiding working in soils and dusty conditions is the best preventative measure. Since some construction workers cannot avoid participating in soil disturbance activities, minimizing fugitive dust as well as other engineering controls are the primary preventative measures. In addition, the CDPH Occupational Health Branch and the CDC make recommendations for the protection of workers. The primary protection measures relate to the following: worker training, dust suppression, and personal protective equipment (PPE). With respect to dust suppression, SJVAPCD Rule 8021 would require the Project to reduce visible dust emissions to less than 20 percent opacity (SJVAPCD 2019). Use of PPE and compliance with Rule 8021 would ensure the Project's compliance with these regulatory requirements and would ensure that the potential impacts from Valley Fever would be less than significant.

- d) **Less-Than-Significant Impact.** The Project may create temporary construction odors from combustion of diesel fuel in equipment engines; however, majority of construction of the Project would be linear, not occurring in one location for an extended period of time, and would cease at the conclusion of construction. Any odorous emissions generated from construction of the Project would dissipate rapidly and would not be expected to be noticeable at the nearest residential receptors. Once operational, there would be no sources of odor associated with the Project; therefore, no impact would occur. Therefore, the Project would not generate other emissions, including odors, which would result in a significant impact.

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3.2.4 Biological Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than-Significant Impact</i>	<i>No Impact</i>
IV. BIOLOGICAL RESOURCES — Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
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 native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Environmental Setting

ESA prepared the “Madera Subbasin Recharge Project 1 Biological Constraints Report” (ESA 2022a) prepared for the Project, which is included as **Appendix B** of this Initial Study. The biological resource study area (BRSA) for the biological constraints report and this Initial Study is the construction footprints of the four Project sites and off-site conveyance components (see Figures 2-3a through 2-3d) and a 100-foot buffer surround the construction footprints. Biological communities within the BRSA, both upland and aquatic, were assessed to determine if they could provide potential habitat for special-status species. Upland biological communities within the BRSA include a variety of agricultural land, grassland, and disturbed areas. The communities and habitats associated with the aquatic settings within the BRSA include open water, agricultural ditches, and seasonal wetlands and swales (ESA 2022a). These communities are discussed further below and are described in more detail in the “Madera Subbasin Recharge Project 1, Biological Constraints Report” (ESA 2022a) and the “Madera Subbasin Recharge Project 1, Aquatic Resources Delineation Report” (ESA 2022b) included, respectively, as Appendix B and **Appendix C** of this Initial Study. ESA conducted a formal delineation of aquatic resources at the same time as the biological reconnaissance survey and determined that there are potential Waters of the United States and Waters of the State occurring within the BRSA (ESA 2022b). Habitat types in the BRSA, including aquatic resources, are further discussed below.

Agriculture

Agricultural lands are present throughout the BRSA, with these lands having been leveled and undergone frequent, generally seasonal cycles of crop growth and harvesting. They also receive applications of irrigation water, fertilizers, and pesticides. The agricultural lands are generally well maintained, with very few weeds along the field margins, well-maintained roadways, and properly functioning drainage and irrigation systems. There are three irrigated crop types present within these lands, with the Root Creek and Brock Moore Project sites possessing citrus, almond and pistachio crops while the Wine Group and Waterlands sites have grapes as their main crop.

In general, agricultural lands support relatively low species diversity, but the value of agricultural lands for special-status and common plant and wildlife species varies greatly depending on crop types and agricultural practices. Agricultural lands close to natural land cover can provide functions that complement and increase the habitat value of the natural land cover.

Disturbed/Ruderal

Disturbed/ruderal areas include dirt and gravel roads throughout the BRSA, along with associated roadsides and levee slopes. These areas are either unvegetated with heavily compacted substrate or are sparsely to densely vegetated with non-native, invasive weeds.

Grassland

The upland areas within the Root Creek Project site portion of the BRSA are dominated by grassland habitat. The dominant species in this habitat type are non-native, invasive grasses such as wild oat (*Avena* spp.), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), red brome (*Bromus rubens*), and short-pod mustard (*Hirschfeldia incana*). Annual native herbaceous and shrub species are also scattered intermittently throughout this habitat type and included species such as Fitch's tarweed (*Centromadia fitchii*), vinegar weed (*Trichostema lanceolata*), and fiddleneck (*Amsinckia* spp.). This collection of non-native, invasive grassland species is classified as *Avena* spp. – *Bromus* spp. Semi-Natural Alliance, which is not considered a sensitive natural community and has no applicable global/state ranking.

Open Water

This habitat type consists of year-round bodies of water in the form of lakes, streams, ponds, or rivers. This includes portions of water bodies that generally carry water and contain relatively low amounts of vegetative cover. Within the BRSA, open water refers to existing recharge basins that include a developed bank perimeter area. Specifically, the Wine Group Project site contains one irrigation basin that covers an estimated 2 acres and the Waterlands Project site has one irrigation basin that covers approximately 1.2 acres.

Seasonal Wetlands and Swales

Seasonal wetlands are ephemeral wetlands that are characterized by shallow depressions that pond water for short durations in the winter and spring due to either landscape position, a restrictive soil layer that acts as a barrier preventing water percolation to deeper soil levels, or both. Swales are linear features that are vegetated with wetland plants and often connect other wetland features. Both seasonal wetlands and swales are dominated by plants that tolerate inundation during part of the growing season. Within the BRSA, there is one seasonal wetland present within the Root Creek Project site, as well as Root Creek

itself which is an ephemeral stream. The seasonal wetland present is dominated by a *Lasthenia fremontii* – *Downingia* Herbaceous Alliance, while the Root Creek ephemeral stream hosts an *Eleocharis macrostachya* Herbaceous Alliance. Both vegetation alliances are considered sensitive natural communities, with both alliances having global and state rankings of G2/S2.

Agricultural Ditches and Canals

Agricultural ditches and canals are found throughout the BRSA and serve the functions of draining agricultural fields during the wet season and delivering irrigation water during the dry season. Ditches and canals found throughout the BRSA are mostly free of emergent vegetation, but some minor patches of spikerush (*Eleocharis macrostachya*) are present at certain locations. The agricultural canals (identified as MID Lateral 6.2 and MID Lateral 32.2) are connected downstream to other aquatic features outside the boundaries of the BRSA (ESA 2022b).

Discussion

- a) **Less Than Significant with Mitigation Incorporated.** A list of special-status species with the potential to occur on or within the vicinity of the BRSA was compiled from a nine-quad search of the California Natural Diversity Database (CNDDB) (CDFW 2022), a nine-quad search on the California Native Plant Society's Rare Plant Inventory (CNPS 2022), a BRSA search of the U.S. Fish and Wildlife Service (USFWS) endangered species database (USFWS 2022), and biological literature on the region for the surrounding 7.5-minute United States Geologic Survey (USGS) topographic quadrangles. The quadrangles for the Wine Group Project site were Le Grand, Raynor Creek, Raymond, Berenda, Kismet, Daulton, Bonita Ranch, Madera, and Gregg. The quadrangles for the Waterlands and Brock Moore Project sites were Daulton, Little Table Mountain, Millerton Lake West, Gregg, Lanes Bridge, Friant, Herndon, Fresno North and Clovis. The quadrangles for the Root Creek Project site were Kismet, Daulton, Little Table Mountain, Madera, Gregg, Lanes Bridge, Biola, Herndon, and Fresno North. No special-status plant or wildlife species were observed within the BRSA during the September 13 and 14, 2022, reconnaissance surveys (ESA 2022a).

From the full list of species, each species was individually assessed based on habitat requirements and distribution relative to vegetation communities and habitat features that occur in and around the BRSA (ESA 2022a). Based on the habitat types and conditions within the BRSA, along with review of background information and database searches, 13 special-status plant species were assessed as having low potential to occur within or near the BRSA and have some potential to be impacted by Project activities: heartscale (*Atriplex cordulata* var. *cordulata*), lesser saltscale (*Atriplex minuscule*), vernal pool smallscale (*Atriplex persistens*), subtle orache (*Atriplex subtilis*), California jewelflower (*Caulanthus californicus*), beaked clarkia (*Clarkia rostrata*), dwarf downingia (*Downingia pusilla*), spiny-sealed button-celery (*Eryngium spinosepalum*), shining navarretia (*Navarretia nigelliformis* ssp. *radians*), San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*), hairy Orcutt grass (*Orcuttia pilosa*), Sanford's arrowhead (*Sagittaria sanfordii*), and Greene's tuctoria (*Tuctoria greenei*).

Similarly, an estimated 17 special-status wildlife species were determined to have at least a low to moderate potential to occur within or near the BRSA and potential to be affected by Project

activities; vernal pool fairy shrimp (*Brachinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), California tiger salamander (*Ambystoma californiense*), western spadefoot (*Spea hammondi*), California glossy snake (*Arizona elegans occidentalis*), blunt-nosed leopard lizard (*Gambelia silus*), coast horned lizard (*Phrynosoma blainvillii*), tricolored blackbird (*Agelaius tricolor*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), pallid bat (*Antrozous pallidus*), Fresno kangaroo rat (*Dipodomys nitratoideus exilis*), hoary bat (*Lasiurus cinereus*), American badger (*Taxidea taxus*) and San Joaquin kit fox (*Vulpes macrotis mutica*). The majority of these special-status species have the potential to occur in the grasslands and seasonal wetland on the Root Creek Project site. The other three sites have limited suitable habitat present. These species lists, as well as their determinations for their potential to occur within the BRSA, are provided in Appendix B of this Initial Study.

Due to the potential for these special-status species to occur with the BRSA, there is also potential for adverse effects to occur to special-status species during Project construction, either directly or through habitat modifications. While the Project construction disturbance would occur in disturbed and agricultural habitat, there is also annual grassland habitat where these species may occur. There is the potential for indirect impacts to special-status species during construction that may occur on the adjacent annual grassland or agricultural habitat due to construction activities noise and visual disturbances.

Mitigation Measures MM BIO-1 through MM BIO-5 provide avoidance and protection measures for special-status plant species and special-status wildlife species potentially affected by Project construction. Implementation of **Mitigation Measures MM BIO-1 through MM BIO-5** would avoid or reduce potential impacts on special-status species associated with Project construction to a less-than-significant level.

MM BIO-1: Special-Status Plant Species Avoidance and Relocation: Prior to any ground disturbance, a qualified biologist shall conduct pre-construction surveys for special-status plant species within the freshwater emergent wetland, seasonal wetland, and alkali grassland habitat areas subject to ground-disturbing activities or within 50 feet of ground-disturbing activities. The surveys shall be conducted during bloom season, typically during the months of March and June, and prior to ground-disturbing activities. The biologist shall work with the construction contractor to mark and avoid disturbance of locations of special-status plant species where feasible or prepare a relocation plan if avoidance is infeasible. The relocation plan shall include, but not be limited to, seed and soils collection, plant salvage, suitable relocation sites, monitoring requirements, and success criteria.

Federally threatened vernal pool fairy shrimp (VPFS; *Branchinecta lynchi*) and federally endangered vernal pool tadpole shrimp (VPTS; *Lepidurus packardii*) occur in vernal pools and some seasonal wetlands with similar hydrology in the region. A seasonal wetland occurs on the Root Creek site. The likelihood of VPFS and VPTS occurring in the seasonal wetland on the Root Creek site is moderate because both species have the potential to occur in the area, but it is not clear that the wetland exhibits a sufficient hydroperiod to support these species.

Construction of the proposed recharge basin at the Root Creek Project site has the potential to impact the seasonal wetland through direct disturbance. Due to VPFS and VPTS being

moderately likely to occur within the BRSA, the Project shall implement **MM BIO-2** to reduce impacts on vernal pool species during construction to a less-than-significant level. The basin at the Root Creek Project site has been designed to avoid impacting the seasonal wetland.

MM BIO-2: Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Avoidance:

A qualified biologist shall inspect the vernal pool and seasonal wetland areas present at the Root Creek Project site as part of the focused branchiopod suitability surveys. Areas that have been identified by the branchiopod suitability surveys as potentially suitable habitat for special-status branchiopods (such as VPFS and VPTS) shall be entirely avoided through design and construction best management practices.

To avoid disturbance to other sensitive species including active raptor nests, special-status nesting birds, burrowing owl, and amphibians and reptiles **MM BIO-3**, **MM BIO-4** and **MM BIO-5** shall be implemented. Implementation of these mitigation measures would reduce impacts during construction to less than significant.

MM BIO-3: Nesting Bird Protection Measures: If feasible, construction activities (e.g., grading, mobilization, infrastructure installation) for each Project site shall be initiated outside of the avian nesting season (September 1 through January 31). If initiation of construction for each Project site occurs outside of the avian nesting season and remains ongoing to the completion of construction, no additional action is required to protect nesting birds.

If initiation of construction at one or more Project sites occurs during the avian nesting season (February 1 through August 31), the following measures shall be implemented for construction at the respective Project site to avoid impacts on nesting raptors and other protected birds:

- Within 30 days prior to construction, a qualified wildlife biologist shall conduct a pre-construction survey of all potential nesting habitat within a 1/4 mile of the Project sites where access is available.
- If the pre-construction survey indicates that nests are inactive or potential habitat is unoccupied during the construction period, no further action is required. Trees and shrubs within the construction footprint determined to be unoccupied by nesting birds, or that are outside the no-disturbance buffer for active nests, could be removed.
- If active nests are found during the pre-construction survey, a no-disturbance buffer shall be established by the qualified biologist deemed sufficient to avoid disturbance of active raptor nests and nests of other special-status birds during the breeding season and construction activities shall be prohibited within the no-disturbance area until a qualified biologist determines that all young have fledged. Typical buffers include 1/4 mile for Swainson's hawk, 500 feet for raptors, and 250 feet for other nesting birds (e.g., passerine birds). The size of these buffer zones and types of construction activities restricted in these areas may be further modified during construction in coordination with California Department of Fish and Wildlife (CDFW) and shall be based on the existing level of noise and human disturbance associated with the Project.

MM BIO-4: Burrowing Owl Avoidance, Survey and Passive Relocation: Prior to the initiation of ground-disturbing activities for each Project site, a qualified biologist shall conduct pre-construction surveys for burrowing owl (*Athene cunicularia*) in suitable habitat

within the Project site and a 250-foot buffer. Surveys shall be completed in accordance with the current CDFW Staff Report on Burrowing Owl Mitigation (CDFG 2012).

- If burrowing owls are not detected, no further mitigation is required.
- If burrowing owls are detected, occupied burrows shall be avoided to the maximum extent feasible. A non-disturbance buffer of at least 160 feet shall be established around occupied burrows during the non-breeding season (September 1st through January 31st) and at least 250 feet during the breeding season (February 1st through August 31st), or as otherwise approved by CDFW.
- If avoidance is not feasible, passive relocation may be implemented during the non-breeding season only, under the supervision of a qualified biologist and in coordination with CDFW. Passive relocation shall include installation of one-way doors, monitoring to confirm owl exclusion, and provision of suitable replacement habitat, including artificial burrows, at a minimum 1:1 ratio in preserved habitat prior to relocation. Monitoring shall continue until owls are confirmed to have vacated the burrows.

MM BIO-5: Amphibian and Reptile Protection Measures: Prior to the initiation of ground-disturbing activities at each Project site, a qualified biologist shall provide a worker environmental awareness program (WEAP) training to all construction personnel. The training shall include information on the potential presence of amphibian and reptile species, legal protections, and procedures to follow in the event an individual is encountered. Additionally, the following shall be performed for each Project site:

- A qualified biologist shall conduct a pre-construction clearance survey within suitable habitat (including ponded water, swales, or other seasonal aquatic features) no more than 48 hours prior to the start of ground disturbance. If amphibians or reptiles are observed, the biologist shall relocate individuals out of harm's way to suitable adjacent habitat consistent with CDFW guidance.
- Ground-disturbing activities shall be limited to daylight hours when feasible. Trenches or excavations left open overnight shall be covered or provided with escape ramps. Construction areas shall be inspected daily to ensure that no wildlife is trapped.
- If ground-disturbing activities occur during the rainy season (generally November through April), a qualified biological monitor shall be present during initial grading to ensure avoidance and proper handling of amphibians.

- b) **Less Than Significant with Mitigation Incorporated.** The BRSA contains the following sensitive natural communities within the Root Creek site: *Lasthenia fremontii* – *Downingia* Herbaceous Alliance and *Eleocharis macrostachya* Herbaceous Alliance. Both of these communities are defined as sensitive natural communities by CNPS Standards, with a global and state ranking of G2 and S2, respectively. The *Lasthenia fremontii* – *Downingia* Herbaceous Alliance is found within an identified seasonal wetland on-site while the *Eleocharis macrostachya* Herbaceous Alliance is present within the Root Creek ephemeral feature. Through implementation of **Mitigation Measure MM BIO-6**, potential impacts to these sensitive natural communities associated with Project construction for the Root Creek site would be avoided or reduced to a less-than-significant level.

MM BIO-6: Sensitive Natural Communities Avoidance and Protection: Prior to the start of ground-disturbing activities associated with the Root Creek site, a qualified biologist shall

conduct a pre-construction survey to identify the location and extent of sensitive natural communities within and adjacent to the project site.

- Sensitive natural communities shall be avoided to the maximum extent that is feasible.
- Fencing shall be installed to delineate the boundaries of these Environmentally Sensitive Areas for all that are identified prior to construction and maintained for the duration of construction activities.
- No ground disturbance, equipment staging, material storage, or vehicle access shall occur within designated Environmentally Sensitive Areas fencing.
- If avoidance is not feasible, impacts shall be minimized and mitigated through compensatory mitigation to achieve no net loss of habitat function. Mitigation shall be determined in consultation with the County and other applicable agencies depending on habitat quality, ecological function, and agency requirements.

- c) **Less Than Significant with Mitigation Incorporated.** The BRSA supports state wetlands associated with a vernal pool feature within the Root Creek site (ESA 2022b). This vernal pool was found to support the three USACE wetland parameters, with hydrophytic vegetation, hydric soils and hydrology indicators all being observed during reconnaissance surveys (ESA 2022b). Based on these findings, this vernal pool is considered potential Waters of the State for the purposes of this Initial Study evaluation.

Other aquatic features present within the BRSA include Root Creek, an ephemeral drainage feature with a small local watershed; MID irrigation canal laterals 6.2 and 32.2, both of which connect downstream to other aquatic features and are potential Waters of the U.S.; and agricultural ditches that are isolated and are considered upland due to the lack of wetland indicators and presence of an Ordinary High Water Mark (OHWM). These agricultural ditch features are not considered Waters of the U.S. or Waters of the State. An aquatic resources delineation report (ESA 2022b) was prepared for the Project, it will be submitted for USACE review as part of obtaining applicable permits and approvals.

The project has the potential to impact Waters of the U.S. and Waters of the State through direct disturbance during construction of basins and turnout structures. Impacts to the seasonal wetland and ephemeral drainage at the Root Creek Project site are anticipated to be avoided through the implementation of design and construction best management practices. Impacts to the MID irrigation canal laterals 6.2 and 32.2 cannot be completely avoided due to the need to construct or refurbish turnout structures. With implementation of **MM BIO-7**, impacts would be less than significant.

MM BIO-7: Waters Minimization and Avoidance: The following measures shall be implemented for construction associated with each Project site:

- Clearing of vegetation and ground disturbance within jurisdictional features in wetlands shall be confined to the minimal area necessary for development of Project components.
- Areas of temporary disturbance during Project construction shall be restored to pre-construction conditions to the extent feasible.

- Native vegetation disturbed or removed during Project construction shall be replaced with the same or similar species known to occur in the area upon completion of ground-disturbing activities.
 - Any and all applicable permits or authorizations (USACE Clean Water Act Section 404; Central Valley Regional Water Quality Control Board Section 401 Water Quality Certification; and/or California Department of Fish and Wildlife Streambed Alteration Agreement) shall be obtained prior to disturbance, placement of fill or alteration in any jurisdictional features and all conditions approval associated with such permits and authorizations complied with.
- d) **No Impact.** The BRSA is currently used primarily for a variety of agricultural purposes. Although fences are present at some properties, wildlife may move through the BRSA from surrounding grasslands/agriculture. Root Creek provides a corridor for movement through the Root Creek site, while MID Lateral 6.2 provides a corridor for movement along the borders of the Root Creek and Waterlands sites. The Project would not alter these wildlife movement patterns. Therefore, the Project would not substantially interfere with wildlife movement.
- e) **No Impact.** The Project would not conflict with any local plans or policies for the protection of biological resources. The Project would not substantially alter any biological resources that may be protected by local plans and policies. The BRSA does not support any trees protected by local tree ordinances, and no trees are anticipated to be removed, trimmed or damaged during any Project-related work. Thus, there would be no impact under this criterion.
- f) **No Impact.** There are no adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans applicable to the Project sites. Thus, there would be no impact under this criterion.

References

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- California Department of Fish and Wildlife (CDFW), 2022. California Natural Diversity Database (CNDDDB) search for the U.S. Geological Survey 7.5-minute Gregg, Lanes Bridge, and Kismet topographic quadrangle and surrounding 9 quadrangles. Accessed September 2022.
- California Native Plant Society, 2022, Rare Plant Program. *Rare Plant Inventory* [online edition, v9.5.1]. <https://www.rareplants.cnps.org>. Accessed 2022.
- Environmental Science Associates (ESA), 2022a. Madera Subbasin Recharge Project 1, Biological Constraints Report. September 2022.
- Environmental Science Associates (ESA), 2022b. Madera Subbasin Recharge Project 1, Aquatic Resources Delineation Report. September 2022.
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3.2.5 Cultural Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than- Significant Impact</i>	<i>No Impact</i>
V. CULTURAL RESOURCES — Would the project:				
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 dedicated cemeteries?	☐	☒	☐	☐

Environmental Setting

ESA prepared “Madera Subbasin Recharge Project 1 Madera County, California: Cultural Resources Study” (ESA 2026) to inform the baseline conditions and identify cultural resources within the Project site. To identify the potential presence of cultural resources that could be impacted by the Project, the following tasks were completed: (1) a records search at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System; (2) a review of historical maps aerial photographs to assess the potential for buried pre-European contact and historic-period archaeological deposits within the Project sites; and (3) a field survey of the Project sites.

SSJVIC Records Search Results

On December 2, 2025, ESA requested a records search of the Project sites and a 0.5-mile radius surrounding each site at the SSJVIC (SSJVIC File # 25-496) and results were received on December 8, 2025. The SSJVIC, an affiliate of the State of California Office of Historic Preservation, is the official state repository of cultural resources records and reports for Madera County. ESA also reviewed the following State of California inventories for the Project sites:

- *Five Views: An Ethnic Historic Site Survey for California*
- California Historical Landmarks
- California Points of Historical Interest
- Archaeological Determinations of Eligibility

The SSJVIC records search indicates that no archaeological resources are in or within 0.5 miles of the Project sites, two previously recorded built-environment resources have been documented within one or more of the Project sites as listed and summarized in **Table 3-3** below. The records search also documented five previous cultural resources studies within a 0.5-mile radius of the Project site.

TABLE 3-3
PREVIOUSLY RECORDED RESOURCES WITHIN 0.5 MILES OF THE PROJECT SITE

Resource Identifier	Resource Type Description	Evaluation Status	Location
P-20-002308/ CA-MAD- 2649H	Historic-period canal structure: Madera Irrigation District Lateral 6.2	No California Historical Resources Status Code (CHRSC) has been assigned to this resource. However, in 2017, this resource was determined eligible as a contributor to the Madera Canal which contributes to the Central Valley Project.	Within the Wine Group, Waterlands, Brock Moore, and Root Creek Project site.
P-20-002662	Historic-period railroad segment: Atchison, Topeka, and Santa Fe Railroad	This resource was assigned a CHRSC of 6Z, indicating it is ineligible for inclusion on the National Register of Historic Places, California Register of Historical Resources, or Local designation through survey evaluation.	Within the Wine Group Project site.

Source: SSJVIC File No.: 25-496 per ESA 2026.

Map Review Results

ESA reviewed historical maps and aerial photographs to determine the presence of historic-period buildings and/or structures within the Project site and assess the potential for historic-period archaeological deposits. Archival maps and aerial photographs indicate that the Project site has been undeveloped land utilized for agricultural purposes, indicating low potential for intact historic-period deposits below the surface (e.g., artifact-filled features such as wells or privies).

A review of geologic maps to assess the Project site's potential for containing as-yet undocumented buried pre-European contact archaeological resources depict the Project site underlain by late Pleistocene to early Holocene quaternary alluvium and alluvial basin deposits indicating a moderate sensitivity for buried pre-European contact archaeological resources (ESA 2026).

Field Survey

During December 9–11, 2025, ESA archaeologists conducted a field survey of the areas of the Project site subject to ground disturbance which consist of the conveyance pipeline corridors, Root Creek site recharge basin, and new turnouts. All exposed soils were inspected for pre-European contact archaeological materials (e.g., stone tools and lithic debitage, groundstone) historic-period artifacts (e.g., metal, glass, ceramics) and soils discoloration that might indicate the presence of archaeological deposits. No evidence of archaeological resources was identified within the Project site (ESA 2026).

Discussion

- a) **Less-Than-Significant Impact.** CEQA Guidelines Section 15064.5 requires the lead agency to consider the effects of a Project on historical resources. A historical resource is defined as any building, structure, site, or object listed in or determined to be eligible for listing in the California Register of Historical Resources or determined by a lead agency to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California. The following discussion focuses on built-environment (architectural and structural) resources. Archaeological resources, including those that are potentially historical resources according to CEQA Guidelines Section 15064.5, are addressed below under issue b).

Two previously recorded built-environment resources are within one or more of the Project sites. One is an historic-period railroad segment (P-20-002662) within the Wine Group site. The historic-period railroad segment (P-20-002662) does not meet the criteria for listing in the CRHR therefore it is not considered a historical resource for the purposes of CEQA. The other previously recorded built-environment resource is the MID Lateral 6.2 (P-20-002308/CA-MAD-2649H) within the three sites. Lateral 6.2 (P-20-002308/CA-MAD-2649H) is identified as a dirt-lined open canal, determined eligible as a contributor to the Central Valley Project, a statewide water conveyance system aimed to expand irrigation across California.

MID Lateral 6.2 (P-20-002308/CA-MAD-2649H) would be disturbed for installation of turnouts associated with the Project. However, following construction, the turnout components would be belowground and would not introduce significant new visual elements. In addition, the integrity of the Lateral 6.2 features that make the structure eligible for listing in the CRHR for its role in conveying Central Valley Project water from the Madera Canal to crop fields would not be materially impaired by installation of the turnouts (ESA, 2026). Therefore, the Project would not have the potential to cause a substantial adverse change to the significance of MID Lateral 6.2 (P-20-002308/CA-MAD-2649H) as defined in Section 15064.5 of the CEQA Guidelines.

Based on the above assessment, the Project would have a less-than-significant impact on historical resources and no mitigation is required.

- b) **Less Than Significant with Mitigation Incorporated.** Archaeological resources can be considered historical resources, according to CEQA Guidelines Section 15064.5, as well as unique archaeological resources, as defined in Public Resources Code (PRC) Section 21083.2(g).

No surface indications of archaeological resources were identified during the pedestrian survey. The results of the SSJVIC records search indicate that no previously recorded archaeological resources have been identified in or within 0.5-miles of the Project site. Archival maps and aerial photographs depict the Project site as undeveloped agricultural land and it is unlikely that any historic-period archaeological deposits (e.g., artifact-filled features such as wells or privies) are located within the Project site. However, a review of the relevant geologic maps indicated moderate sensitivity for buried pre-European contact archaeological deposits. Therefore, excavations related to the Project could encounter archaeological deposits and result in an adverse change to a buried archaeological deposit that could qualify as a historical resource and/or an archaeological resource. Thus, potentially significant impacts related to potential disturbance and damage to currently unknown buried archaeological deposits could result from the Project construction.

Implementation of **Mitigation Measure MM CUL-1**, which requires cultural resources awareness training for construction crews to be performed by an archaeologist meeting or under the supervision of an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards (SOI PQS) for Archeology,⁵ and implementation of **Mitigation Measure MM CUL-2**, which requires procedures in the event of inadvertent discovery of

⁵ U.S. Department of the Interior. 1983. *Archaeology and Historic Preservation; Secretary of the Interior's Standards and Guidelines*. Available online: <https://www.nps.gov/subjects/historicpreservation/upload/standards-guidelines-archeology-historic-preservation.pdf>.

cultural resources during construction, would ensure that impacts related to archaeological deposits that qualify as historical resources and archaeological resources would be reduced to less than significant.

MM CUL-1: Cultural Resources Awareness Training: Before any ground-disturbing and/or construction activities, an archaeologist meeting or under the supervision of an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards (SOI PQS) for Archeology shall conduct a training program for all construction and field personnel involved in Project-related ground disturbance prior to such personnel conducting any on-site activities. The training shall outline the general archaeological sensitivity of the area and the procedures to follow if an archaeological resource and/or human remains are inadvertently discovered during Project-related activities. This training shall be provided once to each worker involved in ground-disturbing activities before they begin work and shall be documented in training records submitted to the County.

MM CUL-2: Inadvertent Discovery of Cultural Resources: If pre-European contact or historic-period archaeological resources are encountered during Project implementation, all construction activities within 100 feet shall halt, and a qualified archaeologist, defined as an archaeologist meeting the SOI PQS, shall inspect the find and notify the County of their initial assessment. Pre-European contact archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse.

If the County determines, based on coordination with the SOI PQS archaeologist and a Native American representative (if the resource is pre-European contact and a tribe has requested consultation), that the resource may qualify as a historical resource or unique archaeological resource (as defined in CEQA Guidelines Section 15064.5) or a tribal cultural resource (as defined in PRC Section 21080.3), the resource shall be avoided, if feasible. Consistent with Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement.

If avoidance is not feasible, the County shall consult with appropriate Native American tribes (if the resource is pre-European contact and a tribe has requested consultation), to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2, and CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery (according to PRC Section 21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource (according to PRC Section 21084.3).

- c) **Less Than Significant with Mitigation Incorporated.** Based on the records search and survey results, no human remains are known to exist at the Project site. While unlikely, it is possible that human remains could be encountered during construction. In the event that human remains are identified during Project activities, these remains would be required to be treated in accordance with Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the Public

Resources Code, as appropriate. Section 7050.5 of the California Health and Safety Code states that, in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the remains are discovered has determined whether or not the remains are subject to the coroner's authority. If remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission (NAHC) will identify a Native American Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.

Implementation of **Mitigation Measures MM CUL-1** and **CUL-2**, presented above, and compliance with the California Health and Safety Code as prescribed in **Mitigation Measure MM CUL-3**, below, which specifies procedures in the event of inadvertent discovery of human remains, would ensure that potential impacts to human remains would be less than significant.

MM CUL-3: Inadvertent Discovery of Human Remains: In the event of discovery or recognition of any human remains during construction activities, all such activities within 100 feet of the find shall cease until the County Coroner has been contacted to determine that no investigation of the cause of death is required. Pursuant to Section 7050.5 of the California Health and Safety Code, the NAHC shall be contacted within 24 hours if the Coroner determines that the remains are Native American. The NAHC shall then identify the person or persons it believes to be the most likely descendant from the deceased Native American, who, in turn, would make recommendations for the appropriate means of treating the human remains and any grave goods.

References

Environmental Science Associates (ESA), 2026. Madera Subbasin Recharge Project 1 Madera County, California: Cultural Resources Study.

3.2.6 Energy

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than-Significant Impact</i>	<i>No Impact</i>
VI. ENERGY — Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Environmental Setting

Pacific Gas and Electric (PG&E) provides electrical service to all developed areas of Madera County. Most electrical service in Madera County is provided by above-ground lines and transmission lines enter the County from the north, south, and east, with the major substations being outside the County (County of Madera 1995). In 2024 PG&E's electric power generation mix consisted of 63 percent nuclear, 23 percent unspecified renewables, 12 percent large hydroelectric, and 2 percent natural gas (PG&E 2025). According to the California Energy Commission (CEC), in 2024 the County of Madera consumed 1,687 Giga Watt-hours (GWh) of electricity. This is a 22 percent increase from the 1,378 GWh consumed in 2010 and a 0.76 percent decrease from the 1,700 GWh consumed in 2020 (CEC 2025a).

Currently, gasoline is the most commonly used transportation fuel by volume in California, with 97 percent of all gasoline in use by light-duty cars, pickup trucks, and sport utility vehicles (CEC 2025b). According to the CEC, an estimated 63 million gallons of gasoline were consumed in Madera County in 2024, which is a 10 percent increase from the 57 million gallons consumed in 2010 and similar to the 63 million gallons consumed in 2020 (CEC 2025c).

Diesel fuel is the second most commonly used transportation fuel by volume in California, with 17 percent of all fuel sales. According to the CEC, nearly all heavy-duty trucks, delivery vehicles, buses, trains, ships, boats and barges, farm equipment, construction equipment, military vehicles, and equipment have diesel engines (CEC 2025d). An estimated 44 million gallons of diesel were consumed in Madera County in 2024 which is an 83 percent increase from the 24 million gallons consumed in 2010 and a 37 percent increase from the 32 million gallons consumed in 2020 (CEC 2025c).

Discussion

- a-b) **Less-Than-Significant Impact.** Energy standards such as the Energy Policy Act of 2005 (U.S. EPA 2025) and the Renewables Portfolio Standard (RPS) (CEC 2025e), promote strategic planning standards intended to reduce the consumption of fossil fuels, increase the use of renewable resources, and enhance energy efficiency. In general, these regulations and policies specify statewide strategies to reduce fuel consumption and increase fuel efficiency and energy conservation. If the Project were to use energy resources in a wasteful manner, it would also conflict with state energy standards.

Construction activities for the Project would last approximately 1 year and would be conducted in a manner consistent with the goals and strategies of state energy standards. A full list of construction equipment anticipated to be used for the Project is included in Chapter 2, *Project Description, Construction Equipment and Schedule*. There would be a temporary increase in fuel demand (gasoline and diesel) that would result from the use of construction equipment and vehicles, haul trips to and from the Project sites, and vehicle trips generated by construction workers commuting to and from the Project sites. However, construction activities would use fuel-efficient equipment consistent with state and federal regulations, such as fuel efficiency regulations in CARB's Pavley Phase II standards (CARB 2025) and fuel requirements for stationary equipment in 17 CCR Section 93115 (concerning the Airborne Toxic Control Measures). Further, in accordance with 13 CCR Sections 2485 and 2449, idling commercial vehicles heavier than 10,000 pounds and off-road equipment exceeding 25 horsepower would be limited to a maximum of 5 minutes. Although the intent of these regulations is to reduce construction emissions, compliance with the anti-idling and emission reduction regulations would also result in fuel savings as a result of the use of more efficient equipment and through reductions in unnecessary use.

As discussed in Chapter 2, *Project Description*, flow meters would be electromagnetic or battery-powered and would require minimal maintenance. The Root Creek and Brock Moore recharge basins, maintained by the Root Creek Water District and the landowner, respectively, would require periodic discing and sediment removal to maintain infiltration rates. As a result, operation and maintenance activities would generally be infrequent and transportation fuel use overall during the operations and maintenance phase would be minimal.

Regarding the use of gasoline and diesel for operations and maintenance, landowners and the Root Creek Water District would be required to comply with all state and federal fuel efficiency regulations and energy conservation standards to reduce energy use and consumption as discussed above. When considering implementation of the state RPS program, the Project would not prevent the future use of renewable energy.

The total increase in gasoline, diesel, and electricity used during generally infrequent operations and maintenance activities associated with the Project would be minor in comparison to the approximately 63 million gallons of gasoline and 44 million gallons of diesel consumed in Madera County in 2024, and the 1,687 GWh of electricity used in Madera County in 2024; and therefore, would not constitute an excessive use of energy resources. Additionally, compliance with all applicable fuel standards, energy use reduction goals, and the RPS Program discussed above would serve to further reduce permanent operations and maintenance energy consumption associated with the Project.

The Project would be consistent with all applicable goals and policies adopted by the state and local jurisdictions that support increased energy efficiency, and the Project would not result in the wasteful, inefficient, or unnecessary consumption of energy. Therefore, impacts would be less than significant.

References

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3.2.7 Geology and Soils

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than-Significant Impact</i>	<i>No Impact</i>
VII. GEOLOGY AND SOILS — Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the 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 waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Environmental Setting

Madera County is divided into two major physiographic and geologic provinces: the Sierra Nevada Range and the Central Valley. The Sierra Nevada physiographic province in the northeastern portion of the County is underlain by metamorphic and igneous rock. It consists mainly of homogenous types of granitic rocks, with several islands of older metamorphic rock. The central and western parts of the County, within which the Project sites are located, are part of the Central Valley province, underlain by marine and non-marine sedimentary rocks. (Madera County 1995).

No Alquist-Priolo Earthquake Fault Zones or Seismic Hazard Zones are identified within Madera County (DOC 2025a and b). Geologic mapping by USGS (1964) indicates Pleistocene-age alluvial deposits are present at the surface within a majority of the Project area. To evaluate potential impacts on paleontological resources, ESA conducted a search of the online collections database of the University of California Museum of Paleontology for fossil localities from geologic units mapped as occurring on the Project sites.

Data provided by the museum's online database include taxonomic identification, locality number and name, age, and county, and sometimes geologic formation. The database does not provide precise data on localities; however, in some cases, the locality name can be used to refine the general vicinity of the locality within the County (UCMP 2026).

Discussion

- a.i–iv) **Less-Than-Significant Impact.** No Alquist-Priolo Earthquake Fault Zones or Seismic Hazard Zones have been identified within Madera County (DOC 2025b). According to the California Division of Mines and Geology, there are no active or potentially active faults of major historic significance within Madera County (Madera County 1995). While two significant faults exist within the broader region and may generate seismic activity, the Project sites are not located within an area subject to rupture of a known fault.

The Project would involve construction of water conveyance turnouts, conveyance pipelines, and recharge basins. The Project components do not include habitable structures or occupied facilities. Therefore, the Project would not place people in structures at risk from seismic hazards such as fault rupture, strong ground shaking, liquefaction, or landslides. Although strong seismic shaking could occur during a regional earthquake, compliance with California Building Code seismic design standards would minimize risk to infrastructure.

The portion of Madera County within which the Project sites are located is essentially flat and topographically featureless, resulting in negligible landslide risk (Madera County 1995). The Project sites are not located in an area with high landslide susceptibility. Given the absence of mapped seismic hazard zones, the lack of habitable structures, and adherence to applicable building codes, the Project would not expose people or structures to substantial adverse effects related to seismic rupture, strong seismic shaking, seismic-related ground failure (including liquefaction), landslides, or other soil-related hazards. Therefore, potential impacts would be less than significant.

- b) **Less-Than-Significant Impact.** The construction activities associated with the Project would involve ground-disturbing earthwork, including earthmoving, excavation, and grading. It is anticipated that excavated soils would be reused with the Project for the recharge basin embankments and pipeline trench backfill, and that earthwork would be balanced at each Project site without import or export of soil. Project construction soils disturbance could increase the susceptibility of disturbed soils on the Project sites to erosion by wind or water and subsequently result in the loss of topsoil. As the Project would result in over 1.0 acre of ground disturbance, a Stormwater Pollution Prevention Plan (SWPPP) would be developed and implemented as part of Project construction in accordance with a *National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharge Associated with Construction and Land Disturbance Activities (NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities* (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ) (Construction General Permit). The SWPPP would identify Best Management Practices (BMPs) designed to control run-on and run-off and prevent soil erosion and sedimentation associated with construction-related disturbance. The BMPs would include stormwater runoff quality control

measures, such as watering for dust control use of gravel bags and silt fences, covering of soil stockpiles, as needed. Implementation of these soil and erosion control measures and compliance with these independently enforceable requirements of the Construction General Permit would reduce the Project's potential impacts associated with soil erosion and loss of topsoil during construction to less than significant.

- c) **Less-Than-Significant Impact.** As discussed above, the Project sites are not within a fault, liquefaction, or landslide zone (DOC 2025b). Land subsidence occurs when a large portion of land is displaced vertically, usually due to the withdrawal of groundwater, or oil and gas. Some areas of the San Joaquin Valley have experienced substantial amounts of subsidence, in excess of 20 feet over the past 50 years. The Project would not include dewatering or other construction-phase activities that could exacerbate land subsidence. In fact, by implementing a phased floodwater recharge program within the Madera Subbasin, the Project is designed to enhance sustainable groundwater levels, which may help reduce long-term subsidence risks in the area.

As discussed above, the Project would be subject to the regulations and standards included in the California Building Code (CBC), which would require the preparation of a site-specific geotechnical report by a licensed geotechnical engineer, certified by the State of California. The report would be used to inform the specific design elements of the Project components to ensure the structures associated with the Project are suitable to withstand any potential damage due to unstable soils. Additionally, while the Project is not expected to result in significant impacts related to landslides and subsidence, the site-specific geotechnical investigation would include the analysis of the potential for landslides and subsidence. Compliance with the CBC would ensure impacts related to landslides and other unstable soils would be less than significant.

- d) **Less-Than-Significant Impact.** Expansive soils are soils that possess a “shrink-swell” characteristic, also referred to as linear extensibility. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying; the volume change is reported as a percent change for the whole soil. This characteristic is measured using the coefficient of linear extensibility (COLE) (NRCS 2024). The Natural Resources Conservation Service (NRCS) relies on linear extensibility measurements to determine the shrink-swell potential of soils. If the linear extensibility percent is more than 3 percent (COLE=0.03), shrinking and swelling may cause damage to buildings, roads, and other structures (NRCS 2024). Changes in soil moisture can result from rainfall, landscape irrigation, utility leakage, roof drainage, and/or perched groundwater. Expansive soils are typically very fine-grained and have a high to very high percentage of clay. Structural damage may occur incrementally over a long period of time, usually as a result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils.

NRCS Web Soil Survey data indicates the soils underlying the Project sites primarily have between a 0.3 and 1.5 percent linear extensibility rating, which is considered low linear extensibility rating (NRCS 2026). Small portions of the Brock Moore site (0.4 percent of the site) and Waterlands site (3.2 percent of the site) have soils with a 7.5 linear extensibility which is considered high but given the small amount of these soils it is not anticipated to result in a significant exposure to expansive soils. Nonetheless, geotechnical investigations are required as

part of final Project component design to address expansion potential. As needed based on the geotechnical investigations of site-specific conditions, measures would be included in the geotechnical report that would provide design recommendations and requirements sufficient to address any risk associated with soil expansion. The impacts of the Project would be less than significant.

- e) **No Impact.** None of the Project components include the use of septic tanks or an alternative wastewater disposal system, therefore there would be no impact under this criterion.
- f) **Less Than Significant with Mitigation Incorporated.** Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones; mammals, birds, fish, etc.), invertebrates (animals without backbones; starfish, clams, coral, etc.), and microscopic plants and animals (microfossils), and can include mineralized body parts, body impressions, or footprints and burrows. They are valuable, non-renewable, scientific resources used to document the existence of extinct life forms and to reconstruct the environments in which they lived. A significant impact would occur if a project would destroy a unique paleontological resource or site, or a unique geologic feature.

In its “Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources,” the Society of Vertebrate Paleontology (SVP) defines four categories of paleontological potential for rock units: high, low, undetermined, and no potential: **High Potential**, rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources; **Low Potential**, rock units that are poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule; **Undetermined Potential**, rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment; and **No Potential**, rock units like high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites) that will not preserve fossil resources (SVP 2010).

The Project would involve construction of water conveyance turnouts, conveyance pipelines, and recharge basins. It is anticipated that excavated soils would be reused with the Project for the recharge basin embankments and pipeline trench backfill, and that earthwork would be balanced at each site without import or export of soils.

The risks of encountering and/or destroying paleontological resources increase with the amount of ground disturbance associated with a project; ground-disturbing activities that would not require mass excavation of soil (i.e., post driven into the ground) would have a minimal impact on paleontological resources, as there would be little to no material to observe. Ground disturbance that includes mass open excavation or situations where excavation spoils may be examined, has a greater impact and an increased likelihood of encountering significant paleontological resources. If ground disturbance and/or excavation associated with the Project encounters and inadvertently damages or destroys significant paleontological resources, this would be a potentially significant impact. While the transition from Pleistocene-age alluvium and

the older deposits is unknown at the Project sites, the planned excavation associated with the Project is relatively minimal and would be constrained within the Project site boundaries. Given that the upper layers of Pleistocene-age deposits have a low potential to contain significant paleontological resources, and that the Project sites are within agricultural fields and have been previously disturbed, the potential to encounter significant paleontological resources is low. While no such resources are known to be present, excavations needed for installing Project components (e.g., turnouts, conveyance pipeline, recharge basin, embankments) in alluvium underlying the sites would have the potential to unearth previously unknown unique paleontological resources. **Mitigation Measure MM GEO-1** 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.

MM GEO-1: Paleontological Resources Protection: 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 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.

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United States Geologic Survey, 1964. National Geologic Map Database. Geologic map of parts of Fresno, Merced, and San Benito Counties, California. Scale 1:250,000.

3.2.8 Greenhouse Gas Emissions

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than-Significant Impact</i>	<i>No Impact</i>
VIII. GREENHOUSE GAS EMISSIONS — Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Environmental Setting

Greenhouse gases (GHGs) trap heat in the atmosphere by preventing some of the solar radiation that hits the earth from being reflected back into space. Some GHGs occur naturally and are needed to keep the earth's surface habitable. However, over the past 100 years, human activities have substantially increased the concentration of GHGs in our atmosphere. This has intensified the natural greenhouse effect, increasing average global temperatures.

Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs) are the principal GHGs. When concentrations of these gases exceed historical concentrations in the atmosphere, the greenhouse effect is intensified. CO₂, CH₄, and N₂O occur naturally and are also generated through human activity. Emissions of CO₂ are largely byproducts of fossil fuel combustion, whereas CH₄ results from off-gassing, natural gas leaks from pipelines and industrial processes, and incomplete combustion associated with agricultural practices, landfills, energy providers, and other industrial facilities. N₂O emissions are also largely attributable to agricultural practices and soil management. Other human-generated GHGs include fluorinated gases such as HFCs, PFCs, and SF₆, which have much higher heat-absorption potential than CO₂ and are byproducts of certain industrial processes.

GHG emissions worldwide cumulatively contribute to the global climate change. No single project could generate sufficient GHG emissions on its own to noticeably change the global average temperature. The combination of GHG emissions from past, present, and future projects in the San Joaquin Valley; the entire State of California; across the nation; and around the world contribute cumulatively to the phenomenon of global climate change and its associated environmental effects.

Discussion

- a, b) **Less-Than-Significant Impact.** The San Joaquin Valley Air Pollution Control District's (SVJAPCD's) greenhouse gas (GHG) guidance (SVJAPCD, 2009) is intended to streamline CEQA review by pre-quantifying emissions reductions that would be achieved through the implementation of Best Performance Standards. A project is considered to have a less-than-significant cumulative impact associated with GHG emissions and climate change if it meets any of the following conditions:

1. Comply with an approved GHG reduction plan.

2. Reduce operational GHG emissions by at least 29 percent using any combination of approved operational Best Performance Standards.
3. Reduce operational GHG emissions by at least 29 percent over business-as-usual (BAU) conditions (demonstrated quantitatively).

Since Madera County currently has not adopted a GHG reduction plan, Option 1 (listed above) is inapplicable. Options 2 and 3 both require projects to achieve GHG reductions consistent with the goals of Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, to reduce statewide GHG emissions to 1990 levels by 2020 (equivalent to a 29 percent reduction over business-as-usual [BAU] conditions).

However, since publication of SVJAPCD's GHG guidance in 2009, the California Supreme Court has considered the CEQA issue of determining the significance of GHG emissions, in its decision in *Center for Biological Diversity v. CDFW and Newhall Land and Farming* (*Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 62 Cal.4th 204). In the Newhall decision, the court questioned a common CEQA approach to GHG analyses for development projects that compared project emissions to the reductions from BAU that would be needed statewide to reduce emissions to 1990 levels by 2020, as required by AB 32. The court upheld the BAU method as valid in theory but concluded that the method was applied improperly in the case of the Newhall project, finding that the project's target was incorrectly deemed consistent with the statewide emission target of 29 percent below BAU for the year 2020. In other words, the court ruled that the percent-below-BAU target developed by the AB 32 Scoping Plan is intended as a measure of the GHG reduction effort required by the state as a whole, and it cannot necessarily be applied to the impacts of a specific project in a specific location.

The California Supreme Court provided some guidance for evaluating the cumulative significance of a proposed land use project's GHG emissions but noted that none of the approaches could be guaranteed to satisfy CEQA for a particular project. The court's suggested "pathways to compliance" can include one or more of the following:

- Use a geographically specific GHG emissions reduction plan (e.g., climate action plan) that outlines how the jurisdiction will reduce emissions consistent with state reduction targets, to provide the basis for streamlining project-level CEQA analysis, as described in State CEQA Guidelines Section 15183.5.
- Use the Scoping Plan's BAU reduction goal but provide substantial evidence to bridge the gap between the statewide goal and the project's emissions reductions.
- Assess consistency with AB 32's goal in whole or part by looking to comply with regulatory programs designed to reduce GHG emissions from particular activities. As an example, the court points out that projects consistent with a Senate Bill 375 sustainable communities strategy may need to re-evaluate GHG emissions from cars and light trucks.
- Rely on existing numerical thresholds of significance for GHG emissions, such as those developed by an air district.

Given the construction period of 1 year and the types and numbers of construction equipment needed, total GHG emissions from Project construction amortized over a 30-year period would be below the Bay Area Air District (formerly the Bay Area Air Quality Management District) significance threshold of 1,100 metric tons of CO₂ equivalent per year (Appendix A). Construction of the Project would not result in a cumulatively considerable increase in GHG emissions, and this impact would be less than significant.

As discussed previously, operational GHG emissions for the Project would primarily be generated by on-road vehicular traffic during maintenance trips. However, employee trips required for periodic maintenance, such as servicing flow meters, would generally be infrequent and minor in activity resulting in negligible GHG emissions over the life of the Project. The new operational water pump at the Waterlands site would be powered by either diesel engines or electric motors. If using diesel power, the pump would be driven using power take off units or trailer mounted pump that is powered by a vehicle engine. These operational activities would occur infrequently and the vehicles that would power the pump would be pre-existing equipment already in operation by the landowner. Overall, the proposed motor would emit negligible amounts of GHGs over the lifetime of the Project and would not result in a cumulatively considerable increase in GHG emissions. Further, electric service would be provided by PG&E which has its own GHG reduction goals including net zero emissions by 2040 (PG&E 2026). Therefore, operation of the Project would have a less-than-significant impact related to GHG emissions.

References

- Association of Environmental Professionals (AEP), 2016. Final White Paper Beyond 2020 and Newhall, A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California. Available online: https://califaep.org/docs/AEP-2016_Final_White_Paper.pdf. Accessed January 2026.
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3.2.9 Hazards and Hazardous Materials

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than- Significant Impact</i>	<i>No Impact</i>
IX. HAZARDS AND HAZARDOUS MATERIALS — Would the project:				
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?	☐	☐	☒	☐

Environmental Setting

In California, Government Code Section 65962.5 requires the State Water Resources Control Board (SWRCB) and the California Department of Toxic Substance Control (DTSC) to maintain regulatory databases listing hazardous materials sites; the list is also referred to as the Cortese List. The Cortese List identifies sites with suspected and confirmed releases of hazardous materials to the subsurface soil and/or groundwater. The listed sites can be accessed through the SWRCB's GeoTracker database and the DTSC EnviroStor database. The reporting and statuses of these sites change as identification, monitoring, and clean-up of hazardous materials sites progress.

A database search of both EnviroStor and GeoTracker identified no open hazardous clean-up sites within the Project sites (DTSC 2025; SWRCB 2025). One closed hazardous clean-up site (Paul Mason Cellars [T0603900140]) is located within the Wine Group site; however, clean-up of contaminated soils (diesel contamination) at this site has been completed, and the case has been closed since August 2006. The nearest open hazardous clean-up site to any of the Project sites is the Central California Women's Facility in Chowchilla (T10000011258), which is located 1.7 miles to the northwest of the Wine Group site and is eligible for closure as of January 2018 (SWRCB 2025).

There are two public airports within Madera County; these include the Madera Municipal Airport and the Chowchilla Municipal Airport (Madera County 1995). The Project site closest to either airport is the Wine Group site which is located 6.1 miles northeast of the Madera Municipal Airport and 6.5 miles southeast of the Chowchilla Municipal Airport.

The Project sites are located within the Chowchilla Elementary District (Wine Group) and the Golden Valley Unified District (Brock Moore, Waterlands, and Root Creek). The closest school to any of the Project sites is Webster Elementary School which is approximately 0.5 miles to the south of the Waterlands site (Dept. of Education 2025).

Within California, the California Department of Forestry and Fire Protection (CAL FIRE) designates fire hazard severity zones. CAL FIRE uses a five-tiered ranking system to assess the threat to people based on fuel hazard, wildland fire potential, and housing density. The Project sites are not located within a state responsibility area (SRA) managed by CAL FIRE; however, they are located within a local responsibility area (LRA) which would be served by the Madera County Fire Department. The Wine Group, Root Creek, and Brock Moore sites are un-zoned equating to an overall low fire hazard severity. The Waterlands site is partially zoned as a Moderate Fire Hazard Severity along its northern edge; however, the majority of the site is un-zoned (CAL FIRE 2025).

In the event of a wildfire the Madera County Fire Department would be the first responders to the Project sites. The closest County fire stations are Station 2 Chowchilla and Station 19 Bonadelle Ranchos. Station 2 would serve the Wine Group site and is approximately 7.5 miles to the northwest, Station 19 would serve the Waterlands site (approximately 1.2 miles northwest), Brock Moore site (approximately 3.6 miles northwest), and the Root Creek site (approximately 4.2 miles north). Station 2 is unstaffed and supported by paid call firefighters and has one fire engine and one water tender. Station 19 is staffed by paid firefighters and staffed 24 hours a day by a fire captain and engineer. The station includes three fire engines, one haz-mat vehicle, one water tender, and a support vehicle (Madera County Fire Department 2025).

Discussion

- a, b) **Less-Than-Significant Impact.** Construction activities associated with the Project would require the use of small quantities of hazardous materials such as diesel fuel, gasoline, oils, grease, equipment fluids, cleaning solutions and solvents, lubricant oils, and adhesives. The Project would also include earthmoving activities including grading and trenching for turnout and pipeline installation associated with water conveyance to each of the Project sites and development of embankments for the Root Creek site recharge basin.

During construction, contractors handling, storing, or transporting hazardous materials or wastes would comply with hazardous materials regulations, such as implementation of a SWPPP and BMPs, in compliance with NPDES Construction General Permit which would reduce the risk of accidental release and provide protocols and notification requirements should an accidental release occur.

Any spills of these substances would be cleaned on-site according to the SWPPP and NPDES Construction General Permit. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures,

equipment inspections, equipment, and fuel storage; and describe protocols for responding immediately to spills; and describe BMPs for controlling site run-on and runoff. The SWPPP prepared for the Project would also identify BMPs to ensure the lawful transport, use, storage, and disposal of hazardous materials.

As discussed in Chapter 2, *Project Description*, operation, and maintenance activities would be infrequent, and staff would only be on-site for a temporary period of time. Flow meters would be electromagnetic and would require minimal maintenance. The Brock Moore recharge basin (maintained by the landowner) and the Root Creek recharge basin (maintained by the Root Creek Water District) would require periodic discing and sediment removal to maintain infiltration rates. No hazardous materials would be stored on-site. Operations and maintenance activities would be infrequent; staff would comply with all relevant federal, State, and local laws regarding hazardous material transportation, use, storage and if needed clean-up of spills.

By complying with all relevant regulations pertaining to hazardous materials and implementing a Project-specific SWPPP and associated BMPs, the Project would not result in a significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous materials and would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials. Therefore, the impacts would be less than significant.

- c) **No Impact.** There are no schools located within one-quarter mile of the Project sites. Furthermore, fuels, oils, and lubricants used during the proposed construction and operations and maintenance activities would be handled in accordance with material safety storage and handling protocols and BMPs discussed above that would contain and prevent spills from occurring on the Project sites. Therefore, no impact would occur.
- d) **No Impact.** There are no active hazardous material site cases within the Project sites. As discussed in the Environmental Setting section above, one listed hazardous material site (Paul Mason Cellars [T0603900140]) is located within the Wine Group site; however, clean-up of contaminated soils (diesel contamination) at this site has been completed, and the case has been closed since August 2006 (SWRCB 2025). The Project would not be located on a hazardous materials site, and no impact would occur.
- e) **No Impact.** The nearest public airport to the Project sites is the Madera Municipal Airport approximately located approximately 6.1 miles to the northeast of the Wine Group site. The Project is not located within an airport land use plan or within 2 miles of a public airport or public use airport. No impact would occur.
- f) **No Impact.** During construction, there would be up to approximately 20 workers periodically traveling to and from the Project sites. The Project would require trenching along portions of private dirt roads and an approximately 0.8-mile segment of one public road (Avenue 10) to install pipes and turnouts. These construction activities would be temporary and would not be expected to disrupt movement of emergency vehicle to or through construction areas. Additionally, there are many roadways and access roads in the area near each of the Project sites that can serve

as alternative routes should an emergency occur. At completion of construction these areas would be restored to pre-Project conditions.

Proposed infrastructure would be operated and maintained by the landowners, including maintenance of mechanical equipment such as fueling, lubrication, etc. Flow meters would be electromagnetic and would require minimal maintenance. The Root Creek and Brock Moore recharge basins would require periodic discing and sediment removal to maintain infiltration rates. Therefore, operation and maintenance activities would be minor and there would not lead to a permanent substantial increase in the number of people working or residing at or near the Project sites. The Project would not impair implementation of or physically interfere with any adopted emergency response plan or emergency evacuation plan. Therefore, no impact would occur.

- g) **Less-Than-Significant Impact.** The Project sites are not located in an SRA; however, the sites are located within an LRA. The Project sites are generally un-zoned equating to a low fire hazard severity although a small portion of the Waterlands site is zoned as a Moderate Fire Hazard Severity along the northern edge (CAL FIRE 2025).

The Project pipelines would be routed down existing unimproved private roads and one public road (Avenue 10) with little to no existing vegetation within construction areas.

The Project sites are located in a rural area. In the event of a fire the Madera County Fire Department would be contacted, the closest County fire stations are Station 2 Chowchilla near the Wine Group site and Station 19 Bonadelle Ranchos near the Brock Moore, Root Creek, and Waterlands sites (Madera County Fire Department 2025). Rural roads are generally less congested than urban roads and emergency responders would be able to quickly respond in the event of an emergency. Additionally, the areas in which the Project sites are located have a network of roads that would provide access to emergency service providers in the event of a fire. The Project would not introduce new housing or facilities for workers. For these reasons, the Project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires, and the impact would be less than significant.

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3.2.10 Hydrology and Water Quality

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than-Significant Impact</i>	<i>No Impact</i>
X. HYDROLOGY AND WATER QUALITY — Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
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?	☐	☐	☒	☐

Environmental Setting

The Project is located in the eastern part of the Madera Subbasin of the San Joaquin Valley Groundwater Basin in Madera County in the Central San Joaquin Valley, part of the Great Valley of California. The Valley is bordered by the Sierra Nevada Mountain Range to the east, the Coast Range to the west, the Klamath Mountains and Cascade Range to the north, and the Transverse Range and Mojave Desert to the south. In general, Valley floor hydrology originates from stormwater and snowmelt runoff via the watersheds of surrounding mountain ranges.

The San Joaquin Valley experiences a Mediterranean climate with warm, dry summers and cool, moist winters. Summer temperatures often reach above 90 degrees Fahrenheit, and the humidity is generally low. Winter temperatures are often below 60 degrees Fahrenheit during the day and rarely exceed 70 degrees. On average, the Central Valley receives 12 inches of rainfall annually, which primarily occurs between the months of October and March.

The Project is located within the San Joaquin River Hydrologic Region. The San Joaquin River Hydrologic Region covers about 15,200 square miles in the northern part of the San Joaquin Valley, the

southern part of the Sacramento-San Joaquin Delta, and parts of the Sierra Nevada and Diablo Mountain ranges (RWQCB 2019). The San Joaquin River is the primary waterway in the Project area. It runs parallel to the Chowchilla Bypass on the western side of the Project area and is located approximately 3 miles to the west.

Surface water quality in the region is generally considered good. Water bodies nearby the Project include Berenda Creek listed as Section 303(d) impaired for Toxicity and Chlorpyrifos; Berenda Slough listed as Section 303(d) impaired for toxicity, chlorpyrifos, copper and dissolved oxygen; Cottonwood Creek listed as Section 303(d) impaired for copper, diuron and indicator bacteria; and San Joaquin River (Friant Dam to Mendota Pool) listed as Section 303(d) impaired for invasive species, pH and water temperature (U.S. EPA 2025).

The Madera Subbasin consists of lands overlying the alluvium in Madera County. The Subbasin is bounded on the south by the San Joaquin River, on the west by the eastern boundary of the Columbia Canal Service area, on the north by the south boundary of the Chowchilla Subbasin, and on the east by the crystalline bedrock of the Sierra Nevada foothills (DWR 2004). Groundwater levels in the Project area are approximately 120 feet below ground surface (bgs) (DWR 2025).

Discussion

- a) **Less-Than-Significant Impact.** Construction of the Project would involve ground-disturbing earthwork, including earthmoving, trenching and other excavation, grading, and stockpiling. Construction disturbance has the potential to create conditions for increased erosion and sediment runoff from construction areas which could increase turbidity in downstream receiving waters. In addition, the use of construction equipment would have the potential to result in an accidental release of fuels, oils, solvents, hydraulic fluid, and other construction-related fluids to the environment, thereby degrading water quality.

As described in the *Geology and Soils* Section, the contractor would be required to comply with the NPDES Construction General Permit for Discharges of Stormwater Associated with Construction Activities (Construction General Permit) from the SWRCB before initiating ground-disturbing activities. Among the permit's conditions would be preparation and implementation of a SWPPP that would identify and require implementation of BMPs to prevent sediment and other construction-related compounds (e.g., fuel, oil) from entering stormwater runoff. Compliance with the NPDES Construction General Permit, including the implementation of BMPs described in the SWPPP, would ensure that Project construction would avoid and/or minimize the potential impact of soil erosion or the loss of topsoil during construction, and would control construction-related compounds in stormwater runoff. Therefore, potential water quality impacts to surface and groundwater associated with construction would be less than significant.

Once construction is completed, Project operation and maintenance activities would not involve activities with the potential to result in significant increases in sediment or other potential pollutants discharged into receiving waters. As a result, impacts on water quality from the Project's operation and maintenance activities would be less than significant.

- b) **No Impact.** The Project would contribute to sustainable groundwater management in the Madera Subbasin by implementing a groundwater recharge program to utilize flood flows available as Section 215 water from the Friant Division. The Project would not increase or otherwise influence extraction of groundwater from the Madera Subbasin. Therefore, no change in irrigation or domestic pumping would occur under the Project. The Project would benefit the Madera Subbasin by providing groundwater recharge that would not otherwise occur. Therefore, the Project would not decrease groundwater supplies or interfere with groundwater recharge such that it would impede sustainable groundwater management in the basin.
- c.i-iv) **Less-Than-Significant Impact.** The Project would not alter the course of a river or stream. The Project would involve construction of turnouts from MID laterals for groundwater recharge. The Project would not increase the amount of water in the MID laterals, but would utilize Section 215 water diverted from the laterals for groundwater recharge at the Project sites. The Project would not alter existing drainage patterns in a manner that would have the potential to result in erosion, flooding, or other adverse effects associated with flood flows. Therefore, this impact would be less than significant.
- d) **Less-Than-Significant Impact.** The Project is not located in a tsunami or seiche zone. The Brock Moore site is entirely within Flood Zone X which is outside the 100-year flood zone. The Root Creek site is approximately half Flood Zone X and half Flood Zone AE. Flood Zone AE is a high-risk flood area and within the 100-year flood zone which has a 1-percent chance of occurring in any given year (100-year flood). The Waterlands site is primarily Zone X but has small portions of Zone AE and A. Flood Zone A is also within the 100-year flood zone. The Wine Group site is primarily an area of minimal flood hazard (Flood Zone X) but a small portion is within Flood Zone A. The Project would distribute Section 215 water to the application areas for either direct recharge through recharge basins or application to farmland for Flood-MAR. The Root Creek and Brock Moore recharge basins would require periodic discing and sediment removal to maintain infiltration rates. No maintenance supplies would be stored on-site. The Madera Subbasin's network of monitoring wells includes water quality testing of groundwater along with annual reporting. This information is utilized to assess potential for pollutants in groundwater with follow-up actions if ever needed. Therefore, impacts related to risk release of pollutants due to project inundation would be less than significant.
- e) **Less-Than-Significant Impact.** As described above under checklist items a) and b), the Project would comply with the NPDES Construction General Permit, including the implementation of BMPs described in the SWPPP to prevent water quality pollutants such as silt, sediment, hazardous materials, and construction-related fluids from entering receiving waters. The Project would utilize Section 215 for groundwater recharge within the Madera Subbasin and would be consistent with the goals of the Madera Subbasin Joint GSP. Therefore, the Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, and this impact would be less than significant.

References

California Department of Water Resources (DWR), 2019. Bulletin 118 Groundwater Basin Boundary Assessment Tool. <https://gis.water.ca.gov/app/bbat/> Accessed December 19, 2025.

California Department of Water Resources (DWR), 2004. California's Groundwater Bulletin 118, San Joaquin Valley Groundwater Basin, Madera Subbasin. February 27, 2004.

California Department of Water Resources (DWR), 2025. SGMA Data Viewer. Available online: <https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#gwlevels>. Accessed December 19, 2025.

RWQCB, 2019. Sacramento River Basin and San Joaquin River Basin Water Quality Control Plan. Revised February 2019.

United States Environmental Protection Agency (U.S. EPA), 2024. Final 2024 California Integrated Report (Clean Water Act Section 303(d) List/305(b) Report). Approved by EPA December 13, 2024. Available online: https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/202-integrated-report.html. Accessed December 19, 2025.

3.2.11 Land Use and Planning

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than- Significant Impact</i>	<i>No Impact</i>
XI. LAND USE AND PLANNING — Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Environmental Setting

The Project sites are located in the eastern part of the Madera Subbasin in Madera County. Each Project site has a Madera County General Plan land use designation of AE (Agriculture Exclusive) and zoning classification of ARE-40 (Agricultural, Rural, Exclusive (40 acre) District).

Discussion

- a) **No Impact.** The Project sites are not located within established communities. The Project would not involve construction activities or permanent components that would physically divide an established community. Therefore, there would be no impact.
- b) **No Impact.** Each Project site has a Madera County General Plan land use designation of AE (Agriculture Exclusive) and zoning classification of ARE-40 (Agricultural, Rural, Exclusive (40 acre) District) (Madera County 2025). This land use designation and zoning classification permits agricultural activities along with limited support facilities (such as barns, feed storage, and silos), agriculturally related services (including wineries and cotton gins), timber production, mineral extraction, airstrips, waste disposal sites, recreational uses, and other similar or compatible uses (Madera County 1995). The Project would utilize flood flows available as Section 215 water for groundwater recharge on lands in the Madera County GSA. The Project's proposed recharge basins and Flood-MAR groundwater recharge components are consistent with the General Plan land use designation and zoning, and consistent with the Madera Subbasin GSP. The Project would not interfere or conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

References

Madera County, 1995. Madera County General Plan Background Report. Adopted October 24, 1995. Available online: <https://www.maderacounty.com/home/showpublisheddocument/2852/636480653566630000>. Accessed December 18, 2025.

Madera County, 2025. Madera County Zoning Map Viewer. Available online: <https://map.viewprogis.com/ecp/maderacounty-ca?widget=a619095c-0cd8-499c-8a56-42a5b0ce5b5b#>. Accessed December 18, 2025.

3.2.12 Mineral Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than- Significant Impact</i>	<i>No Impact</i>
XII. MINERAL RESOURCES — Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Environmental Setting

Mineral resources are essential for California’s housing, infrastructure, and energy transition. Under the guidance of the State Geologist, mineral land classification studies are conducted as specified under the Surface Mining and Reclamation Act (SMARA). To promote mineral resource conservation, SMARA established a two-phase process known as classification and designation. Classification is the process of identifying lands containing significant mineral deposits, Mineral Resource Zones (MRZs), and is conducted by the State Geologist, while designation is the formal recognition by the State Mining and Geology Board (SMGB), after consultation with lead agencies and other interested parties, of areas containing mineral deposits of regional or statewide significance. MRZs are established to guide land use planning and to protect mineral resources from being lost to development or incompatible uses. The Project sites are not located within an area classified as a significant mineral resource by the State Geologist, and no active mines are present within the Project sites (DOC 2016; USGS 2025a).

Critical minerals, as defined by the Energy Act of 2020, are minerals that: are important to the economy and national security of the United States, have supply chains that are threatened if disruption were to occur, and are an essential component in the manufacturing of a product that can inflict negative impacts in the event of its absence (USGS 2025b). The list of critical minerals, as well as methodology, are developed at minimum once every 3 years under the guidance of the United States Geological Survey. No known critical minerals are located within the Project sites (USGS 2025b).

Discussion

- a, b) **No Impact.** The Project sites do not include any active or formerly active mines (DOC 2016) or any known minerals, critical or non-critical (USGS 2025a). The Project sites are not located in an area recognized by the State Geologist as an MRZ. Thus, the Project would have no impact on the availability of a known mineral resource of statewide or local importance.

References

- California Department of Conservation (DOC), 2016. Division of Mines Reclamation Interactive Map. Available online at <https://maps.conservation.ca.gov/mol/index.html>. Accessed December 14, 2025.
- United States Geological Survey (USGS), 2025a. Mineral Resources Data System Map. Available online at <https://mrdata.usgs.gov/mrds/map-graded.html#home>. Accessed December 14, 2025

United States Geologic Survey (USGS), 2025b. What Are Critical Minerals?. Available online at <https://www.usgs.gov/programs/mineral-resources-program/science/what-are-critical-minerals-0>. Accessed December 14, 2025.

3.2.13 Noise

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than-Significant Impact</i>	<i>No Impact</i>
XIII. NOISE — Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
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?	☐	☐	☐	☒

Environmental Setting

Noise Terminology

Sound is mechanical energy transmitted by pressure waves through a medium such as air, while noise is defined as unwanted sound. Sound pressure level is measured in decibels (dB), with 0 dB corresponding roughly to the threshold of human hearing and 120–140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements.

When a new noise is introduced to an environment, the human reaction can be predicted by comparing the new noise to the ambient noise level, which is the existing noise level consisting of noise from all sources in a given location. In general, the more a new noise exceeds the ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise levels, the following relationships occur (Caltrans 2013).

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived.
- Outside of the laboratory, a 3-dB change is considered a just-perceivable difference.

- A change in level of at least 5 dB is required before any noticeable change in human response would be expected.
- A 10-dB change is subjectively heard as approximately a doubling in loudness and can cause an adverse response.

The perceived increases in noise levels described above are applicable to both mobile and stationary noise sources. These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence, the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise exposure is a measure of noise over a period of time. Noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short-duration single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual receptor. These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts.

This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{dn}: A 24-hour day and night A-weighted noise exposure level, which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night (“penalizing” nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dB to take into account the greater annoyance of nighttime noises.

CNEL: The Community Noise Equivalent Level (CNEL); similar to L_{dn}, the CNEL adds a 5-dB “penalty” for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dB penalty between the hours of 10:00 p.m. and 7:00 a.m.

L_{eq}: The energy-equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level, which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

L_{max}: The instantaneous maximum noise level for a specified period of time.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of 6 to 7.5 dBA per doubling of distance from the source, depending on the topography of the area and environmental conditions (e.g., atmospheric conditions and noise barriers, vegetative or manufactured). Widely distributed noise, such as a large industrial facility spread over many acres or a street with moving vehicles (known as a *line source*), would typically attenuate at a lower rate, approximately 3 to 4.5 dBA each time the distance doubles from the source, which also depends on environmental conditions (Caltrans 2013). Noise from large construction sites exhibits characteristics of both point and line sources; therefore, attenuation will generally range between 4.5 and 7.5 dBA each time the distance doubles.

Vibration Terminology

As described in the Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Manual, groundborne vibration can be a serious concern for nearby neighbors, causing buildings to shake and rumbling sounds to be heard (FTA 2018).

Several different methods are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal, which is measured in inches per second. The PPV is most frequently used to describe vibration impacts on buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to express RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Typically, groundborne vibration generated by human-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration assessment include structures (especially older masonry structures), people who spend a lot of time indoors (especially residents, students, the elderly and sick), and vibration-sensitive equipment such as hospital analytical equipment and equipment used in computer chip manufacturing.

The effects of groundborne vibration include the movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction, which would not occur under the Project. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin.

Existing Conditions

The noise environment in the area surrounding the Project site is characterized by rural roadways and agricultural and grazing lands. It includes low-volume traffic noise from passenger vehicles and large trucks, as well as agricultural equipment. The U.S. Environmental Protection Agency estimates that residents of rural or other non-urban areas are exposed to outdoor ambient noise levels ranging from 35 to 50 dBA L_{dn} (U.S. EPA 1974). Since the area surrounding the Project site can be categorized as a rural or other non-urban area, it is assumed that ambient noise levels would range between 35 and 50 dBA L_{dn} .

Sensitive Receptors

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication, and can cause physiological and psychological stress and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. The Madera County General Plan defines noise-sensitive receptors as residences, schools, hospitals, and convalescent homes (Madera County 1995). Places such as churches, libraries, and cemeteries (where people tend to pray, study, and/or contemplate) are also sensitive to noise. Commercial and industrial uses are considered the least noise sensitive.

The Project consists of four different sites located in areas with land uses consisting of rural, agricultural, and grazing areas. The nearest sensitive receptor to the Root Creek site is a residence approximately 470 feet north of the proposed pipeline in Avenue 10. All other sites do not have a sensitive receptor located within 1,000 feet of the construction area.

Regulatory Framework

Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies. Local regulation of noise involves implementation of general plan policies and noise ordinance standards. Local general plans tend to identify general principles intended to guide and influence development plans; local ordinances establish standards and procedures for addressing specific noise sources and activities.

Federal

Federal Transit Administration Guidelines for Construction

The impact assessment procedures and criteria in the FTA's *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018) are intended for federally funded mass transit projects, but they are routinely used by projects reviewed by local jurisdictions that have not adopted their own vibration impact standards. FTA has issued guidance on how to assess noise, and vibration impacts from construction-related activities in its manual (FTA 2018). FTA's guidance is designed to be used by project sponsors seeking to evaluate noise and vibration impacts during the environmental review process. The document focuses primarily on operation of transportation projects, but it also provides guidance on the use of heavy machinery and associated sound and vibration levels during construction, including the types of equipment that would be deployed by the Project. FTA's guidance also describes a range of measures for controlling excessive noise and vibration.

Construction Noise

The FTA guidelines identify reasonable criteria for assessing construction noise impacts. According to the manual's Table 7-2, *General Assessment Construction Noise Criteria*, the noise levels at which adverse community reaction could occur for residential land uses in terms of hourly averages are 90 dBA L_{eq} for daytime hours and an 80 L_{eq} dBA for nighttime hours (FTA 2018). FTA recommends that the distances used to estimate construction noise levels at the closest sensitive receptors be based on the middle of the construction site. These noise levels are where adverse community reaction could occur at residential land uses (FTA 2018).

State

Vehicle Operations

The State of California establishes noise limits for vehicles licensed to operate on public roads. The pass-by standard for heavy trucks is consistent with the federal limit of 80 dBA. The pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dBA at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanctions on vehicle operators by State and local law enforcement officials.

Local

Madera County General Plan Noise Element and Standards

The Madera County General Plan (General Plan) is a long-term comprehensive plan for the development of Madera County. The General Plan Noise Element contains goals, policies, standards, and programs directly related to the Project, which are listed below (Madera County 1995)

Noise Goal 7.A: To protect County residents from the harmful and annoying effects of exposure to excessive noise.

Noise Policy 7.A.4: Development of new noise-sensitive land uses shall not be permitted where the noise level from existing non-transportation noise sources exceeds the noise level standards of Table 7.A.4 [see **Table 3-4** below].

TABLE 3-4
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NON-TRANSPORTATION NOISE SOURCES¹

	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Leq, dB	50	45
Maximum Level, dB	70	65

Notes: Each of the noise levels specified above shall be lowered by 5 dB for pure tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

1. As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers at the property line.

Source: Madera County 1995, 84

Madera County Noise Ordinance

Section 9.58.020 of the Madera County Code contains general noise regulations for noise sources located within Madera County. Madera County restricts construction activities to the hours of 7 a.m. and 7 p.m. Monday through Friday and 9 a.m. and 5 p.m. on Saturdays. Construction activities are prohibited on Sundays. Although this section contains general regulations geared toward residences, schools, generation of motor vehicles, horns, etc., it does not specify quantitative noise level limits for construction activities or provide numeric criteria for evaluating the compatibility of new projects with surrounding land uses (Madera County 2025).

Since the Project's construction and operational activities would not result in the development of a new noise-sensitive land use as defined by the Madera County General Plan, the FTA's recommended daytime construction noise threshold of 90 dBA L_{eq} and the CEQA guidelines are used to assess Project noise impacts.

Discussion

a) **Less-Than-Significant Impact**

Construction

Project construction would result in temporary increases in ambient noise levels. Construction would occur over a period of approximately 1 year. On-site construction activities would require the use of heavy construction equipment (e.g., excavators, loaders, rollers) that would generate varying noise levels. The operation of each piece of equipment would not be constant throughout the day, as equipment would be turned off when not in use. Over a typical workday, the equipment would be operated at different locations, and all the equipment would not operate concurrently at the same location on the Project sites.

Construction noise levels have been estimated using typical equipment source noise levels suggested in the Federal Highway Administration's (FHWA) Roadway Construction Noise Model (RCNM) and based on the types of construction equipment that are proposed to be used. To quantify construction-related noise exposure that would occur at the nearest sensitive receptor, it was assumed that the two loudest pieces of construction equipment would operate concurrently at the portion of the Project closest to that receptor, which is located at the Root Creek site.

The estimated L_{max} and L_{eq} for each of the two loudest pieces of equipment that would be used for Project construction, and the combined L_{eq} noise level for the two loudest pieces of construction equipment at the closest sensitive receptor location (470 feet) is presented in **Table 3-5, Project Construction Noise Levels**. Using FTA methodology for noise evaluation, at this distance, simultaneous operation of the two noisiest pieces of equipment likely to be used for construction would result in noise level of 63.9 dBA L_{eq} , much less than the FTA's recommended daytime construction noise threshold of 90 dBA L_{eq} . Since the calculated construction noise level at the nearest sensitive receptor, located at the Root Creek recharge basin site, is below the FTA's recommended daytime construction noise threshold, all other Project locations, which are farther from sensitive receptors, would experience even lower noise levels that are well below the FTA's threshold.

The Madera County Municipal Code Section 9.58.020 regulates construction noise by allowing construction work that generates noise to occur between the hours 7 a.m. and 7 p.m. Monday through Friday and 9 a.m. and 5 p.m. on Saturdays, with activities prohibited on Sundays. The Project's construction activities would adhere to the County's construction work hours as construction would occur Monday through Friday from 7 a.m. to 7 p.m., with no work proposed on the weekends. Therefore, the construction of the turnout components and conveyance pipelines would not generate substantial temporary increases in noise levels in excess of applicable standards.

In addition to on-site construction equipment, the Project would also result in short-term increases in local daytime traffic volumes. The Project would add a maximum of 40 one-way construction-related vehicle trips per day and a minimal number of construction materials delivery trips to area roadways over the construction period. The increase of 40 one-way passenger vehicle and truck trips would not substantially increase noise levels at rural residences that are setback 500 feet from the primary roads that would be used to access the Root Creek recharge basin site. For this reason, construction-related traffic would not result in a substantial temporary increase in noise levels.

TABLE 3-5
PROJECT CONSTRUCTION NOISE LEVELS

Type of Equipment	Distance to Closest Sensitive Receptor	Equipment L_{max} at 50 feet (dBA)/ Usage (%)	Equipment L_{eq} at Receptor (dBA)	Combined L_{eq} at Sensitive Receptor (dBA)
Grader	470 feet (Residence; Root Creek recharge basin Site)	85.0/40	61.6	63.9
Scraper		83.6/20	60.1	

Notes: L_{max} = maximum instantaneous noise level; L_{eq} = the equivalent sound level; dBA = A-weighted decibels

Source: Table compiled by ESA in 2026 based on Federal Highway Administration, 2008. FHWA Roadway Construction Noise Model, Version 1.1, December 2008.

Operation

The primary source of noise during Project operation would be a new on-site pump at the Waterlands site to convey water for Flood-MAR application. The new pump would be operated by the private landowner and would utilize power by either diesel engines or electric motors. As a reference, noise monitoring of two large capacity (200 hp) submersible pumps while operational without the attenuation of an enclosure, and considered representative of the proposed pump noise levels, indicates a combined steady-state operational noise level of 62 dBA at a distance of 5 feet. (ESA 2019). This noise generation corresponds to a noise level of 48 dBA at 25 feet. The additional attenuation with distance that would occur at the nearest sensitive receptor location for this site (beyond 1,000 feet), would be within ambient rural noise levels (U.S. EPA 1974). Therefore, the Project's operational noise impact would be less than significant.

- b) **Less-Than-Significant Impact.** Vibration can be interpreted as energy transmitted as waves through the ground. These energy waves generally dissipate with distance from the vibration source. Since energy is lost during the transfer of energy from one particle to another, vibration attenuates rapidly with distance. Construction of the Project would not involve the use of vibration-generating equipment, such as pile drivers or vibratory rollers, and there are no existing structures in the immediate vicinity of the infrastructure components or pipeline alignments that could be affected by groundborne vibrations. Additionally, operations and maintenance of the Project would not include any sources of vibration. Therefore, the impact with regard to groundborne vibration during construction or operations would be less than significant.
- c) **No Impact.** The closest airport to the Project is the Sierra Sky Park Airport, located approximately 4-miles southeast of the Root Creek recharge basin site. The Project would not involve the development of noise-sensitive land uses that would be exposed to excessive aircraft noise. Workers that would construct the Project may be exposed to periodic short-term aircraft

overflight noise associated with this airport; however, no Project components are located within the 60 dBA L_{dn} noise contours for the Sierra Sky Park Airport (Fresno Council of Governments 2026). Thus, the Project would not expose people working in the Project area to excessive aircraft-related noise levels. Therefore, there would be no impact.

References

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- Environmental Science Associates (ESA), 2019 Assessment of Potential Noise Impacts from the Proposed Fowler Pump Station Upgrade in San Jose, California, March 2019.
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3.2.14 Population and Housing

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than- Significant Impact</i>	<i>No Impact</i>
XIV. POPULATION AND HOUSING — Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Environmental Setting

The Project includes four properties located as shown in Figure 2 in Chapter 2, *Project Description*. Each Project site is used for agricultural-related land uses and none contains other businesses or housing.

Discussion

- a) **No Impact.** The Project would not include any new residential development or other infrastructure that would directly or indirectly induce population growth. The Project would contribute to groundwater management in the Madera Subbasin by implementing a phased floodwater recharge program to utilize flood flows available as Section 215 water from the Friant Division and would not facilitate or induce growth either directly or indirectly.
- b) **No Impact.** The Project does not involve demolition of existing housing or require the construction of housing elsewhere. Furthermore, the Project sites are not in areas that are currently developed that would cause physical displacement of existing population and housing. The Project would not cause a significant environmental impact due to unplanned or induced population growth and/or displaced population and housing. Therefore, the Project would not necessitate construction of replacement housing elsewhere and there would be no impact.

3.2.15 Public Services

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than- Significant Impact</i>	<i>No Impact</i>
XV. PUBLIC SERVICES —				
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 following public services:				
i) Fire protection?	☐	☐	☐	☒
ii) Police protection?	☐	☐	☐	☒
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities?	☐	☐	☐	☒

Environmental Setting

The Project sites are within the service area of the Madera County Fire Department, a full-service agency providing emergency response across 2,153 square miles of unincorporated Madera County. The County operates six staffed fire stations, each staffed 24/7 by at least 12 career firefighters, and six additional unstaffed stations supported by paid on-call personnel. The nearest stations to the Project sites are Station 3, closest to the Wine Group site approximately 3.5 miles northeast, and Station 7, located approximately 4 miles east of the Waterlands site. Both stations are staffed by one captain and one engineer and are equipped with a fire engine and a water tender (Madera County 2025a).

The site is also within the jurisdiction of the Madera County Sheriff's Office. The Sheriff serves as the Chief Law Enforcement Officer and oversees four divisions: Patrol, Investigations, Special Operations, and Professional Standards. Additionally, the Sheriff acts as the County's chief coroner and emergency services director. The Sheriff's Office headquarters is near the City of Madera, approximately 6 miles south of the Root Creek site and 11 miles west of the other Project sites (Madera County 2025b).

Madera County encompasses all or portions of 11 school districts, nine of which have schools within the County with the remaining two overlap with Fresno County (Madera County 1995). There are no parks, libraries, hospitals, or other public facilities in the immediate vicinity of the Project sites.

Discussion

a.i–a.iii) **No Impact.** In the event of a fire or other emergency at the Project sites, existing fire and law enforcement services in Madera County are expected to adequately respond using current equipment and staffing resources. Construction would occur at existing MID laterals, agricultural land, and along established access roads. Operation and maintenance would generally be infrequent and temporary; ongoing agricultural activities would remain relatively unchanged. The Project does not include new housing or infrastructure that could directly or indirectly induce

population growth. Consequently, the project would not introduce facilities requiring additional emergency response services. Therefore, implementation of the Project would not necessitate new fire or police facilities to maintain service levels or performance standards. Impacts would be less than significant.

- a.iii–a.v) **No Impact.** The Project would utilize flood flows available as Section 215 water from the Friant Division for groundwater recharge in the Madera County GSA to help address groundwater sustainability. The Project would not result in an increase in population. As a result, the Project would not lead to the construction of new housing, resulting in a need for additional school services, parks, or other public facilities. Therefore, the Project would have no impact related to the need for additional schools, parks, or other public facilities.

References

- Madera County, 1995. Madera County General Plan Background Report. Adopted October 1995.
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3.2.16 Recreation

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than- Significant Impact</i>	<i>No Impact</i>
XVI. RECREATION —				
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?	☐	☐	☐	☒

Environmental Setting

The Project sites do not contain recreational facilities nor are there recreational facilities in the vicinity of the Project sites.

Discussion

- a) **No Impact.** The Project involves construction of facilities to support recharge of floodwater on agricultural lands to address groundwater sustainability in the Madera County Subbasin. The Project would not result in population growth and would not increase the use of any existing neighborhood or regional parks or cause the need for expansion of recreational facilities. Therefore, no impact would occur.
- b) **No Impact.** The Project would not include the construction of new or expansion of existing recreational facilities. Because the Project would not require the construction or expansion of additional recreational facilities, there would be no impact under this criterion.

3.2.17 Transportation

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than-Significant Impact</i>	<i>No Impact</i>
XVII. TRANSPORTATION — Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
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?	☐	☐	☒	☐

Environmental Setting

The Project sites are located in the eastern part of the Madera Subbasin in Madera County. The Wine Group site is approximately 3.3 miles east of the unincorporated community of Fairmead, the Brock Moore and Waterlands sites are adjacent to the unincorporated community of Madera Ranchos while the Root Creek site is approximately 1.2 miles southwest of Madera Ranchos. The Project sites are northeast of SR 99 and west of SR 41 (Figure 1-1) and are generally bound by agricultural lands, grasslands, and unimproved agricultural access roads. In the case of the Waterlands and Brock Moore sites they are also adjacent to residential areas in Madera Ranchos to the west and south (Figure 2-3a and 2-3c).

County roads providing access to the Project sites are listed below:

- Wine Group Site – Avenue 20 ½ and County Road 24
- Waterlands Site – Avenue 12 and County Road 39 ½
- Brock Moore Site – Avenue 12
- Root Creek Site – Avenue 12, County Road 33 ½, and Avenue 10

There are no public transit or bicycle or pedestrian facilities in proximity to the Project sites.

Discussion

- a) **Less-Than-Significant Impact.** The Project would result in the temporary addition of Project-related construction vehicles to local roadways over the 1-year construction period. All equipment and materials would be transported to the site on public highways, local roads, and private agricultural access roads, using standard transport vehicles.

The Project would require up to 20 construction crews for approximately 1 year of proposed construction activities discussed in Chapter 2, *Project Description, Project Construction*. Construction workers could generate up to approximately 20 round trips per day (40 one-way trips). Importantly, these trips would be temporary and cease with the completion of construction. The addition of these temporary construction round trips along local roads would not substantially

affect circulation capacity, and therefore, the trips would not substantially affect the capacity of the local roadways.

Construction of pipelines would occur on private unimproved roads for the Brock Moore, Wine Group and Waterlands sites, and on Avenue 10, a public road for the pipeline to the Root Creek recharge basin site. Pipeline trenching along these roads would generally be short-term, and traffic control would be required for the work conducted in Avenue 10. There are many local access roads and in the area that can serve as alternative routes for existing uses. Additionally, parking for construction workers would be accommodated at staging areas within the Project sites and would not affect local roads.

As discussed in Chapter 2, *Project Description*, Project-specific traffic generated from operation and maintenance would be infrequent, and therefore, would not result in any long-term degradation in operating conditions on local roadways used for the Project. Further, the Project would not conflict with adopted policies, plans, or programs related to public transit or alternative modes of transportation as there are no nearby facilities which accommodate alternative modes of travel such as bus routes, bike lanes, or pedestrian infrastructure. Therefore, the Project would not decrease the performance or safety of these facilities, which are sparse within the largely rural Project area. Project activities would not disrupt services along local public transit, bicycle, or pedestrian routes.

Overall, impacts on the local circulation system from construction and operation of the Project would be minor, and would not conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Impacts would be less than significant.

- b) **Less-Than-Significant Impact.** CEQA Guidelines Section 15064.3, subdivision (b) outlines criteria for analyzing transportation impacts in terms of vehicle miles traveled (VMT) for land use projects and transportation projects. VMT refers to the amount and distance of automobile travel attributable to a project. According to the Office of Planning and Research Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018), the term “automobile” refers to on-road passenger vehicles, specifically cars and light-duty trucks. For the Project, worker trips would be conducted in cars and light-duty trucks. Construction-related vehicle trips would not create the potential for conflicting with CEQA Guidelines Section 15064.3 pertaining to VMT. Although excluded from VMT analysis, potential environmental impacts associated with the use of medium- and heavy-duty truck trips are addressed in the *Air Quality*, *Energy*, and *Greenhouse Gas* sections of this document.

According to the *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR 2018), projects that generate fewer than 110 trips per day may be assumed to cause a less-than-significant transportation impact. The Project would require construction crews for approximately 1 year of construction activities. Construction workers could generate an estimated 20 round trips (40 one-way trips) per day. Importantly, these trips would be temporary and limited to the approximately 1-year construction period and therefore would not result in any significant or permanent increase in trip generation or VMT. Project operation would require minimal vehicle

travel and components would be operated primarily by the property owner generating only a few trips per day and no trips on most days and generally infrequent operations and maintenance activities would be far below the 110-trip threshold for VMT impacts. Because the Project's construction and operational trips would be below the 110-trip threshold, the Project would not conflict with nor be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) regarding VMT. Impacts due to a conflict or inconsistencies with CEQA guidelines would be less than significant.

- c) **Less-Than-Significant Impact.** The Project would result in trenching along portions of public and private roads to install pipelines and turnouts; however, these roadways would be restored to pre-Project conditions following installation of the conveyance infrastructure and no alterations would be made to their alignments. The Project would use existing private and public agricultural roads for access to the Project sites and for construction activities. The Project does not include the construction or design of any new roadway infrastructure that would cause a safety risk. The Project would not adversely alter the physical configuration of the existing roadway network serving the area and would not introduce unsafe design features. In addition, the Project would not permanently introduce uses (types of vehicles) that are incompatible with existing uses already served by the area's road system. Therefore, roadway hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) would be less than significant.
- d) **Less-Than-Significant Impact.** The Project would temporarily add vehicles to the local roadway and circulation system such as construction-related vehicles and crew vehicles; however, construction would be short-term lasting approximately 1 year. Additionally, as mentioned above, the Project would result in trenching along portions of mostly private unimproved roads and one public road (Avenue 10) to install pipelines and turnouts. A traffic control plan would be submitted to the County for review and approval for temporary construction in Avenue 10 to the Root Creek recharge basin during Project pipeline installation. The Project would comply with any conditions included in the traffic control plan to avoid or reduce potential roadway and circulation impacts during construction. The Project would not make any changes to these roadways nor introduce new structures which would interfere with emergency response access.

Due to the agricultural character of the area, there are many alternative roadways and access roads which could provide access to emergency responders; however, any work required to install conveyance infrastructure would be short-term. Following construction, disturbed areas would be restored to pre-Project conditions. Operations and maintenance activities would be infrequent with minimal potential for any effect on emergency response. Impacts associated with inadequate emergency access would be less than significant.

References

- Madera County, 1995. Madera County General Plan Background Report. Adopted October 1995. Accessed November 5, 2025. Available online: https://www.maderacounty.com/government/community-economic-development-department/divisions/planning-division/planning-forms-and-documents/-folder-269#docfold_14_623_363_269.

3.2.18 Tribal Cultural Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than- Significant Impact</i>	<i>No Impact</i>
XVIII. TRIBAL CULTURAL RESOURCES —				
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.	☐	☒	☐	☐

Discussion

PRC Section 21080.3.1 requires that during the CEQA process the lead agency must initiate consultation with tribes that are traditionally and culturally affiliated with the geographic area of a proposed project if (1) the tribe requested of the agency, in writing, to be informed through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the tribe; and (2) the tribe responds, in writing, within 30 days of receipt of the formal notification of a proposed project and requests consultation with the agency (PRC Section 21080.3.1[b]).

In accordance with Public Resources Code Section 21080.3.1, notification letters for the Project 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. Notification letters were sent to representatives of the following tribes on February 26, 2026:

- 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, no responses have been received.

Native American Heritage Commission

The NAHC is a state agency that maintains the Sacred Lands File (SLF), an official list of sites that have cultural and religious importance to California Native American tribes. A review of the SLF was requested and a response was received on November 10, 2025, stating that a search was completed and the results were negative.

- a) The results of the SSJVIC records search as described in Section 3.7 *Cultural Resources*, indicate that no previously recorded archaeological resources or tribal cultural resources listed or eligible for listing in the CRHR or a local register of historical resources are known to exist within the Project sites or within a 0.5-mile radius of any of the Project sites. However, a review of the relevant geologic maps indicated moderate sensitivity for buried pre-European contact archaeological deposits.

As discussed in Section 3.7 *Cultural Resources*, although not expected archaeological deposits that may qualify as tribal cultural resources could be encountered during Project excavation. Such resources may be eligible for listing in the CRHR or a local register of historical resources, or the lead agency, in its discretion and supported by substantial evidence, could determine the resources to be significant pursuant to the criteria set forth in subdivision (c) of PRC Section 5024.1. Should deposits be encountered during Project excavation, this could result in an adverse change to a tribal cultural resource. Thus, potentially significant impacts related to tribal cultural resources could result from construction of the Project.

Should Native American human remains be encountered during Project excavation, the County Coroner would be required to notify the NAHC as provided in **Mitigation Measure MM CUL-3**, presented above in Section 3.7, and all applicable state and federal regulations governing the treatment of human remains will be followed.

Implementation of **Mitigation Measures MM CUL-1: *Cultural Resources Awareness Training***, **MM CUL-2: *Inadvertent Discovery of Cultural Resources***, and **MM CUL-3: *Inadvertent Discovery of Human Remains***, each as described in Section 3.7 *Cultural Resources* would ensure that impacts related to any tribal cultural resources that may be encountered during Project excavation would be less than significant.

3.2.19 Utilities and Service Systems

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

Environmental Setting

Agricultural water in the Madera County GSA primarily comes from groundwater, with limited surface water from riparian rights along the San Joaquin and Fresno Rivers and a small Reclamation contract (City of Madera et al. 2025). The Project sites lack riparian water rights and rely on groundwater wells and diversions from existing MID irrigation laterals (Laterals 6.2 and 32.2).

Wastewater in the vicinity of the Project sites is primarily managed through private septic systems. Stormwater runoff drains into nearby ditches and canals or infiltrates directly into the ground through percolation.

PG&E provides electricity via above-ground lines to all of Madera County (Madera County 1995). Telephone service is provided by Pacific Bell, Sierra Telephone, and Ponderosa Telephone; cable TV by Continental Cablevision and Northland Cable, although remote areas do lack coverage. Internet providers include AT&T, T-Mobile, Verizon, and Project Genesis (FCC 2025).

Solid waste sources include residential, commercial, and industrial sectors, totaling about 42,102 tons annually (Madera County 1995). Franchise haulers collect waste for disposal at Fairmead Solid Waste Disposal Site (Madera County 1995), which has 5.5 million cubic yards of remaining capacity and is permitted until December 2028 (CalRecycle 2025a).

Discussion

- a) **Less-Than-Significant Impact.** Project construction would require approximately 20 workers (at the Project sites on a temporary basis during the approximately 1-year construction period. The

Project would not involve the construction of housing or new staff facilities. Additionally, there would be no new water or wastewater treatment systems needed, and the Project does not require new natural gas or telecommunications infrastructure. There are also existing electrical service lines that the Project could utilize if needed for electromagnetic flow meters and would comply with applicable County Codes for powerline installation (e.g., County Code of Ordinances section 18.88.040-Public Utilities). New or expanded stormwater drainage facilities are not necessary, as the Project would not significantly alter the sites' drainage patterns, and does not include large structures or solid surfaces that would change surface runoff rates or volumes. The Project does require excavation in local access roads to install conveyance pipelines and turnouts; however, these areas would be restored to pre-Project conditions following construction. Existing utilities and infrastructure would remain in place without relocation. Therefore, impacts regarding the relocation or construction of new or expanded utilities and service systems would be less than significant.

- b) **Less-Than-Significant Impact.** The Project would not include the construction of new housing or other development that would require a continuous supply of water, including during normal, dry, and multiple dry years. During construction of the Project, a limited amount of water would be used for dust suppression as needed, and no new or expanded entitlements would be required. Once constructed, the Project would utilize flood flows available as Section 215 water from the Friant Division for groundwater recharge on lands in the Madera County GSA and contribute to groundwater sustainability. Impacts associated with the availability of water supplies, including during normal, dry, and multiple dry years would be less than significant.
- c) **No Impact.** The Project does not include construction of new housing or other development that would require new or expanded wastewater facilities. Project construction is expected to last approximately 1 year and would consist of a maximum of 20 construction workers on-site daily. During Project implementation, the contractor would provide portable toilet facilities for use by construction workers. During the construction period, wastewater would be properly handled and disposed of in accordance with applicable laws and regulations. Additionally, at the end of the construction period, all portable facilities would be removed. Operation and maintenance of the Project would not require wastewater treatment from a wastewater treatment provider. The Project would have no impact on the capacity of any existing wastewater treatment facilities.
- d) **Less-Than-Significant Impact.** Construction of the Project would result in nominal solid waste limited to trash and other construction-related materials. Most solid waste would be generated during the construction phase and would be associated with packaging and discarded materials from construction activities. Cut-and-fill is expected to be balanced at each site, and any excess soils at a site would be spread or otherwise utilized onsite. Long-term operation and maintenance activities would not generate substantial quantities of solid waste, and any solid waste produced would be removed and disposed in compliance with local laws and regulations regarding the recycling of waste. The Fairmead Solid Waste Disposal Site is located approximately 3.6 miles west of the Wine Group site and approximately 20 miles northwest of the Waterlands, Brock Moore, and Root Creek sites. The Fairmead site has a remaining capacity of 5.5 million cubic yards (CalRecycle 2025a) and would have sufficient capacity to receive any nominal waste

generated by the Project. The Project would not interfere with waste reduction goals, and impacts related to solid waste generation would be less than significant.

- e) **No Impact.** Assembly Bill 939 requires local governments to create waste reduction and recycling policies to ensure waste reduction goals are being met (CalRecycle 2025b). As discussed above, construction waste would be minimal and would be handled and disposed of, or recycled, consistent with management and reduction statutes and regulations related to solid waste. Landowners or the County, depending on the Project site, would be responsible for the correct handling and disposal of the minimal accumulation of waste, and similarly would be required to comply with management and reduction statutes and regulations related to solid waste. By complying with all relevant statutes and regulations related to solid waste management, no impacts would occur.

References

- California Department of Resources Recycling and Recovery (CalRecycle), 2025a. SWIS Facility/Site Summary. Fairmead Solid Waste Disposal Site (20-AA-0002). Available online: <https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/3028?siteID=1701>. Accessed November 17, 2025.
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- Madera County, 1995. Madera County General Plan Background Report. Adopted October 1995. Available online: https://www.maderacounty.com/government/community-economic-development-department/divisions/planning-division/planning-forms-and-documents/-folder-269#docfold_14_623_363_269. Accessed November 17, 2025.
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3.2.20 Wildfire

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less-Than-Significant Impact</i>	<i>No Impact</i>
XX. WILDFIRE — If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
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?	☐	☐	☒	☐

Environmental Setting

Within California, CAL FIRE designates fire hazard severity zones. CAL FIRE uses a five-tiered ranking system to assess the threat to people based on fuel hazard, wildland fire potential, and housing density. The Project sites are not located within an SRA managed by CAL FIRE; however, they are located within an LRA which would be served by the County. The Wine Group, Root Creek, and Brock Moore sites are un-classified for hazard severity and are considered to have an overall low fire hazard severity. The Waterlands site is partially zoned as a Moderate Fire Hazard Severity along its northern edge; however, the majority of the site is un-classified (CAL FIRE 2025).

In the event of a wildfire the Madera County Fire Department would be the first responders to the Project sites. The closest County fire stations to the Project sites are Station 2 Chowchilla and the closed station to the Brook Moore, Root Creek, and Waterlands sites is Station 19 Bonadelle Ranchos. Station 2 would serve the Wine Group site and is approximately 7.5 miles to the northwest. Station 19 would serve the Waterlands (approximately 1.2 miles northwest), Brock Moore (approximately 3.6 miles northwest), and the Root Creek sites (approximately 4.2 miles north). Station 2 is unstaffed and supported by paid call firefighters and has one fire engine and one water tender. Station 19 is staffed by paid firefighters and staffed 24 hours a day by a fire captain and engineer. The station includes three fire engines, one haz-mat vehicle, one water tender, and a support vehicle (Madera County Fire Department 2025).

Discussion

- a) **No Impact.** Implementation of the Project is not anticipated to substantially impair an adopted emergency response plan or evacuation plan or interfere with emergency response access to the Project vicinity because there would be negligible numbers of construction workers traveling to the Project site on a temporary basis during the approximately 1-year construction period. The

Project does not include the construction of housing or permanent structures. Further, as discussed in Chapter 2, *Project Description*, staff would be on-site temporarily, and operations and maintenance activities would generally be infrequent. Temporary road closures associated with the Project would be managed with a traffic control plan, and the Project would not increase the amount of people residing at or near the Project sites. No impact would occur.

- b) **No Impact.** The Project sites are relatively flat and do not include steep slopes or the introduction of impervious surfaces that would be susceptible to downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Further, as the Project sites are relatively flat and not near any steep slopes or hillsides, and the Project would not introduce large structures that could affect wind conditions, there would be little effect due to prevailing winds or exacerbated fire risk. Additionally, the surrounding vegetation and land use types have a low potential for fires due to regular irrigation. No impact would occur.
- c, d) **Less-Than-Significant Impact.** As discussed above, the Project is not located in an SRA (CAL FIRE 2025); however, the Project sites are located within an LRA. Project construction would utilize vehicles and equipment that would involve combustion engines and heated exhaust that would create a marginal increase in fire ignition risk during construction. In the event an electric connection is needed for flow meters, a PG&E connection would be made to existing nearby transmission lines to power the Project; the line would follow existing road alignments and would comply with applicable County Codes for powerline installation (e.g., County Code of Ordinances section 18.88.040-Public utilities). However, the Project does not require the installation of roads, fuel breaks, or emergency water sources, nor does it include the construction of housing or permanent structures for staff. The Project is also located in a rural area and as such population density is low and there are generally few homes in the surround area which could be exposed to toxic pollutants from a wildfire.

The Project would allow for Flood-MAR on the Brock Moore, Wine Group and Waterlands sites, and it is expected that seasonal application of surface water at these Project sites would not increase and may decrease any potential fire risk during the application period. The Project sites are located in a rural area and public roadways provide access throughout the area. Therefore, the Project is not expected to substantially increase exposure of Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire, exacerbate fire risk or result in temporary or ongoing impacts to the environment, or expose people or structures to significant risks. As a result, the impact would be less than significant.

References

- California Department of Forestry and Fire Protection (CAL FIRE), 2025. Find your Fire Hazard Severity Zone (FHSZ). Accessed December 18, 2025. Available online: <https://experience.arcgis.com/experience/5065c998b4b0462f9ec3c6c226c610a9>.
- Madera County, 2025. Madera County Fire Department [Home Page]. Accessed December 18, 2025. Available online: <https://www.maderacounty.com/government/fire-department>.

3.2.21 Mandatory Findings of Significance

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

Discussion

- a) **Less Than Significant with Mitigation Incorporated.** As discussed in the preceding impact analyses, the potential of the Project to substantially impact or degrade the quality of environment would be less than significant with incorporated mitigation measures. As described in this Initial Study, the Project has the potential for impacts related to biological resources, cultural resources, geology and soils (paleontological resources), and tribal cultural resources. However, these impacts would be avoided or reduced to a less-than-significant level with the incorporation of mitigation measures discussed in each section.
- b) **Less Than Significant with Mitigation Incorporated.** This section provides a description of other actions in the area and a discussion of the cumulative impacts of those projects, in combination with the previously identified effects of the Project. State CEQA Guidelines Section 15355 states that "cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts":
- The individual effects may be changes resulting from a single project or a number of separate projects.
 - The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

The Project is designed to enhance groundwater sustainability of the Madera Subbasin, and is consistent with the GSP for the Madera Subbasin, along with other floodwater recharge projects

in Madera County. As discussed in the following cumulative analyses, there are no other past, present, or future related projects in the vicinity of the Project that together with the Project would result in cumulatively considerable impacts.

Aesthetics. The Project would include minimal aesthetic differences with the installation of the turnouts, delivery infrastructure and recharge basin on existing farmland and would be consistent with the surrounding agricultural and flood-control landscape. Therefore, the Project would not contribute to cumulatively considerable aesthetics impacts.

Agriculture and Forestry Resources. Implementation of the Project would include construction of the 40-acre Root Creek recharge basin; however, the Root Creek site is not designated as important farmland. The removal of 0.1 acres of vineyards on the Waterlands site would result in a minimal loss of important farmland. In addition, the Project would be considered a compatible agricultural use as it would help capture flood flows to facilitate groundwater recharge, increase groundwater levels and storage, reduce subsidence potential, and improve water supply reliability, thereby directly benefiting agricultural users who rely on local groundwater resources. Therefore, impacts related to agriculture would be less than significant. As such, cumulative impacts to agricultural resources would be less than significant. The Project would have no impact on forestry resources and thus would not contribute to cumulative impacts.

Air Quality and Greenhouse Gas Emissions. A number of individual projects in the vicinity of the Project may be under construction simultaneously with the Project. Depending on construction schedules and actual implementation of projects in and around Madera County, generation of fugitive dust and pollutant emissions during construction may result in short-term air pollutants, which would contribute to short-term cumulative impacts on air quality. However, each individual project would be subject to SJVAPCD rules, regulations, and other mitigation requirements during construction. For cumulative impacts on air quality and greenhouse gas emissions, see Section *Air Quality*, and Section *Greenhouse Gas Emissions*, where the analyses conclude that air pollutant and greenhouse gas emissions associated with the Project would not result in a significant Project-specific or cumulative impact.

Biological Resources, Cultural Resources, Tribal Cultural Resources, Geology and Soils, and Hazards and Hazardous Materials. The Project's impacts for these environmental issues would be limited to the Project site, and any significant impacts would be reduced to a less-than-significant level by implementing proposed mitigation measures. Thus, the Project would not contribute to cumulatively considerable impacts for these topics.

Energy. Construction of the Project would result in fuel consumption from the use of construction tools and equipment, truck trips to haul materials, and vehicle trips by construction workers commuting to and from the Project site. This impact would be temporary and localized. Operational energy impacts are not anticipated. Construction-related fuel consumption by the Project would not result in inefficient, wasteful, or unnecessary energy use compared with other construction sites in the region. Thus, the Project would not contribute to cumulatively considered impacts from energy consumption.

Hydrology and Water Quality. Implementation of the Project could result in erosion and sedimentation, and other construction site pollutants (e.g., fuels, solvents) entering stormwater runoff during construction. However, with implementation of the Project SWPPP and BMPs during construction as required by the NPDES Construction General Permit, impacts to water quality would be less than significant. Therefore, the Project together with other projects would not result in cumulatively considerable impacts.

Land Use and Land Use Planning. The Project would have no impact on land use and land use planning; therefore, it would not contribute to cumulatively considerable land use impacts.

Mineral Resources. The Project would have no impact on mineral resources and thus would not contribute to cumulatively considerable impacts.

Noise. The Project's noise impacts are anticipated to be minor, and the Project would comply with the noise standards in the Noise Element of the Madera County General Plan and Madera County Code of Ordinances. Operation of the Project would not result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project. Thus, the Project would not contribute to cumulatively considerable noise impacts.

Population and Housing. The Project would have no impact on population and housing resources and thus would not contribute to cumulative considerable impacts.

Public Services. The Project's impacts on public services are anticipated to be minor, and existing fire and police protection services in Madera County would be able to sufficiently respond to emergencies with existing equipment and staffing capacities. Thus, the Project would not contribute to cumulatively considerable impacts on public services.

Recreation. The Project would have no impact on recreation and thus would not contribute to cumulatively considerable impacts on recreation.

Transportation. The Project would not result in any significant Project-specific transportation-related impacts and would not have the potential to contribute to cumulatively considered impacts associated with transportation.

Utilities and Service Systems. The Project would not require the addition or expansion of utilities, including electrical, natural gas, communications, stormwater, water supply, and wastewater treatment facilities. Solid waste generation would be minimal. Therefore, impacts associated with the utilities would be less than significant and would not contribute to cumulatively considerable impacts.

Wildfire. The Project is not located in a State Responsibility Area nor in an area classified by CAL Fire as high fire hazard severity zone. The Project would not contribute to cumulatively considerable impacts associated with wildfire.

- c) **Less Than Significant with Mitigation Incorporated.** The Project would not result in any substantial adverse effects on human beings, either directly or indirectly, because each potentially significant impact can be reduced to a less-than-significant level with the implementation of the mitigation measures outlined in this document. No other substantial adverse effects on human beings are anticipated as a result of the Project, resulting in a less-than-significant impact with mitigation incorporated.

Appendix A

Madera Subbasin Recharge Project 1 CalEEMod Detailed Report

Madera Subbasin Project 1 Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Madera Subbasin Project 1
Construction Start Date	1/1/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.90000
Precipitation (days)	25.8000
Location	36.89524926905199, -120.34001674549415
County	Madera
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2554
EDFZ	5
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.37

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
General Light Industry	0.26000	1000sqft	0.00597	260.000	0.00000	0.00000	—	Pump Station
Road Construction	1.60000	Mile	10.00000	0.00000	0.00000	—	—	Regrading ditch

Road Construction	3.03000	Mile	20.0000	0.00000	0.00000	—	—	Conveyance pipeline
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1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.94251	5.85200	47.1231	59.2136	0.12052	1.97368	6.58513	8.55881	1.81587	0.74002	2.55589	—	13,285.1	13,285.1	0.53479	0.12625	0.89284	13,337.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.91759	5.83242	47.1475	59.0469	0.12052	1.97368	19.8577	21.0294	1.81587	10.1495	11.2275	—	13,261.9	13,261.9	0.53739	0.12625	0.02315	13,313.0
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.58121	3.86368	31.2428	39.0836	0.07944	1.30491	4.66658	5.97149	1.20057	0.68428	1.88486	—	8,751.33	8,751.33	0.35336	0.08348	0.26978	8,785.31
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.83607	0.70512	5.70181	7.13275	0.01450	0.23815	0.85165	1.08980	0.21910	0.12488	0.34399	—	1,448.88	1,448.88	0.05850	0.01382	0.04467	1,454.51

2.2. Construction Emissions by Year, Unmitigated

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

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

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	6.94251	5.85200	47.1231	59.2136	0.12052	1.97368	6.58513	8.55881	1.81587	0.74002	2.55589	—	13,285.1	13,285.1	0.53479	0.12625	0.89284	13,337.0
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	6.91759	5.83242	47.1475	59.0469	0.12052	1.97368	19.8577	21.0294	1.81587	10.1495	11.2275	—	13,261.9	13,261.9	0.53739	0.12625	0.02315	13,313.0
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	4.58121	3.86368	31.2428	39.0836	0.07944	1.30491	4.66658	5.97149	1.20057	0.68428	1.88486	—	8,751.33	8,751.33	0.35336	0.08348	0.26978	8,785.31
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.83607	0.70512	5.70181	7.13275	0.01450	0.23815	0.85165	1.08980	0.21910	0.12488	0.34399	—	1,448.88	1,448.88	0.05850	0.01382	0.04467	1,454.51

3. Construction Emissions Details

3.1. Site Preparation (2027) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.63178	3.05170	27.9724	28.2794	0.04891	1.17173	—	1.17173	1.07799	—	1.07799	—	5,297.82	5,297.82	0.21490	0.04298	—	5,316.00
Dust From Material Movement	—	—	—	—	—	—	19.6570	19.6570	—	10.1024	10.1024	—	—	—	—	—	—	—

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipm ent	0.03980	0.03344	0.30655	0.30991	0.00054	0.01284	—	0.01284	0.01181	—	0.01181	—	58.0583	58.0583	0.00236	0.00047	—	58.2575
Dust From Material Movement	—	—	—	—	—	—	0.21542	0.21542	—	0.11071	0.11071	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipm ent	0.00726	0.00610	0.05594	0.05656	0.00010	0.00234	—	0.00234	0.00216	—	0.00216	—	9.61221	9.61221	0.00039	0.00008	—	9.64520
Dust From Material Movement	—	—	—	—	—	—	0.03931	0.03931	—	0.02020	0.02020	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15362	0.14921	0.09789	1.05363	0.00000	0.00000	0.20066	0.20066	0.00000	0.04703	0.04703	—	195.496	195.496	0.00970	0.00979	0.01853	198.674
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00170	0.00165	0.00097	0.01139	0.00000	0.00000	0.00216	0.00216	0.00000	0.00051	0.00051	—	2.21135	2.21135	0.00009	0.00011	0.00339	2.24888
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00031	0.00030	0.00018	0.00208	0.00000	0.00000	0.00039	0.00039	0.00000	0.00009	0.00009	—	0.36611	0.36611	0.00001	0.00002	0.00056	0.37233
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3. Grading (2027) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.50534	2.94546	25.5801	27.2816	0.06093	1.04307	—	1.04307	0.95962	—	0.95962	—	6,598.08	6,598.08	0.26765	0.05353	—	6,620.72
Dust From Material Movement	—	—	—	—	—	—	9.20359	9.20359	—	3.65375	3.65375	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.09604	0.08070	0.70082	0.74744	0.00167	0.02858	—	0.02858	0.02629	—	0.02629	—	180.769	180.769	0.00733	0.00147	—	181.390
Dust From Material Movement	—	—	—	—	—	—	0.25215	0.25215	—	0.10010	0.10010	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01753	0.01473	0.12790	0.13641	0.00030	0.00522	—	0.00522	0.00480	—	0.00480	—	29.9284	29.9284	0.00121	0.00024	—	30.0311
Dust From Material Movement	—	—	—	—	—	—	0.04602	0.04602	—	0.01827	0.01827	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15362	0.14921	0.09789	1.05363	0.00000	0.00000	0.20066	0.20066	0.00000	0.04703	0.04703	—	195.496	195.496	0.00970	0.00979	0.01853	198.674
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00426	0.00414	0.00241	0.02846	0.00000	0.00000	0.00541	0.00541	0.00000	0.00127	0.00127	—	5.52838	5.52838	0.00022	0.00027	0.00846	5.62220
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00078	0.00075	0.00044	0.00519	0.00000	0.00000	0.00099	0.00099	0.00000	0.00023	0.00023	—	0.91529	0.91529	0.00004	0.00004	0.00140	0.93082
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.5. Building Construction (2027) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.85030	0.71019	6.52033	10.2632	0.01539	0.21866	—	0.21866	0.20117	—	0.20117	—	1,530.75	1,530.75	0.06209	0.01242	—	1,536.00
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03494	0.02919	0.26796	0.42177	0.00063	0.00899	—	0.00899	0.00827	—	0.00827	—	62.9076	62.9076	0.00255	0.00051	—	63.1235
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.00638	0.00533	0.04890	0.07697	0.00012	0.00164	—	0.00164	0.00151	—	0.00151	—	10.4151	10.4151	0.00042	0.00008	—	10.4508

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15362	0.14921	0.09789	1.05363	0.00000	0.00000	0.20066	0.20066	0.00000	0.04703	0.04703	—	195.496	195.496	0.00970	0.00979	0.01853	198.674
Vendor	0.00006	0.00004	0.00190	0.00056	0.00001	0.00002	0.00046	0.00048	0.00002	0.00013	0.00015	—	1.63105	1.63105	0.00002	0.00024	0.00010	1.70187
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00639	0.00620	0.00362	0.04269	0.00000	0.00000	0.00811	0.00811	0.00000	0.00190	0.00190	—	8.29258	8.29258	0.00033	0.00040	0.01269	8.43330
Vendor	< 0.000005	< 0.000005	0.00008	0.00002	< 0.000005	< 0.000005	0.00002	0.00002	< 0.000005	0.00001	0.00001	—	0.06700	0.06700	< 0.000005	0.00001	0.00007	0.06998
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00117	0.00113	0.00066	0.00779	0.00000	0.00000	0.00148	0.00148	0.00000	0.00035	0.00035	—	1.37293	1.37293	0.00005	0.00007	0.00210	1.39623
Vendor	< 0.000005	< 0.000005	0.00001	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	< 0.000005	—	0.01109	0.01109	< 0.000005	< 0.000005	0.00001	0.01159
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.7. Pipeline Construction & Conveyance Channel (2027) - Unmitigated

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

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

Off-Road	6.76105	5.68116	46.9606	57.9670	0.11996	1.97255	—	1.97255	1.81474	—	1.81474	—	12,989.7	12,989.7	0.52692	0.10538	—	13,034.3
Dust From Material Movement	—	—	—	—	—	—	6.36300	6.36300	—	0.68706	0.68706	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	6.76105	5.68116	46.9606	57.9670	0.11996	1.97255	—	1.97255	1.81474	—	1.81474	—	12,989.7	12,989.7	0.52692	0.10538	—	13,034.3
Dust From Material Movement	—	—	—	—	—	—	6.36300	6.36300	—	0.68706	0.68706	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.29743	3.61104	29.8489	36.8448	0.07625	1.25378	—	1.25378	1.15348	—	1.15348	—	8,256.46	8,256.46	0.33492	0.06698	—	8,284.79
Dust From Material Movement	—	—	—	—	—	—	4.04443	4.04443	—	0.43670	0.43670	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.78428	0.65901	5.44743	6.72417	0.01391	0.22882	—	0.22882	0.21051	—	0.21051	—	1,366.95	1,366.95	0.05545	0.01109	—	1,371.64

Dust From Material Movement	—	—	—	—	—	—	0.73811	0.73811	—	0.07970	0.07970	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17840	0.16861	0.07919	1.22066	0.00000	0.00000	0.20066	0.20066	0.00000	0.04703	0.04703	—	218.679	218.679	0.00705	0.00979	0.71448	222.487
Vendor	0.00306	0.00223	0.08333	0.02601	0.00056	0.00113	0.02147	0.02260	0.00113	0.00593	0.00706	—	76.4958	76.4958	0.00078	0.01108	0.17836	79.9945
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15362	0.14921	0.09789	1.05363	0.00000	0.00000	0.20066	0.20066	0.00000	0.04703	0.04703	—	195.496	195.496	0.00970	0.00979	0.01853	198.674
Vendor	0.00293	0.00205	0.08903	0.02633	0.00056	0.00113	0.02147	0.02260	0.00113	0.00593	0.00706	—	76.5500	76.5500	0.00074	0.01108	0.00462	79.8738
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09876	0.09596	0.05600	0.66035	0.00000	0.00000	0.12543	0.12543	0.00000	0.02937	0.02937	—	128.259	128.259	0.00504	0.00622	0.19634	130.435
Vendor	0.00189	0.00136	0.05545	0.01676	0.00036	0.00072	0.01346	0.01418	0.00072	0.00372	0.00444	—	48.6362	48.6362	0.00050	0.00704	0.04884	50.7955
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01802	0.01751	0.01022	0.12051	0.00000	0.00000	0.02289	0.02289	0.00000	0.00536	0.00536	—	21.2347	21.2347	0.00084	0.00103	0.03251	21.5950
Vendor	0.00034	0.00025	0.01012	0.00306	0.00007	0.00013	0.00246	0.00259	0.00013	0.00068	0.00081	—	8.05228	8.05228	0.00008	0.00117	0.00809	8.40977
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	1/1/2027	1/6/2027	5.00000	4.00000	—
Grading	Grading	1/7/2027	1/20/2027	5.00000	10.00000	—
Building Construction	Building Construction	1/21/2027	2/10/2027	5.00000	15.0000	—
Pipeline Construction & Conveyance Channel	Linear, Grading & Excavation	2/11/2027	12/31/2027	5.00000	232.000	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Tractors/Loaders/Back hoes	Diesel	Average	4.00000	8.00000	84.0000	0.37000
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00000	8.00000	367.000	0.40000
Grading	Graders	Diesel	Average	1.000000	8.00000	148.000	0.41000
Grading	Rubber Tired Dozers	Diesel	Average	1.000000	8.00000	367.000	0.40000
Grading	Tractors/Loaders/Back hoes	Diesel	Average	2.00000	8.00000	84.0000	0.37000
Grading	Excavators	Diesel	Average	2.00000	8.00000	36.0000	0.38000

Grading	Scrapers	Diesel	Average	2.00000	8.00000	423.000	0.48000
Building Construction	Forklifts	Diesel	Average	3.00000	8.00000	82.0000	0.20000
Building Construction	Tractors/Loaders/Back hoes	Diesel	Average	3.00000	7.00000	84.0000	0.37000
Building Construction	Generator Sets	Diesel	Average	1.000000	8.00000	14.0000	0.74000
Building Construction	Welders	Diesel	Average	1.000000	8.00000	46.0000	0.45000
Pipeline Construction & Conveyance Channel	Excavators	Diesel	Average	6.00000	8.00000	36.0000	0.38000
Pipeline Construction & Conveyance Channel	Graders	Diesel	Average	2.00000	8.00000	148.000	0.41000
Pipeline Construction & Conveyance Channel	Crawler Tractors	Diesel	Average	2.00000	8.00000	87.0000	0.43000
Pipeline Construction & Conveyance Channel	Rollers	Diesel	Average	4.00000	8.00000	36.0000	0.38000
Pipeline Construction & Conveyance Channel	Rubber Tired Loaders	Diesel	Average	2.00000	8.00000	150.000	0.36000
Pipeline Construction & Conveyance Channel	Scrapers	Diesel	Average	4.00000	8.00000	423.000	0.48000
Pipeline Construction & Conveyance Channel	Signal Boards	Electric	Average	9.00000	8.00000	6.00000	0.82000
Pipeline Construction & Conveyance Channel	Tractors/Loaders/Back hoes	Diesel	Average	4.00000	8.00000	84.0000	0.37000

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
------------	-----------	-----------------------	----------------	-------------

Site Preparation	Worker	40.0000	7.10000	LDA,LDT1,LDT2
Site Preparation	Vendor	—	12.8000	HHDT,MHDT
Site Preparation	Hauling	0.00000	20.0000	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	Worker	40.0000	7.10000	LDA,LDT1,LDT2
Grading	Vendor	—	12.8000	HHDT,MHDT
Grading	Hauling	0.00000	20.0000	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	Worker	40.0000	7.10000	LDA,LDT1,LDT2
Building Construction	Vendor	0.04261	12.8000	HHDT,MHDT
Building Construction	Hauling	0.00000	20.0000	HHDT
Building Construction	Onsite truck	—	—	HHDT
Pipeline Construction & Conveyance Channel	Worker	40.0000	7.10000	LDA,LDT1,LDT2
Pipeline Construction & Conveyance Channel	Vendor	2.00000	12.8000	HHDT,MHDT
Pipeline Construction & Conveyance Channel	Hauling	0.00000	20.0000	HHDT
Pipeline Construction & Conveyance Channel	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	0.00000	0.00000	6.00000	0.00000	0.00000
Grading	0.00000	0.00000	30.0000	0.00000	0.00000
Pipeline Construction & Conveyance Channel	0.00000	0.00000	30.0000	0.00000	0.00000

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	264.157	203.983	0.03300	0.00400

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres
--------------------------	----------------------	---------------	-------------

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres
--------------------	---------------	-------------

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

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

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	31.2400	annual days of extreme heat
Extreme Precipitation	0.05000	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00000	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about $\frac{3}{4}$ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

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

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	0	0	N/A

Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

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

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

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

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	72.8314
AQ-PM	55.1960
AQ-DPM	15.1462
Drinking Water	86.6242
Lead Risk Housing	90.1323
Pesticides	90.1034
Toxic Releases	51.8880
Traffic	6.07500
Effect Indicators	—
CleanUp Sites	0.00000
Groundwater	91.5657
Haz Waste Facilities/Generators	10.1522
Impaired Water Bodies	91.8732
Solid Waste	72.3940
Sensitive Population	—
Asthma	72.2458
Cardio-vascular	95.1645
Low Birth Weights	4.70875
Socioeconomic Factor Indicators	—
Education	78.1321
Housing	23.3714
Linguistic	72.5132

Poverty	73.2035
Unemployment	92.6471

7.2. Healthy Places Index Scores

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

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	—
Employed	—
Median HI	—
Education	—
Bachelor's or higher	—
High school enrollment	—
Preschool enrollment	—
Transportation	—
Auto Access	—
Active commuting	—
Social	—
2-parent households	—
Voting	—
Neighborhood	—
Alcohol availability	—
Park access	—
Retail density	—
Supermarket access	—
Tree canopy	—
Housing	—
Homeownership	—

Housing habitability	—
Low-inc homeowner severe housing cost burden	—
Low-inc renter severe housing cost burden	—
Uncrowded housing	—
Health Outcomes	—
Insured adults	—
Arthritis	0.0
Asthma ER Admissions	39.9
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	0.0
Cognitively Disabled	68.5
Physically Disabled	47.8
Heart Attack ER Admissions	33.6
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	0.0
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0

Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	35.2
Elderly	63.3
English Speaking	0.0
Foreign-born	0.0
Outdoor Workers	1.5
Climate Change Adaptive Capacity	—
Impervious Surface Cover	96.5
Traffic Density	0.0
Traffic Access	0.0
Other Indices	—
Hardship	0.0
Other Decision Support	—
2016 Voting	0.0

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	82.0000
Healthy Places Index Score for Project Location (b)	—
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

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

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

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Construction: Construction Phases	Project Specific Information: year-long construction schedule
Construction: Off-Road Equipment	Default Equipment List, Removal of Crane Equipment for Building Construction
Construction: Trips and VMT	Project Specific Information: Worker Trips Adjusted for Max Number of On-site workers, 20 workers, 2 one-way trips each.
Operations: Energy Use	No Natural Gas
Operations: Water and Waste Water	Project Specific Information, no associated use for pump station
Operations: Solid Waste	Project Specific Information, no associated use for pump station
Operations: Refrigerants	Project Specific Information, no associated use for pump station

8.4. Construction

8.4.1. Construction Phases

Phase Type	Phase Name	Model Parameter	Default Value	New Value
Site Preparation	Site Preparation	Start Date	1/16/2027	1/1/2027
Site Preparation	Site Preparation	End Date	1/17/2027	1/6/2027
Site Preparation	Site Preparation	Work Days per Phase	1.000000	4.00000
Grading	Grading	Start Date	1/18/2027	1/7/2027
Grading	Grading	Work Days per Phase	2.00000	10.00000

Building Construction	Building Construction	End Date	6/10/2027	2/10/2027
Building Construction	Building Construction	Work Days per Phase	100.0000	15.0000

8.4.6. Trips and VMT

Phase Name	Trip Type	Model Parameter	Default Value	New Value
Site Preparation	Worker	One-Way Trips per Day	17.5000	40.0000
Grading	Worker	One-Way Trips per Day	20.0000	40.0000
Building Construction	Worker	One-Way Trips per Day	0.10920	40.0000
Pipeline Construction & Conveyance Channel	Worker	One-Way Trips per Day	82.5000	40.0000

Appendix B

Madera Subbasin Recharge Project 1 Biological Constraints Report

Final

MADERA SUBBASIN RECHARGE PROJECT 1

Biological Constraints Report

Prepared for
Madera County

December 2022



MADERA SUBBASIN RECHARGE PROJECT 1

Biological Constraints Report

Prepared for
Madera County

December 2022

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CVRWQCB	Central Valley Regional Water Quality Control Board
CVFPB	Central Valley Flood Protection Board
CWA	Clean Water Act
FESA	Federal Endangered Species Act
MBTA	Migratory Bird Treaty Act
NAVD	North American Vertical Datum
NRCS	Natural Resources Conservation Service
RD	Reclamation District
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

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MADERA SUBBASIN RECHARGE PROJECT 1

Biological Constraints Report

1 Introduction

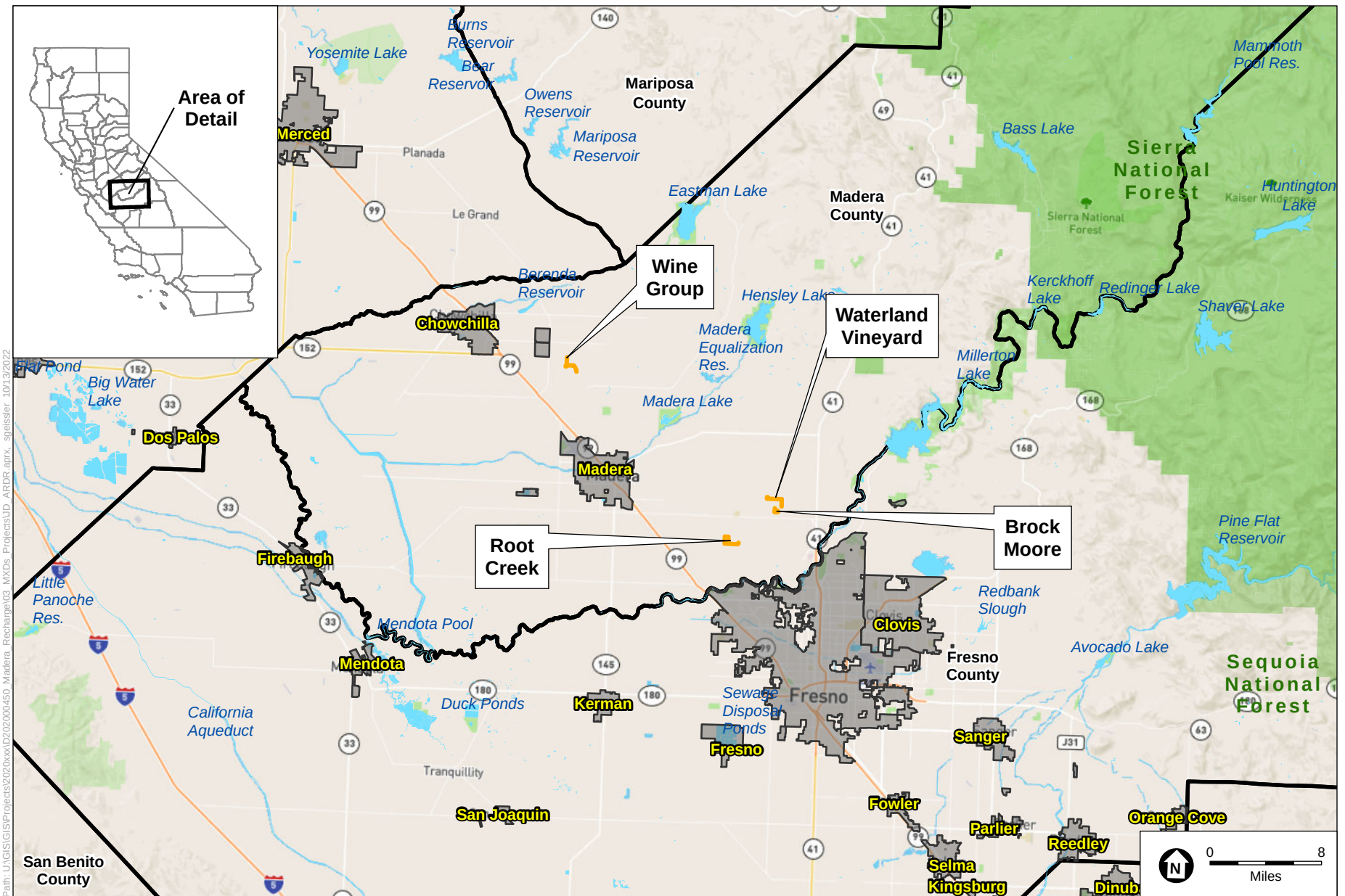
1.1 Background and Purpose for the Biological Constraints Review

This report presents an evaluation of the special-status wildlife, plants, and other sensitive biological resources that potentially occur within the Madera Subbasin Project 1 Study Area (Study Area). The evaluation is based on background data review of biological resources in the Study Area and vicinity as well as reconnaissance surveys conducted by ESA in September 2022. The intent and scope of this document are to characterize these biological resources in the Study Area (**Figure 1**) and propose measures to protect sensitive biological resources during installation of the groundwater recharge basins and pipelines.

1.2 Study Area Description

This report includes information for four properties (or project sites): Wine Group, Root Creek, Brock Moore and Waterland Vineyards, referred to collectively as the Study Area. The Study Area is located Madera County, northeast of State Route 99 and west of State Route 41. The Wine Group property lies to the north of the other two, approximately 3.5 miles east of Fairmead. Root Creek, Brock Moore and Waterland Vineyards lie approximately 14 miles southeast of Wine Group and are located roughly midway between the cities of Clovis and Madera. (**Figure 1**).

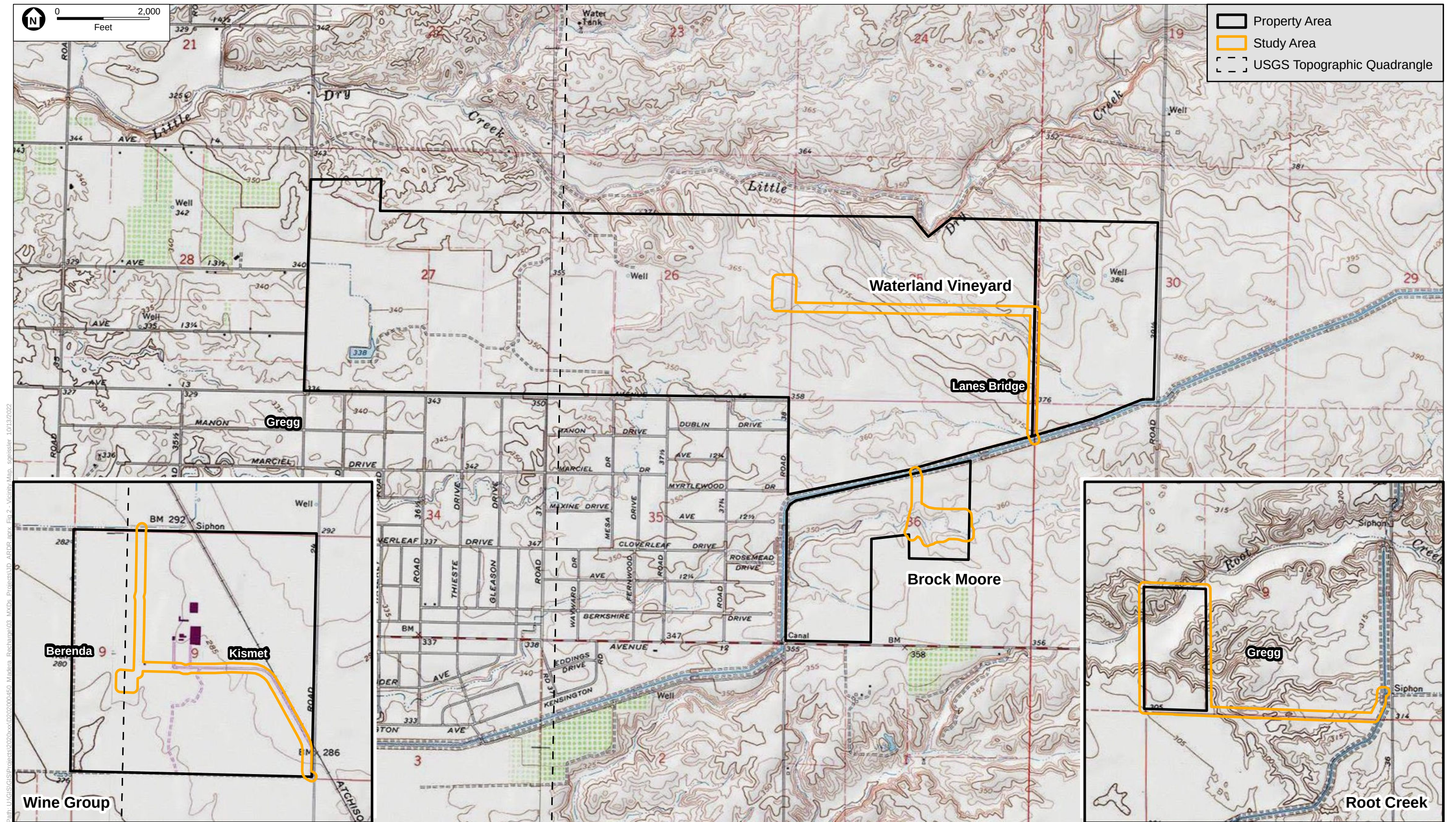
The Wine Group property is located immediately south of MID Lateral 32.2. The Study Area at Wine Group is a linear footprint within a roughly square property that is generally bounded on the north by Ave 23 and MID Lateral 32.2 and on the east by Rd 24. The Root Creek portion of the study area is roughly rectangular, bound by Ave 10 on the south and Rd 35 on the west with a linear portion that stretches east along Ave 10 to MID Lateral 6.2. The Brock Moore property is roughly rectangular with a short linear segment that extends north approximately 0.1 miles to MID Lateral 6.2. Waterland Vineyards is a linear footprint within a rectangular property that stretches north for .5 miles from MID Lateral 6.2, then west for 1 mile through an active vineyard (**Figures 2**).



SOURCE: ESRI; National Hydrography Dataset; DWR

East Madera Subbasin Recharge Phase 1

Figure 1
Regional Location



SOURCE: USGS Topographic Series (Gregg, Lanes Bridge, Berenda, Kismet, CA); ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 2
Vicinity Map

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2 Methods

2.1 Review of Background Information

Prior to performing reconnaissance biological surveys, ESA reviewed publicly available data, subscription-based biological resource data, and Study Area-specific information. Data sources that assisted in this analysis include:

- Topographic maps
- Historic and current aerial imagery
- The CDFW California Natural Diversity Database (CDFW, 2022)
- The National Wetlands Inventory (USFWS 2022b)
- The California Native Plant Society (CNPS) online database
- Soil maps from the Natural Resources Conservation Service (NRCS, 2022)
- eBird
- iNaturalist

2.2 Survey Dates and Surveying Personnel

Biological reconnaissance surveys of the Study Area were conducted by ESA Biologists Brennan Mulrooney and Brenda McMillan on September 13 and 14, 2022. Surveys were conducted to observe and characterize vegetation communities in the Study Area and to assess habitat quality and potential for common and special-status wildlife species to occur within the Study Area or the vicinity.

2.3 Regulatory Context

Biological resources in the Study Area may fall under the jurisdiction of various regulatory agencies and be subject to their regulations. In general, the greatest legal protections are provided for plant and wildlife species that are formally listed by the federal or state government. The following regulations and agencies are commonly associated with projects that have the potential to affect biological resources:

- Federal Endangered Species Act (FESA)
- Migratory Bird Treaty Act (MBTA)
- Bald and Golden Eagle Protection Act
- Clean Water Act, Section 404 (CWA)
- California Endangered Species Act (CESA)
- Fish and Game Code Section 3503, 3503.5, and 3511
- Native Plant Protection Act
- Lake or Streambed Alteration Program

- Porter Cologne Water Quality Act
- CEQA Guidelines Section 15380

3 Environmental Setting

This section provides the environmental baseline for soils, vegetation communities and habitats, and special-status plant and wildlife species in the Study Area.

3.1 Soils

The NRCS is a branch of the U.S. Department of Agriculture whose National Cooperative Soil Survey program produces soil data and provides information to the general public. NRCS has soil maps and data for approximately 95 percent of the nation's counties, including Madera County. Their reference materials include soil surveys, maps, reports and inventories, scientific and research reports and data, forestry, range, and wildlife inventories and studies, and official soil series and soil interpretations.

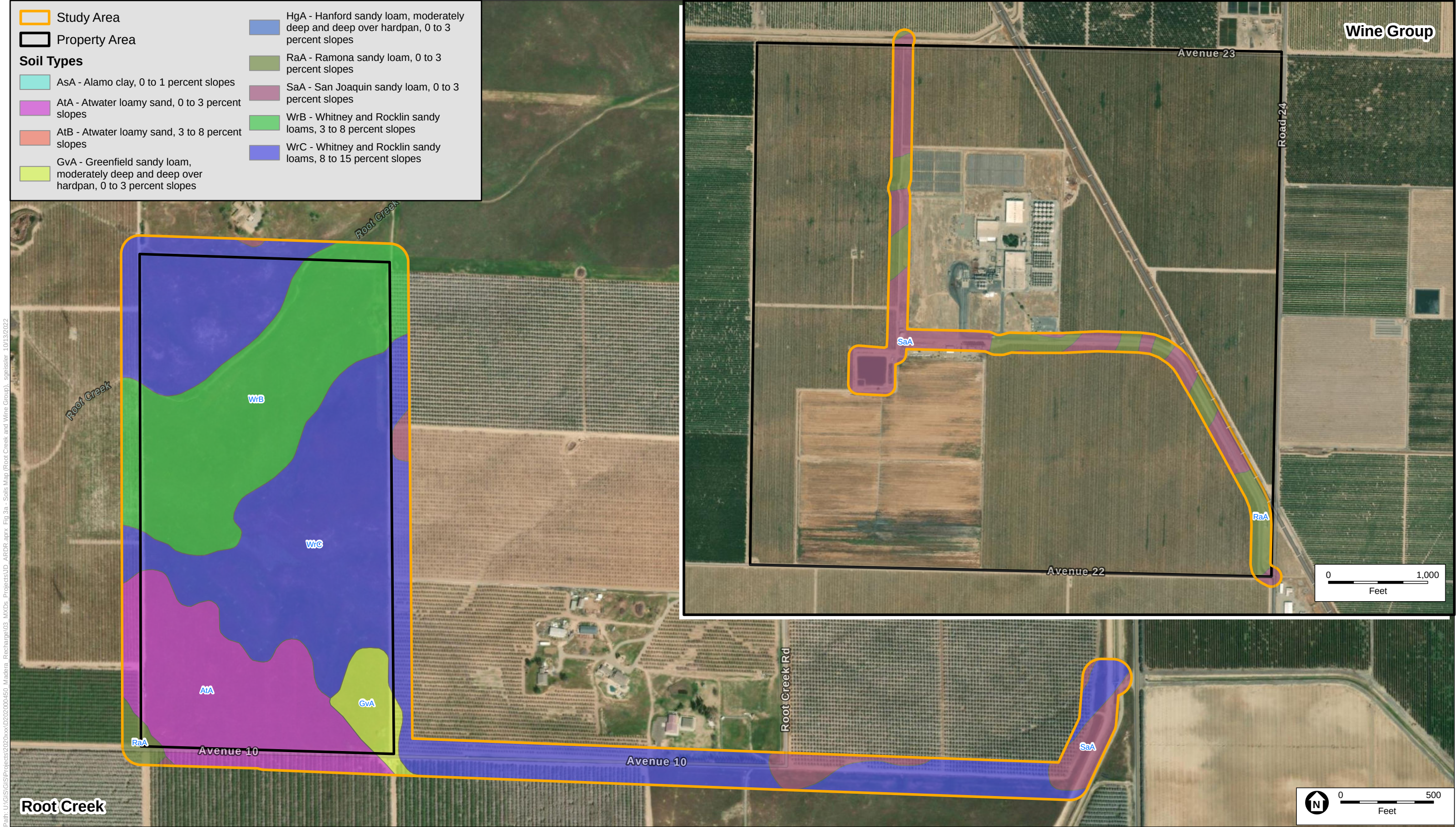
According to the NRCS soils report, 11 soil unit occurs within the Study Area, as shown in **Table 1** and **Figure 3a–b**.

TABLE 1
MAP GEOLOGICAL UNIT NAMES

Map Unit Symbol	Map Unit Name	Acres in Study Area	Percent of Study Area
AsA	Alamo clay, 0 to 1 percent slopes	.89	0.4%
AtA	Atwater loamy sand, 0 to 3 percent slopes	31.66	13.2%
AtB	Atwater loamy sand, 3 to 8 percent slopes	3.68	1.5%
GvA	Greenfield sandy loam, moderately deep and deep over hardpan, 0 to 3 percent slopes	3.57	1.5%
HgA	Hanford sandy loam, moderately deep and deep over hardpan, 0 to 3 percent slopes	12.73	5.3%
RaA	Ramona sandy loam, 0 to 3 percent slopes	17.02	7.1%
SaA	San Joaquin sandy loam, 0 to 3 percent slopes	39.24	16.4%
WrB	Whitney and Rocklin sandy loams, 3 to 8 percent slopes	67.35	28.2%
WrC	Whitney and Rocklin sandy loams, 8 to 15 percent slopes	63.18	26.4%
Total for Study Area		239.32	100.0%

SOURCE: USGS 2022

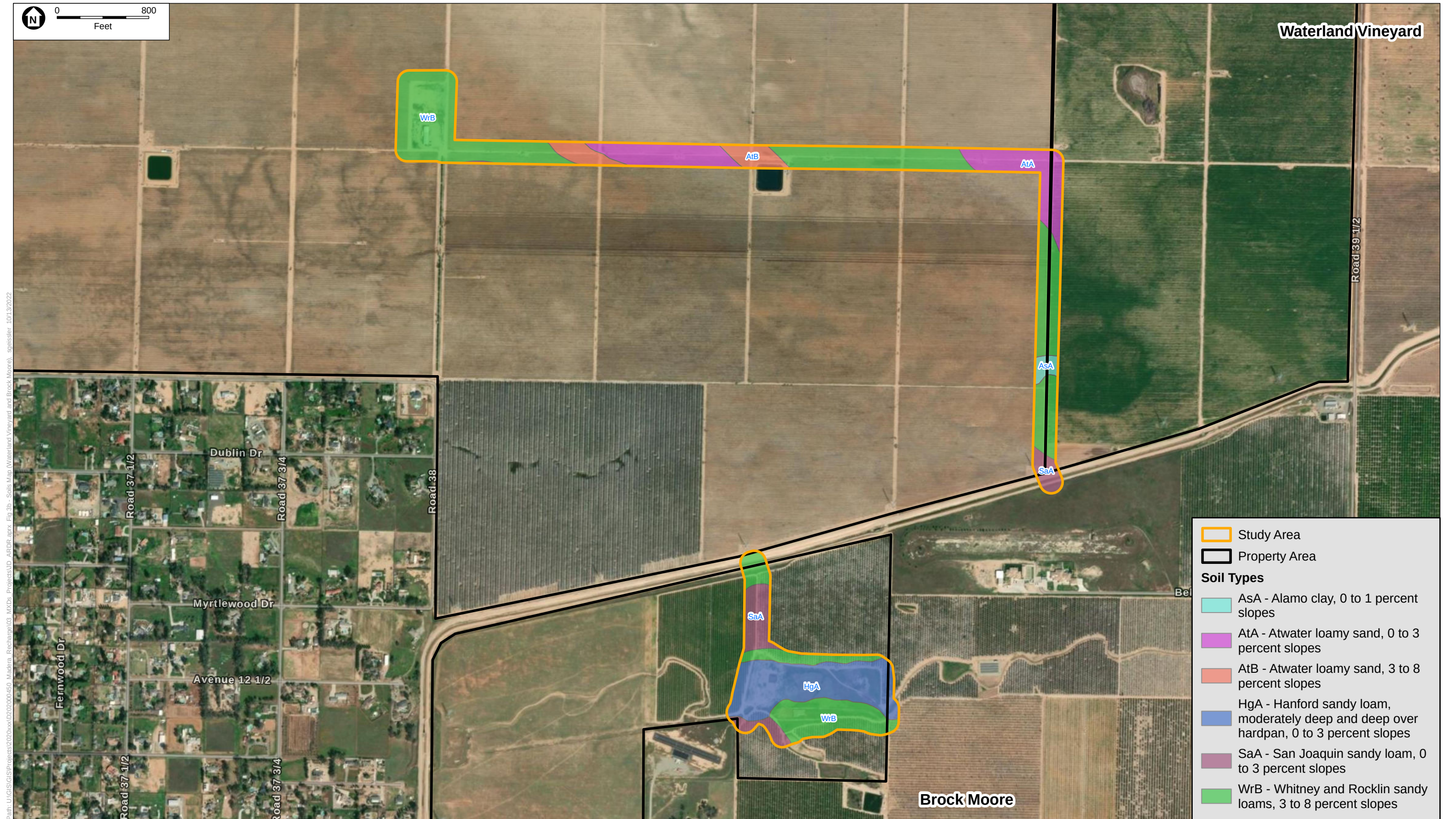
The surface geology of the Study Area consists predominantly of clay and clay loams. The majority of the soils within the Study Area are formed in alluvium derived from sedimentary rock. The silt loams and clays that make up the majority of the Study Area are primarily poorly drained with runoff ranging from very high to low.



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 3a
Soils Map
(Root Creek and Wine Group)



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

3.2 Hydrology

An Aquatic Resources Delineation report has been prepared for the Project and all relevant aspects of the Study Area hydrology are discussed in that report.

3.3 Biological Communities and Wildlife Habitats

Biological communities within the Study Area could provide potential habitat for special-status species, and are described below. These habitats were mapped for the Study Area as shown in **Figure 4a–b**.

Upland biological communities within the Study Area include a variety of agriculture crops, grassland and disturbed. Plant communities and habitats associated with aquatic settings within the Study Area include seasonal wetland, freshwater emergent wetland, and drainage ditches and irrigation canals. A formal delineation of aquatic resources was conducted by ESA at the same time as the biological reconnaissance survey and the boundary delineation results are presented in a separate Aquatic Resources Delineation Report (**Figure 5a–b**). Sensitive natural communities, such as those with a State rarity ranking of S1, S2, or S3, are identified within the descriptions below.

Agriculture

The Study Area is comprised mainly of agricultural land. In general, agricultural land within the Study Area has been leveled and undergoes frequent, generally seasonal cycles of crop growth and harvesting, along with applications of irrigation water, fertilizers, and pesticides. Study Area crop types fall into three main categories described below.

In general, croplands support relatively low species diversity, but the value of agricultural lands for special-status and common fish and wildlife species varies greatly among crop types and agricultural practices. Agricultural lands close to natural land cover can provide functions that complement and increase the habitat value of the natural land cover. For example, some raptors nest in valley foothill riparian habitat but forage in nearby croplands.

Irrigated Agriculture

Irrigated crops at Root Creek and Brock Moore include citrus, almonds and pistachios, while at Wine Group and Waterland Vineyards the crop is grapes. In general, the agricultural fields in the Study Area are kept extremely clean with very few weeds at the field margins, healthy crops, well-maintained roads, and properly functioning drainage and irrigation systems.

Disturbed/Ruderal

Disturbed/ruderal areas include dirt and gravel roads throughout the Study Area along with roadsides and levee slopes. These areas are either unvegetated with heavily compacted substrate or are sparsely to densely vegetated with weeds.



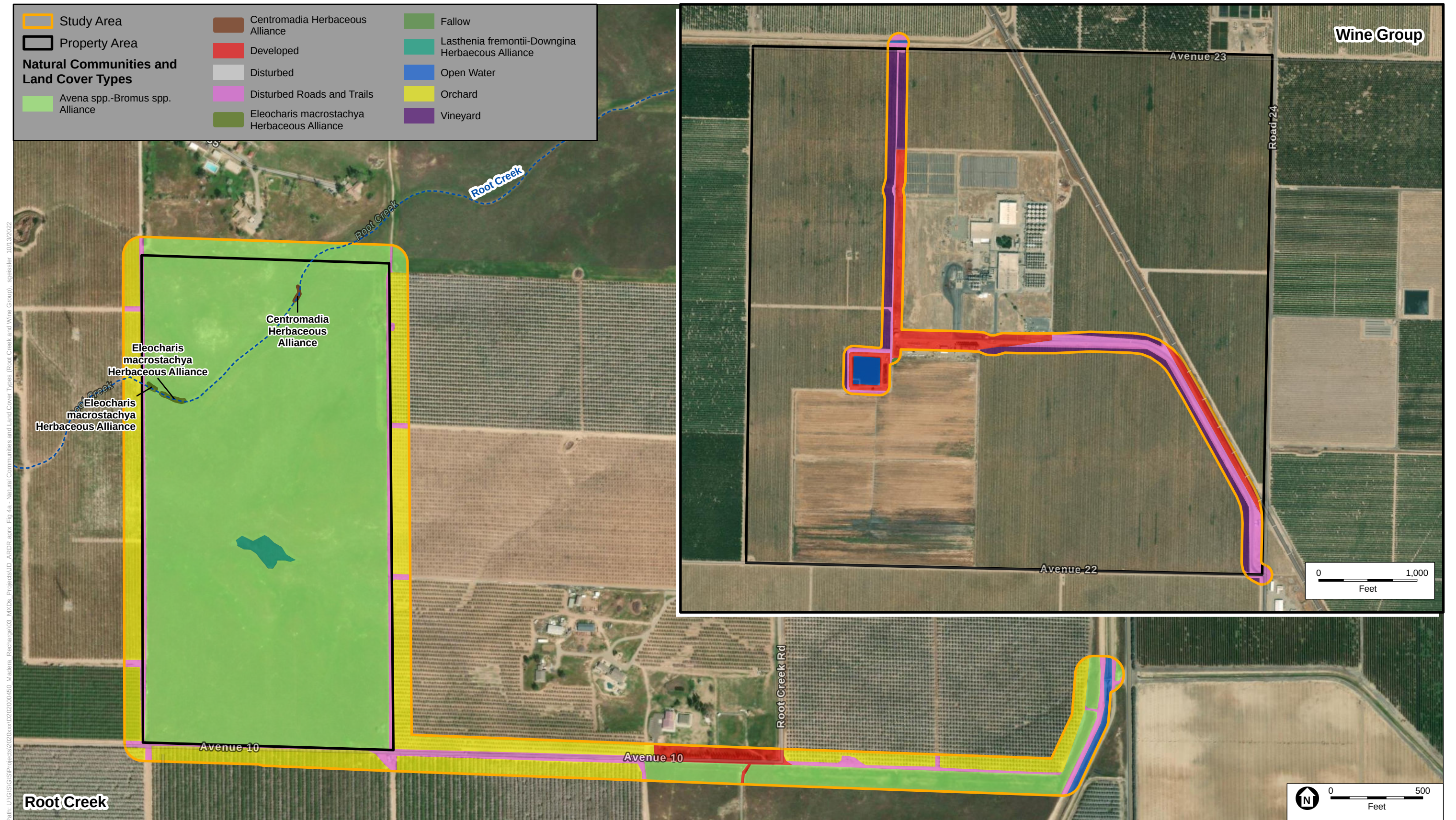
Photo 1. Disturbed/Ruderal habitat at Waterland Vineyards.
September 15, 2022

Grassland

Grassland habitat dominates the upland areas of Root Creek. At the time of the survey in September 2022, the dominant species in this habitat type were annual invasive non-native grasses such as wild oat (*Avena* spp.), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), red brome (*Bromus rubens*), and short-pod mustard (*Hirschfeldia incana*). Annual native herb and shrub species, such as, Fitch's tarweed (*Centromadia fitchii*), vinegar weed (*Trichostema lanceolata*), and fiddleneck (*Amsinckia* spp.) were also scattered intermittently within this habitat type (**Photo 2**).



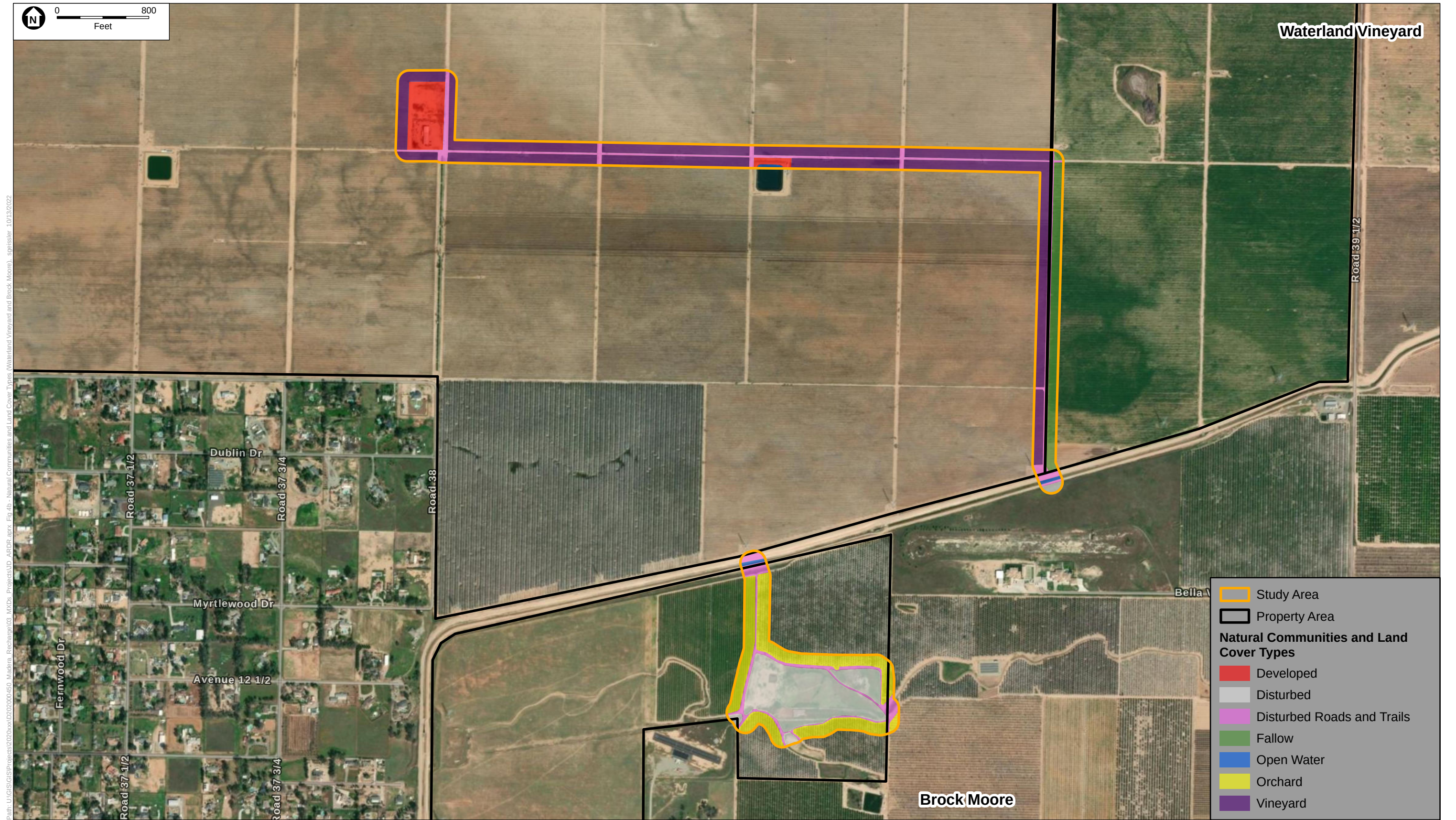
Photo 2. Grassland at Root Creek. September 15, 2022.



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

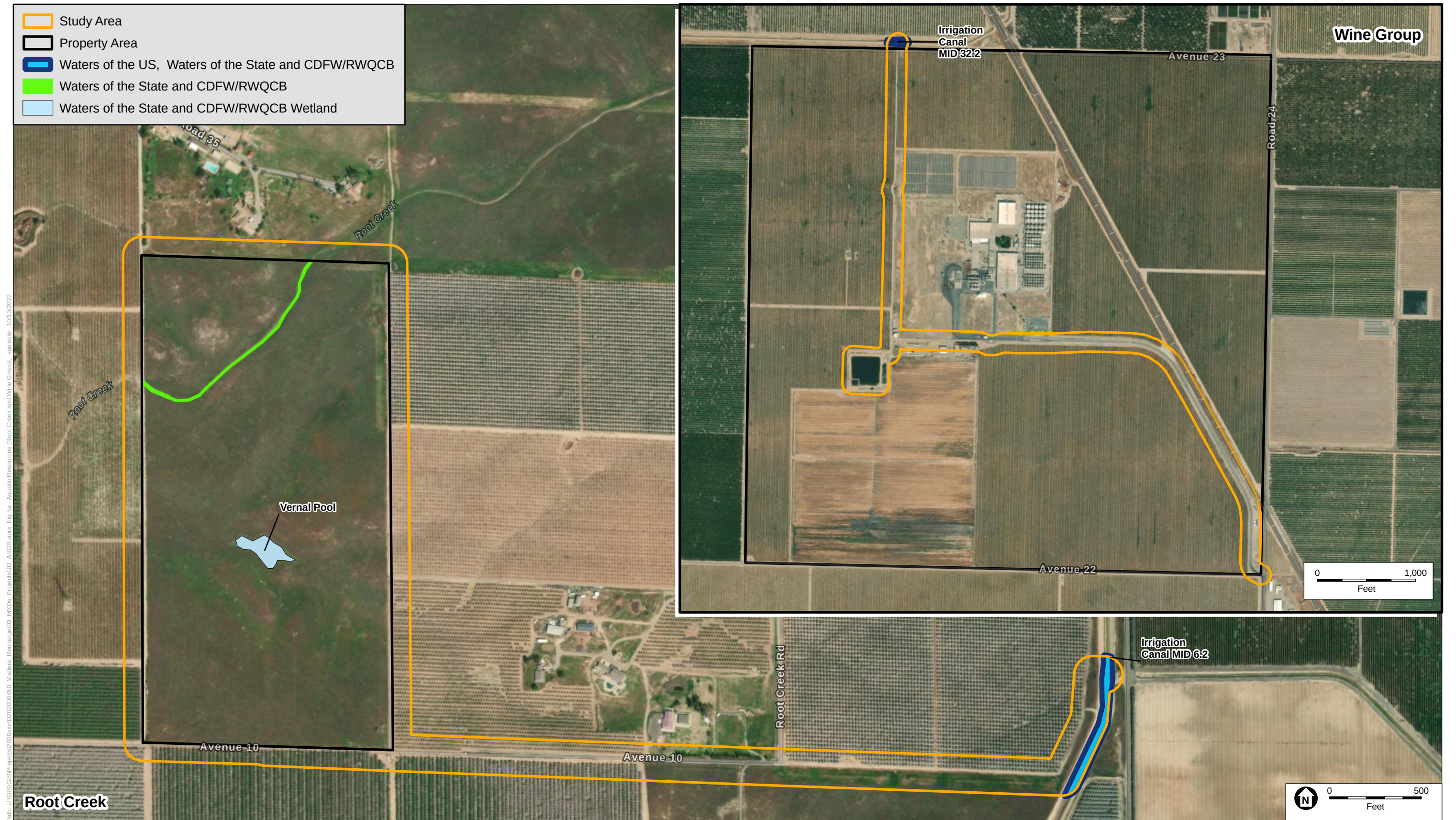
Figure 4a
Natural Communities and Land Cover Types
(Root Creek and Wine Group)



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

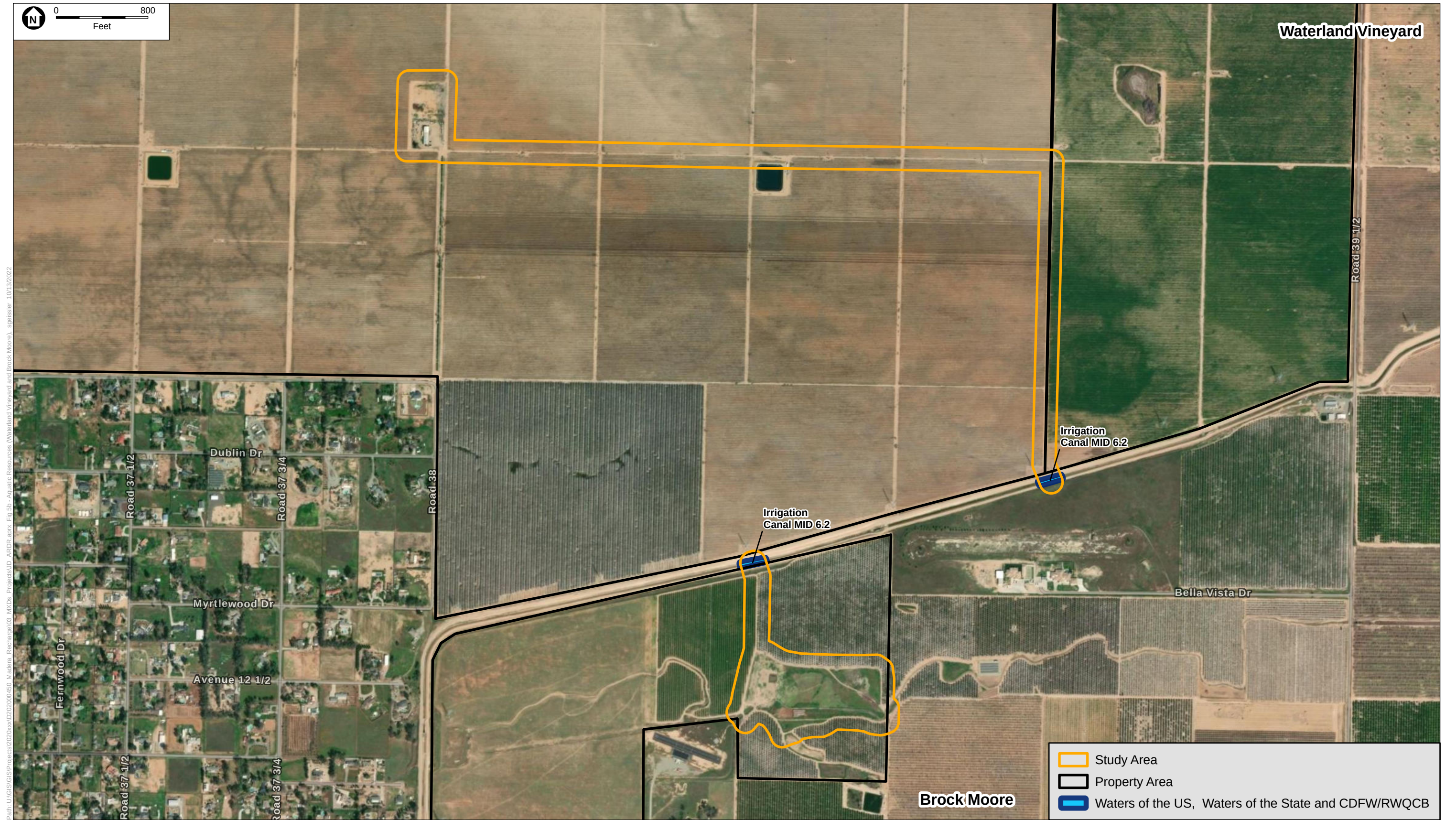
Figure 4b
Natural Communities and Land Cover Types
(Waterland Vineyard and Brock Moore)



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 5a
Aquatic Resources
(Root Creek and Wine Group)



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 5b
Aquatic Resources
(Waterland Vineyard and Brock Moore)

Open Water

This habitat type is comprised of year-round bodies of fresh water in the form of lakes, streams, ponds or rivers. This includes those portions of water bodies that are usually covered by water and contain less than 10 percent vegetative cover. Within the Study Areas open water refers to existing recharge subbasins which also includes a developed bank perimeter area. Within the Wine Group Study Area one recharge basin is present and covers approximately 2 acres. The Waterlands Vineyard supports one recharge basin within the Study Area and covers approximately 1.2 acres (**Photo 3**).



Photo 3. Open water habitat in recharge basin at Waterland Vineyards.
September 15, 2022.

Seasonal Wetlands and Swales

Seasonal wetlands are ephemeral wetlands characterized by shallow depressions that pond water for short durations in the winter and spring due to landscape position, a restrictive soil layer that acts as a barrier preventing water percolation to deeper soil layers, or both. Swales are linear features that are vegetated with wetland plants, and often connect other wetland features.

Seasonal wetlands and swales are dominated by plants that tolerate inundation during part of the growing season. Within the Study Area, there is one seasonal wetland at Root Creek as well as Root Creek itself which is an ephemeral stream. The seasonal wetland at the Root Creek property is dominated by *Lasthenia fremontii*-*Downingia* herbaecous alliance while Root Creek proper hosts *Eleocharis macrostachya* (**Photo 4**). Both of these seasonal wetland vegetation alliances are considered sensitive natural communities.



Photo 4. Seasonal Wetland at Root Creek. September 15, 2022.

Agricultural Ditches and Canals

Agricultural ditches and canals are found throughout the Study Area and serve the functions of draining the agricultural fields during the wet season and delivering irrigation water in the dry season. Ditches and canals in the Study area are mostly free of emergent vegetation, but where there is a thin layer of silt on the bottom they support patches of spikerush (*Eleocharis macrostachya*) (Photo 5).



Photo 5. MID Lateral 6.2 with *Eleocharis* bordering Brock Moore and Waterland Vineyards. September 15, 2022.

3.4 Special-Status Species

Several species known to occur on or in the vicinity of the Study Area are protected pursuant to federal and/or State endangered species laws or have been designated as Species of Special Concern by CDFW. In addition, Section 15380(b) of the *CEQA Guidelines* provides a definition of rare, endangered, or threatened species that are not included in any listing.¹ Species recognized under these terms are collectively referred to as “special-status species.”

A list of special-status species with potential to occur on or in the vicinity of the Study Area was compiled from a nine-quad search of the California Natural Diversity Database (CNDDDB) (CDFW 2022), a nine-quad search on the California Native Plant Society’s (CNPS) Rare Plant Inventory (CNPS 2022), a Study Area search of the U.S. Fish and Wildlife Service (USFWS) endangered species database (USFWS 2022c), and biological literature on the region for the surrounding 7.5-minute USGS topographic quadrangles. The quadrangles for Wine Group were Le Grand, Raynor Creek, Raymond, Berenda, Kismet, Daulton, Bonita Ranch, Madera and Gregg. The quadrangles for Waterland Vineyards were Daulton, Little Table Mountain, Millerton Lake West, Gregg, Lanes Bridge, Friant, Herndon, Fresno North and Clovis. The quadrangles for Root Creek were Kismet, Daulton, Little Table Mountain, Madera, Gregg, Lanes Bridge, Biola, Herndon and Fresno North. See **Figures 6a–c** for maps of CNDDDB special-status species occurrences within 5 miles of the Study Area.

From the full list of species, each was then individually assessed based on habitat requirements and distribution relative to vegetation communities and habitat features that occur in and around the Study Area. A comprehensive list of special-status species, by project site, that were considered in the analysis is provided in **Appendix A, Special-Status Species with Potential to Occur in the Study Area**.

Special-Status Plants

No special-status plants were identified during the September 13 or 14, 2022, biological reconnaissance surveys of the Study Area.

Based on the habitat types and conditions within the Study Area, along with review of background information and database searches a variety of special-status plant species have potential to occur in the Study Area (indicated by project site), and are listed in **Appendix A**. From this list, 13 special-status plant species were determined to have a low potential to occur within the Study Area and potential to be affected by the Madera Subbasin Recharge Project 1: heartscale (*Atriplex cordulata* var. *cordulata*), lesser saltscale (*Atriplex minuscula*), vernal pool smallscale (*Atriplex persistens*), subtle orache (*Atriplex subtilis*), California jewelflower (*Caulanthus californicus*), beaked clarkia (*Clarkia rostrata*), dwarf downingia (*Downingia pusilla*), spiny-sealed button-celery (*Eryngium spinosepalum*), shining navarretia (*Navarretia nigelliformis* ssp. *radians*), San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*), hairy Orcutt

¹ For example, vascular plants listed as rare or endangered or as List 1 or 2 by the California Native Plant Society (CNPS) are considered to meet Section 15380(b) requirements.

grass (*Orcuttia pilosa*), Sanford's arrowhead (*Sagittaria sanfordii*), and Greene's tuctoria (*Tuctoria greenei*).

Special-Status Wildlife Species

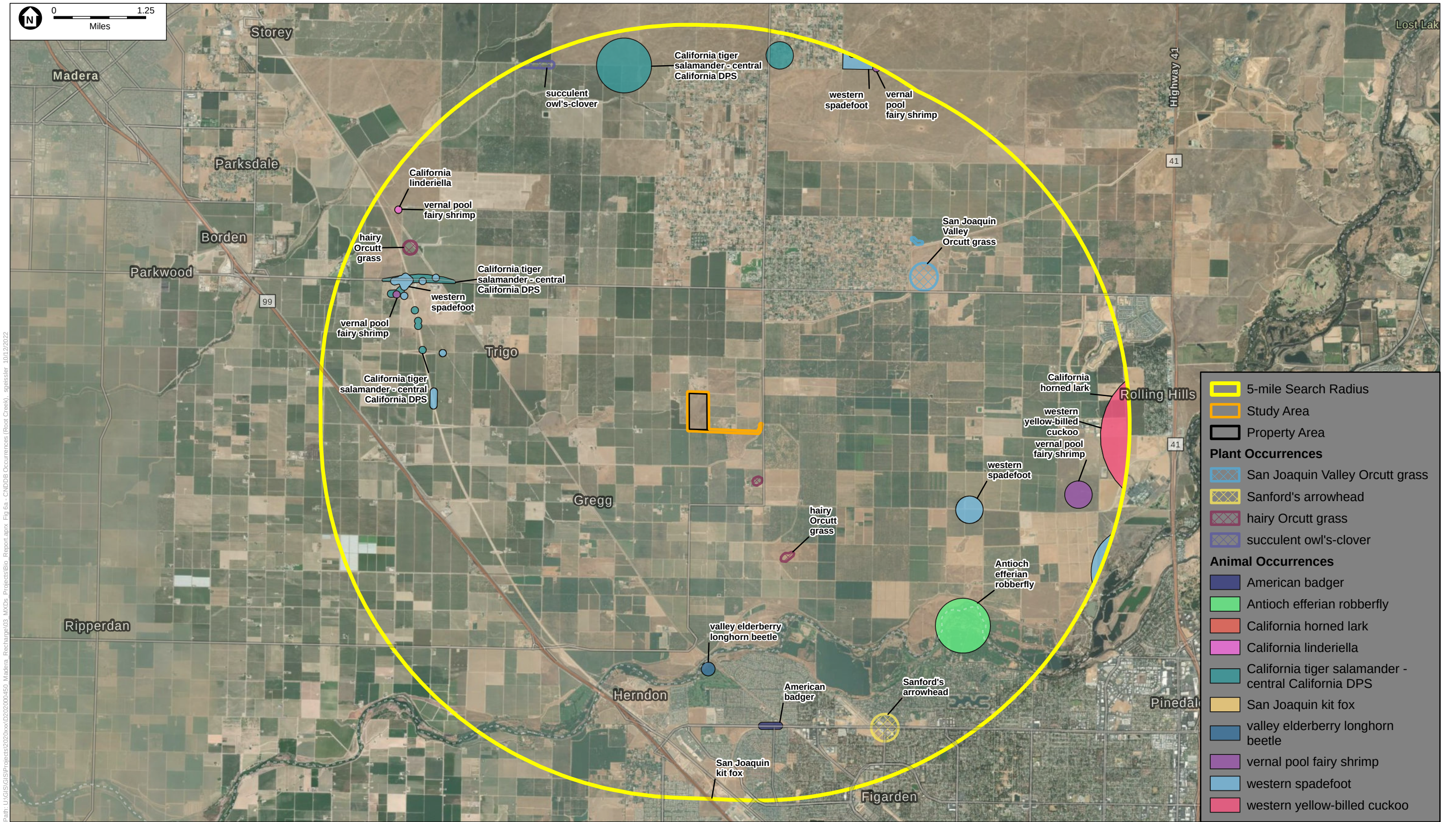
No federal or state-listed wildlife species were observed during the September 13 or 14, 2022, reconnaissance surveys within the Study Area. Based on the habitat types and conditions within the Study Area, along with review of background information and database searches, a variety of special-status wildlife species have potential to occur in the Study Area and are listed in **Appendix A**. From this list, 17 special-status wildlife species were determined to have a potential to occur within the Study Area and potential to be affected by the project: vernal pool fairy shrimp (*Brachinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), California tiger salamander (*Ambystoma californiense*), western spadefoot (*Spea hammondi*), California glossy snake (*Arizona elegans occidentalis*), blunt-nosed leopard lizard (*Gambelia silus*), coast horned lizard (*Phrynosoma blainvillii*), tricolored blackbird (*Agelaius tricolor*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), pallid bat (*Antrozous pallidus*), Fresno kangaroo rat (*Dipodomys nitratoideis exilis*), hoary bat (*Lasiurus cinereus*), American badger (*Taxidea taxus*) and San Joaquin kit fox (*Vulpes macrotis mutica*). No elderberry shrubs (*Sambucus* sp.), which are the sole hosts for the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), were observed within the Study Area. Therefore, no valley elderberry longhorn beetle occurs within the Study Area. No work is planned in perennial aquatic resources, and no impacts to those features or any special-status species in them are expected to occur.

Potential impacts to special-status species are discussed in Section 4, followed by recommendations for avoiding and minimizing these impacts.

3.5 Wildlife Movement Corridors

Wildlife movement corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or by areas of human disturbance or urban development. Topography and other natural factors in combination with urbanization can fragment or separate large open-space areas. The fragmentation of natural habitat can create isolated “islands” of vegetation and habitat that may not provide sufficient area to accommodate sustainable populations and can adversely impact genetic and species diversity. The retention of wildlife movement corridors ameliorates the effects of such fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished. Such movement may also promote genetic exchange between separated populations.

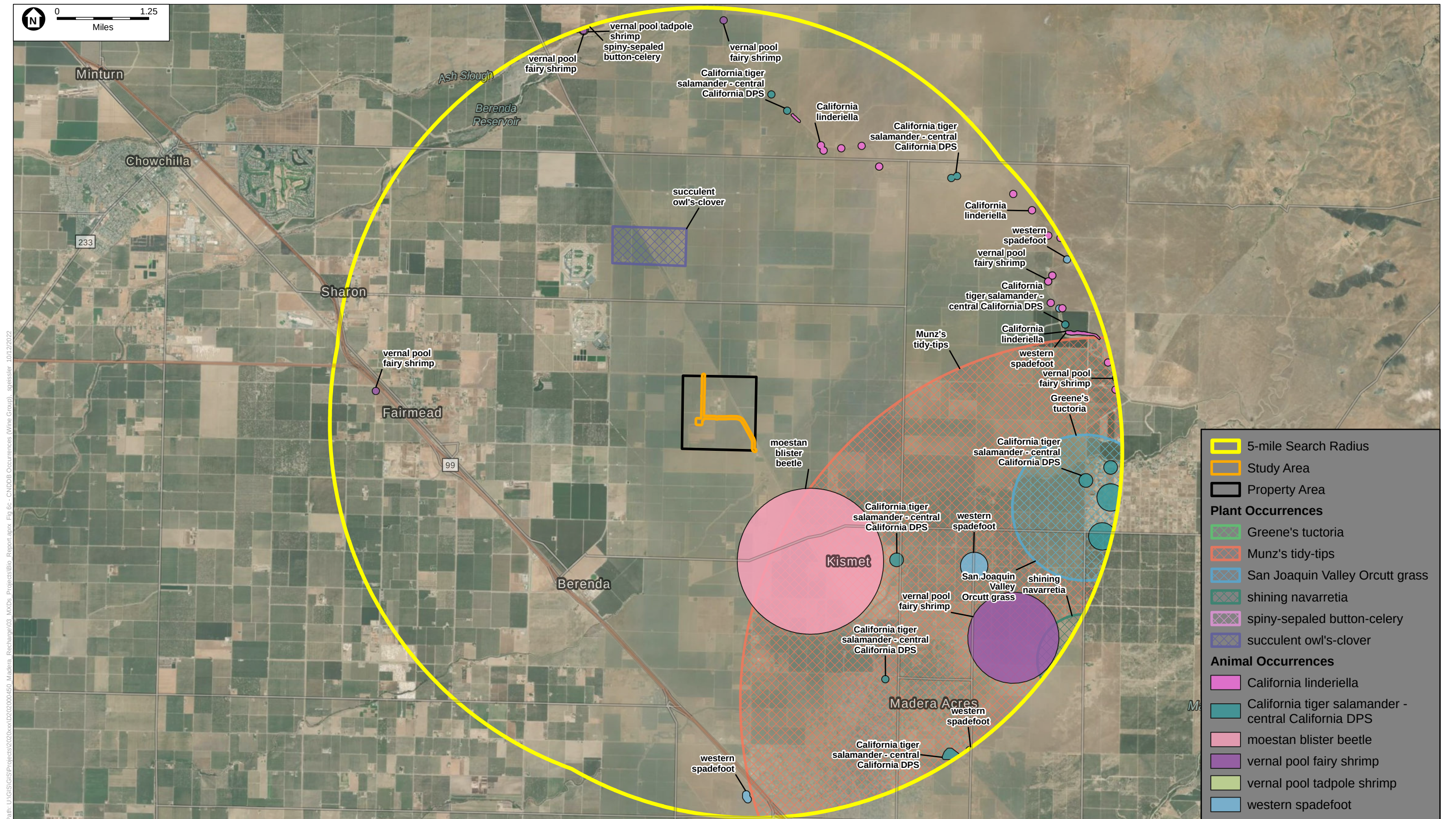
The Study Area is currently used for a variety of agricultural purposes. Wildlife that is able to pass through or over the fencing may move through the Study Area from surrounding grasslands/agriculture. Root Creek provides a corridor for movement through the Root Creek property and MID Lateral 6.2 provides a corridor for movement along the borders of Root Creek property and Waterland Vineyards. The grasslands north of Waterland Vineyards provides a source of wildlife movement into the Study Area. Wine Group is surrounded by active agriculture that limits the potential for wildlife movement into that portion of the Study Area.



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 6a
CNDDDB Occurrences within 5 miles of the Study Area
Root Creek



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 6c
CNDDDB Occurrences within 5 miles of the Study Area
Wine Group

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3.6 Critical Habitat for Listed Fish and Wildlife Species

The USFWS defines the term “critical habitat” in the federal Endangered Species Act as a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The Study Area is not within designated critical habitat for any listed plant species, but is adjacent to designated critical habitat for federally threatened and state endangered San Joaquin Valley Orcutt grass.

3.7 Heritage and Protected Trees

The Study Area does not support any trees protected by local tree ordinances, and no trees would be removed, trimmed, or damaged during project related work.

4 Recommendations

Based on the results of ESA’s review of the background information, sensitive species database searches, the reconnaissance biological survey, and habitat suitability, the Study Area provides limited suitable habitat for special-status species. **Appendix A** presents the potential to occur for special-status species known to occur in the vicinity of each project site within the Study Area. Most of the special-status species evaluated have low potential to occur, or the Study Area does not support suitable habitat. For special-status species and sensitive biological resources that could be negatively affected by the project, the recommendations below would allow the project to avoid and minimize impacts to special-status species.

4.1 Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp

Federally threatened vernal pool fairy shrimp (VPFS; *Branchinecta lynchi*) and federally endangered vernal pool tadpole shrimp (VPTS; *Lepidurus packardii*) occur in vernal pools and some seasonal wetlands with similar hydrology in the region. A seasonal wetland occurs on the Root Creek property. The likelihood that VPFS and VPTS occur in the seasonal wetland on the Root Creek property is moderate because both species have potential to occur in the area, but it is not clear that the wetland exhibits a sufficient hydroperiod to support these species.

Because vernal pool fairy and tadpole shrimp are moderately likely to occur, the project intends to incorporate the following avoidance measure:

- Areas identified by the branchiopod habitat suitability surveys to be potentially suitable habitat for special-status branchiopods will be entirely avoided.²

4.2 Special-Status and Other Nesting Birds

If ground disturbance is scheduled to occur during the avian nesting season (February 1 through August 31), Madera County or its contractor may implement the following measures to avoid

² Refer to Figure 4a

potential adverse effects to nesting raptors, including burrowing owl, Swainson's hawk, and white-tailed kite, and other common and special-status nesting birds.

1. No more than two weeks prior to ground disturbance, a qualified biologist shall perform pre-activity surveys for nesting birds within 500 feet of the work areas, where access is available. If pre-activity surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further surveys or avoidance are required.
2. If active nests are detected during pre-activity surveys, Madera County shall create a no-disturbance buffer around active raptor nests and nests of other special-status birds during the breeding season, or until it is determined that young birds have fledged. Buffers shall be at least 250 feet for raptors and at least 150 feet for other nesting birds. Nests initiated within the active work area may have reduced buffer sizes due to the increased tolerance of disturbance. Reductions to nest buffer distances may be allowed on a case-by-case basis in coordination with the CDFW based on site-specific factors such as the existing disturbance levels, the species of nesting bird, and the magnitude of the proposed disturbance.

4.3 Special-Status Plants

The following measure should be implemented in freshwater emergent wetlands, seasonal wetlands, and alkali grassland habitat prior to any ground disturbance to avoid or minimize impacts to special-status plant species:

1. A qualified biologist will conduct pre-construction surveys at Root Creek for special-status plant species in suitable habitat areas and areas subject to ground disturbing activities. The surveys will be conducted during bloom season, typically during the months of March and June, and prior to ground-disturbing activities. The biologist will work with the contractor to mark and avoid locations of all special-status plant species observed where feasible or prepare a relocation plan if avoidance is infeasible. The relocation plan may include, but is not limited to, seed and soils collection, plant salvage, suitable relocation sites, monitoring requirements, and success criteria.

4.4 Wetlands and Waters of the U.S. and State

Seasonal wetlands were observed within the Study Area during the reconnaissance surveys in September 2022. Therefore, a Wetland Delineation Report will be prepared, for review and verification by USACE. The best strategy to protect wetlands and waters of the U.S. would be to avoid impacts to areas identified in the wetland delineation. However, if avoidance is not feasible, the following measure should be implemented to protect Water of the U.S. and wetlands:

1. Clearing of wetland vegetation and ground disturbance in waters and wetlands will be confined to the minimal area necessary for project related impacts.
2. Areas of temporary impacts will be restored to pre-project conditions.
3. Native wetland vegetation should be replaced with the same or similar species known to occur in the area upon completion of ground disturbing activities.
4. Any necessary permits or authorizations (404, 401, CVRWQCB) will be obtained prior to placement of fill or alteration of any regulated waters of the U.S. and state.

5 References

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Appendix A

**Special-Status Species with
Potential to Occur in the Study
Area**

Species	Federal Status/State Status/CRPR Status	Habitat Requirements	Potential to Occur
Plants			
<i>Atriplex cordulata</i> var. <i>cordulata</i> heartscale	—/—/1B.2	Chenopod scrub, alkali seasonal wetlands, and grassland. Often found in the sandy soils of alkaline flats and scalds in the Central Valley. Blooms Apr–Oct. Elevation: 3 to 960 feet	Low. Grasslands at the RC site provides marginal suitable habitat. Suitable habitat is not present within the WG, WV and BM study areas.
<i>Atriplex minuscula</i> lesser saltscale	—/—/1B.1	Annual herb found in chenopod scrub, playas, and valley and foothill grasslands with sandy, alkali soil. Blooms May–Oct. Elevation: 49 to 656 feet.	Low. Grasslands at the RC site provides marginal suitable habitat. Suitable habitat is not present within the WG, WV and BM study areas.
<i>Atriplex persistens</i> vernal pool smallscale	—/—/1B.2	Annual herb generally found in alkali vernal pools. Blooms Jun–Oct. Elevation: 33 to 377 feet	Low. Grassland and the vernal pool at the RC site provides marginal suitable habitat. Suitable habitat is not present within the WG, WV and BM study areas.
<i>Atriplex subtilis</i> subtle orache	—/—/1B.2	Valley and foothill grassland up to 400 feet. Blooms Jun–Sep. Elevation: 130–330 feet.	Low. Grasslands at the RC site provides marginal suitable habitat. Suitable habitat is not present within the WG, WV and BM study areas.
<i>Calycadenia hooveri</i> Hoover's calycadenia	—/—/1B.2	Annual herb occurs in rocky, exposed areas of cismontane woodland, oak savannah, and valley and foothill grassland. Blooms Jul–Oct. Elevation: 215 to 985 feet.	Not expected: Study Area substrates are not suitable.
<i>Castilleja campestris</i> var. <i>succulenta</i> succulent owl's-clover	FT/SE/1B.2	Annual hemiparasitic herb found in vernal pools, which are often acidic. Blooms April–May. Elevation: 164 to 2,461 feet.	Not expected: Study Area substrates are not suitable.
<i>Caulanthus californicus</i> California jewelflower	FE/SE/1B.1	Annual herb occurs in sandy areas of chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland. Blooms Feb– May. Elevation is 200 to 3280 feet.	Low. Grasslands at the RC site provides marginal suitable habitat. Suitable habitat is not present within the WG, WV and BM study areas.
<i>Clarkia rostrata</i> beaked clarkia	—/—/1B.3	Annual herb occurs in in cismontane woodland and valley and foothill grassland. Blooms Apr–May. Elevation: 195 to 1640 feet.	Low. Grasslands at the RC site provides marginal suitable habitat. Suitable habitat is not present within the WG, WV and BM study areas.

Species	Federal Status/State Status/CRPR Status	Habitat Requirements	Potential to Occur
<i>Cryptantha hooveri</i> Hoover's cryptantha	—/—/1A	Annual herb generally found in dry, coarse, sandy flats and hills in valley and foothill grassland. Blooms Apr–May. Elevation: 30 to 490 feet.	Not expected: Study Area substrates are not suitable.
<i>Delphinium recurvatum</i> recurved larkspur	—/—/1B.2	Perennial herb occurring in chenopod scrub, cismontane woodland, and in alkali valley and foothill grassland. Blooms March–June. Elevation: 10 to 2,460 feet.	Not expected: Study Area substrates are not suitable within the WG, WV, and BM study areas. Suitable habitat is not present within the RC study area.
<i>Downingia pusilla</i> dwarf downingia	—/—/2B.2	Prefers lake margins, vernal pools and wet places sometimes playas and grasslands. Blooms Mar–May. Elevation: 5 to 1460 feet	Low. A vernal pool at the RC site provides marginal suitable habitat. Suitable habitat is not present within the WG, WV and BM study areas.
<i>Eryngium spinosepalum</i> spiny-sepaed button-celery	—/—/1B.2	Annual to perennial herb occurs in vernal pools, swales, and mesic areas within valley and foothill grassland. Blooms Apr–Jun. Elevation: 260 to 3200 feet.	Low. A vernal pool at the RC site provides suitable habitat. However, button celery plants present were identified as <i>Eryngium castrense</i> . Suitable habitat is not present within the WG, WV and BM study areas.
<i>Imperata brevifolia</i> California satintail	—/—/2B.1	Perennial grass found in meadows and springs (often alkali), streambanks, floodplains, and mesic areas of chaparral and scrub. Blooms Sep–May. Elevation: 0 to 3985 feet.	Not expected: No suitable habitat is present in the Study Area.
<i>Layia munzii</i> Munz's tidy-tips	—/—/1B.2	Annual herb occurs in alkaline clay areas of chenopod scrub and valley and foothill grassland. Blooms May–Apr. Elevation: 490 to 2295 feet.	Not expected: Study Area substrates are not suitable at WG, WV, BM. RC does not support suitable habitat.
<i>Leptosiphon serrulatus</i> Madera leptosiphon	—/—/1B.2	Annual herb occurs in openings within cismontane woodland and lower montane coniferous forest. Blooms Apr–May. Elevation: 985–4265	Not expected: Study Area is outside of the elevation range for Madera leptosiphon.
<i>Navarretia myersii</i> ssp. <i>myersii</i> pincushion navarretia	—/—/1B.1	Annual herb occurs in vernal pools, often those that are acidic. Blooms Apr–May. Elevation: 65–1085 feet.	Not expected: Study Area substrates are not suitable. A vernal pool at the RC site does not support suitable vernal pool habitat.

Species	Federal Status/State Status/CRPR Status	Habitat Requirements	Potential to Occur
<i>Navarretia nigelliformis</i> ssp. <i>radians</i> shining navarretia	—/—/1B.2	Annual herb occurs in vernal pools, cismontane woodland, and valley and foothill grasslands, often in clay depressions. Blooms Apr-Jul. Elevation: 215 to 3280 feet.	Low. A vernal pool at the RC site does not appear support a sufficient hydroperiod and conditions to support this species. Suitable habitat is not present within the WG, WV and BM study areas.
<i>Orcuttia inaequalis</i> San Joaquin Valley Orcutt grass	FT/SE/1B.1	Annual grass occurs in vernal pools. Blooms Apr-Sep. Elevation: 35 to 2475 feet.	Low. A vernal pool at the RC site does not appear support a sufficient hydroperiod and conditions to support this species. Suitable habitat is not present within the WG, WV and BM study areas.
<i>Orcuttia pilosa</i> hairy Orcutt grass	FE/SE/1B.1	Annual herb found in vernal pools. Blooms May-Sept. Elevation: 151 to 656 feet.	Low. A vernal pool at the RC site does not appear support a sufficient hydroperiod and conditions to support this species. Suitable habitat is not present within the WG, WV and BM study areas.
<i>Phacelia ciliata</i> var. <i>opaca</i> Merced phacelia	—/—/3.2	Annual herb found in clay or gravel substrates (often alkaline) within valley and foothill grassland. Blooms Feb-May. Elevation: 195 to 490 feet.	Not expected: No suitable habitat is present in the Study Area.
<i>Puccinellia simplex</i> California alkali grass	—/—/1B.2	Annual grass occurring in saline flats and mineral springs within chenopod scrub, meadow and seep, valley and foothill grassland, and vernal pool. Blooms Mar-May. Elevation: 5 to 3050 feet.	Not expected: Study Area substrates and habitats are not suitable.
<i>Pseudobahia bahiifolia</i> Hartweg's golden sunburst	FE/SE/1B.1	Annual herb occurs in clay (often acidic) areas of cismontane woodland and valley and foothill grassland. Blooms Mar-Apr. Elevation: 50 to 490 feet.	Not expected: Study Area substrates are not suitable.
<i>Sagittaria sanfordii</i> Sanford's arrowhead	—/—/1B.2	Perennial rhizomatous emergent herb found in assorted shallow freshwater marshes and swamps. Blooms May-Oct. Elevation: 0 to 2,133 feet.	Low. Perennial channels within the study area support some emergent wetland vegetation however, suitable habitat is marginal for this species.
<i>Tuctoria greenei</i> Greene's tuctoria	FE/SR/1B.1	Annual grass occurs within vernal pools. Blooms May-Jul. Elevation: 100 to 3510 feet.	Low. A vernal pool at the RC site does not appear support a sufficient hydroperiod and conditions to support this species. Suitable habitat is not present within the WG, WV and BM study areas.

Species	Federal Status/State Status/CRPR Status	Habitat Requirements	Potential to Occur
Invertebrates			
<i>Branchinecta lynchi</i> Vernal pool fairy shrimp	FE/SA/—	Lifecycle restricted to vernal pools and sandstone rock outcrop pools.	Moderate: Vernal pool at RC may support a sufficient hydroperiod and conditions to support this species. Not expected at WG, BM or WV due to lack of suitable habitat.
<i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle	FT/—/—	Breeds and forages exclusively on elderberry shrubs (<i>Sambucus mexicana</i>) typically associated with riparian forests, riparian woodlands, elderberry savannas, and other Central Valley habitats. Occurs only in the Central Valley of California.	Not expected: The host plant for valley elderberry longhorn beetle (<i>Sambucus nigra</i> subsp. <i>caerulea</i>) was not observed within the study area September 2022 reconnaissance surveys.
<i>Lepidurus packardii</i> Vernal pool tadpole shrimp	FE/—/—	Inhabits vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, ditches, backhoe pits, and ruts caused by vehicular activities.	Moderate. Vernal pool at RC may support a sufficient hydroperiod and conditions to support this species. Not expected at WG, BM or WV due to lack of suitable habitat.
Amphibians			
<i>Ambystoma californiense</i> California tiger salamander	FT/ST/—	Inhabits vacant or mammal-occupied burrows. Breeds in ephemeral or semipermanent pools and ponds that fill during heavy winter rains or in permanent ponds (Nature Serve 2022).	Low: The grassland at RC provides upland habitat and the creek and vernal pool provide suitable breeding habitat. Not expected at WG, BM or WV due to lack of suitable habitat. The closest record in CNDDDB is approximately 1.6 miles north of WV.
<i>Rana boylei</i> foothill yellow-legged frog	—/SE, SSC/—	Inhabits partially shaded, rocky streams at low to moderate elevations, in areas of chaparral, open woodland, and forest (Nature Serve 2022).	Not expected: No suitable habitat is present in the Study Area
<i>Spea hammondi</i> western spadefoot	—/SSC/—	Requires shallow, temporary pools or streams during the breeding season. Found predominantly in grasslands or pine-oak woodlands of the valley foothills.	Low: Vernal Pool at RC is only suitable habitat. Not expected at WG, BM or WV due to lack of suitable habitat.

Species	Federal Status/State Status/CRPR Status	Habitat Requirements	Potential to Occur
Reptiles			
<i>Anniella pulchra</i> northern California legless lizard	—/SSC/—	Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks and well developed leaf litter or loose sandy soil for burrowing	Not expected: No suitable habitat is present in the Study Area
<i>Arizona elegans occidentalis</i> California glossy snake	—/SSC/—	Inhabits arid scrub, rocky washes, grasslands, chaparral, preferring areas with loose soil for easy burrowing	Low: marginally suitable habitat at RC, soils harder than is ideal for this species. Not expected at WG, BM or WV due to lack of suitable habitat.
<i>Emys marmorata</i> western pond turtle	—/SSC/—	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg-laying.	Not expected: No suitable habitat is present in the Study Area
<i>Gambelia silus</i> blunt-nosed leopard lizard	FE/SE, FP/—	Inhabits semiarid grasslands, alkali flats, low foothills, canyon floors, large washes, and arroyos, usually on sandy, gravelly, or loamy substrate, sometimes on hardpan.	Low: Marginally suitable habitat only at RC and no recent records of the species in the vicinity of the Study Area. Not expected at WV, BM or WG due to lack of suitable habitat.
<i>Phrynosoma blainvillii</i> coast horned lizard	—/SSC/—	Chapparal, riparian woodland, and open spaces. Prefers open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	Low: Marginally suitable habitat only at RC and no recent records of the species in the vicinity of the Study Area. Not expected at WG, BM or WV due to lack of suitable habitat.
Birds			
<i>Agelaius tricolor</i> tricolored blackbird	—/ST, SSC/—	Typically requires open water, protected nesting substrate, and foraging grounds within vicinity of the nesting colony. Nests in dense thickets of cattails, tules, or willows.	Low: A small amount of suitable nesting habitat is present only in the pond at WG. Fallow fields adjacent to the pond would serve as suitable foraging habitat. RC has suitable foraging habitat but is not in close proximity to suitable nesting habitat. Not expected at WV and BM due to lack of suitable habitat.
<i>Aquila chrysaetos</i> golden eagle	—/FP/—	Found in open mountains, foothill, plains or open country. Nest in large trees or more typically on cliff faces.	Low: RC is suitable foraging habitat, but probably too small an area to support this species. Not expected at WG, BM or WV due to lack of suitable habitat.

Species	Federal Status/State Status/CRPR Status	Habitat Requirements	Potential to Occur
<i>Athene cunicularia</i> burrowing owl	—/SSC/—	Forages in open plains, grasslands, and prairies. Typically nests in abandoned small mammal burrows.	Moderate: RC contains suitable low-growing grasslands for foraging habitat with several suitable burrows. Grassland at BM is too disturbed and lacks suitable burrows. Not expected at WG or WV due to lack of suitable habitat. The closest record in CNDDB is approximately 3 miles west of WV.
<i>Buteo swainsoni</i> Swainson's hawk	—/ST/—	Forages in open plains, grasslands, and prairies. Typically nests in trees or large shrubs.	Moderate: the grassland at RC provides suitable foraging habitat and surrounding areas have trees that could provide nesting habitat. Not expected at WG, BM or WV due to lack of suitable habitat. The closest record in CNDDB is approximately 3.7 miles northwest of WV.
<i>Elanus leucurus</i> white-tailed kite	—/FP/—	Inhabits open groves, river valleys, marshes, grasslands.	Moderate: the grassland at RC provides suitable foraging habitat and surrounding areas have trees that could provide nesting habitat. Not expected at WG, BM or WV due to lack of suitable habitat. There are eBird records within 1 mile of RC
<i>Haliaeetus leucocephalus</i> bald eagle	—/SE, FP/—	Typically found along coasts or near large lakes, or during migration in mountains or open country	Not expected; There is no suitable breeding or foraging habitat in the Study Area
Mammals			
<i>Antrozous pallidus</i> pallid bat	—/SSC, WBWG:H/—	Typically found in arid or semi-arid habitats, often in mountainous or rocky areas near water. They are also found over open, sparsely vegetated grasslands.	Low: RC contains suitable foraging habitat, but no suitable roosting habitat is found in the Study Area
<i>Dipodomys nitratoides exilis</i> Fresno kangaroo rat	FE/SE/—	Found in uncultivated grassland, alkali sink shrubland, and seasonally flooded wetlands. There are no known populations within Merced, Madera, or Fresno Counties. However, surveys were not authorized in several areas of private land. Only known from the Alkali Sink Ecological Reserve west of Fresno and in isolated parcels in Kings County.	Low. The Study Area occurs outside of the extant geographical range for the species.
<i>Lasiurus cinereus</i> hoary bat	—/ WBWG:M/—	Roosts in trees and forages over a variety of habitats	Low: grassland at RC and BM as well as ponds at WG and WV provide foraging habitat, but few suitable roosting trees are present in the Study Area

Species	Federal Status/State Status/CRPR Status	Habitat Requirements	Potential to Occur
<i>Taxidea taxus</i> American badger	—/SSC/—	Occurs in a wide variety of open forest, shrub, and grassland habitats that have friable soils for digging.	Low. The grassland at RC provides foraging habitat and there are existing suitable dens, but there are no known extant populations in the project vicinity. Not expected at WG, BM or WV due to lack of suitable habitat.
<i>Vulpes macrotis mutica</i> San Joaquin kit fox	FE/ST/—	Inhabits alkali sink, valley grassland, and woodland (Nature Serve 2017).	Low. The grassland at RC provides foraging habitat and there are existing suitable dens, but there are no known extant populations in the project vicinity. Not expected at WG, BM or WV due to lack of suitable habitat.
Fish			
<i>Mylopharodon conocephalus</i> hardhead	—/SSC/—	Inhabits deep pools over rocky and sandy substrates in small to large rivers	Not expected. There is no suitable habitat in the Study Area
NOTES: RC = Root Creek study area WG = Wine Group study area WV = Waterland Vineyard study area BM = Brock Moore study area			

Appendix C

Madera Subbasin Recharge Project 1 Aquatic Resources Delineation Report

Final

MADERA SUBBASIN RECHARGE PROJECT 1

Aquatic Resources Delineation Report

Prepared for
Madera County

December 2022



Final

MADERA SUBBASIN RECHARGE PROJECT 1

Aquatic Resources Delineation Report

Prepared for
Madera County

December 2022

Bend	Orlando	San Jose
Camarillo	Pasadena	Santa Monica
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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
CDFW	California Department of Fish and Wildlife
County	Madera County
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
ESA	Environmental Science Associates
GSAs	Groundwater Sustainability Agencies
GSP	Groundwater Sustainability Plan
MID	Madera Irrigation District
NWI	National Wetlands Inventory
OHW	Ordinary High Water Mark
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
RWQCB	Regional Water Quality Control Board
SR	State Route
TNW	Traditionally Navigable Water
USACE	U.S. Army Corps of Engineers

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EXECUTIVE SUMMARY

The goal of the Madera County Groundwater Sustainability Agencies' (GSAs) Groundwater Sustainability Plan (GSP) is to achieve groundwater sustainability in the Madera Subbasin by 2040. The Madera Subbasin Recharge Project 1 consists of a group of recharge projects that, taken together, can recharge large amounts of water when it is available. The combination of recharge basins and flood managed aquifer recharge (Flood-MAR) allows for a larger total recharge capacity while maintaining much of that capacity in productive farmland when water is not being applied for recharge.

Proposed groundwater recharge projects at four properties—Wine Group, Waterland Vineyard, Brock Moore, and the Root Creek —were found to support potentially jurisdictional aquatic features within the survey area (defined as the area surrounding the proposed recharge project improvements along with a 100-foot buffer). Aquatic resource surveys observed the following:

- Wine Group survey area: 0.12 acres of irrigation canal habitat in Madera Irrigation District (MID) Lateral 32.2
- Waterland Vineyard survey area: 0.13 acres of irrigation canal habitat within MID Lateral 6.2
- Brock Moore survey area: 0.15 acres irrigation canal habitat in MID Lateral 6.2
- Root Creek survey area: 0.6 acres of vernal pool habitat, 0.13 acres of ephemeral stream habitat, and 0.67 acres irrigation canal habitat within MID Lateral 6.2

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MADERA SUBBASIN RECHARGE PROJECT 1

Aquatic Resources Delineation Report

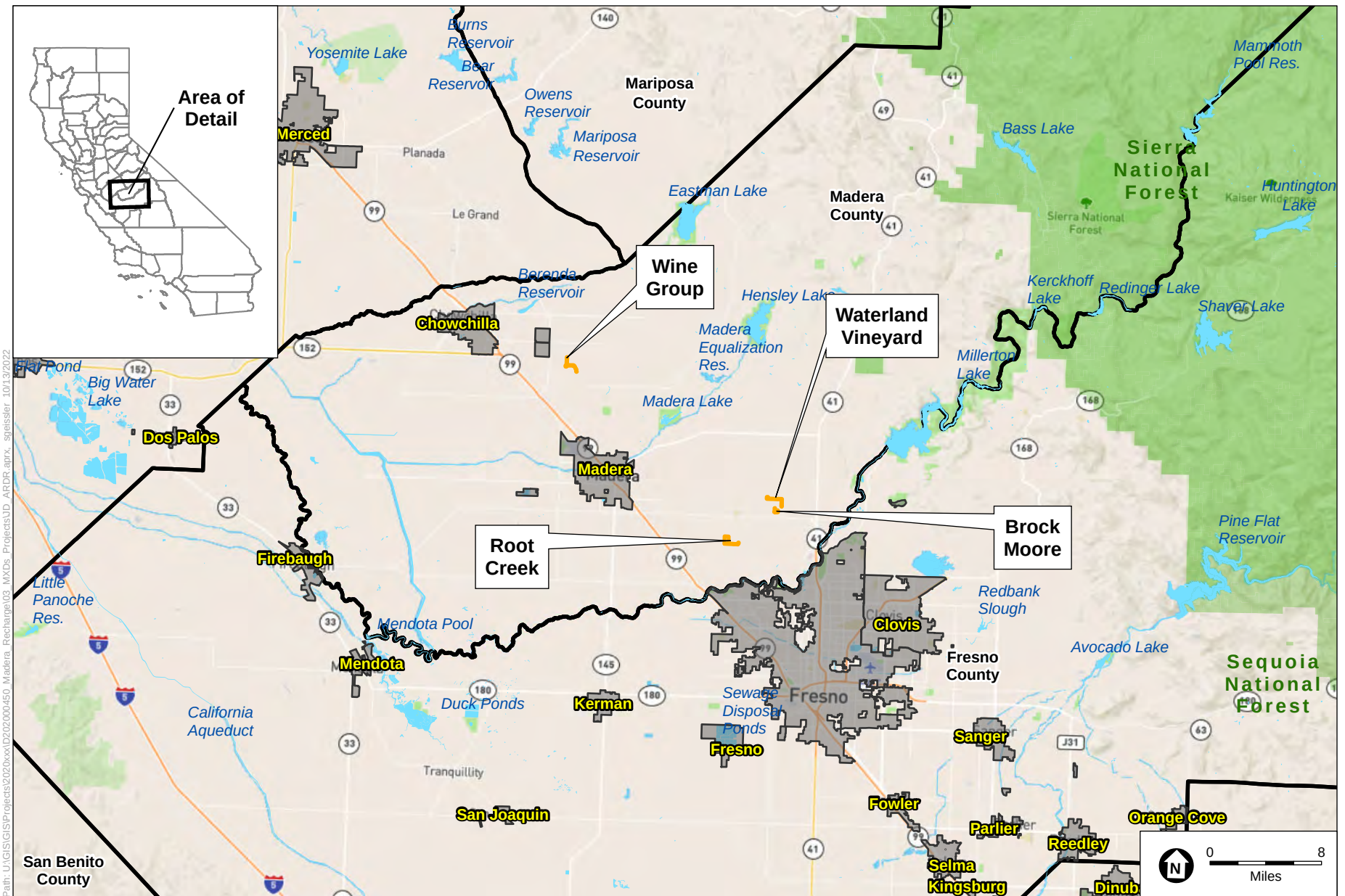
1 Introduction

Environmental Science Associates (ESA) staff conducted an aquatic resources delineation for the Madera Subbasin Recharge Project 1 in Madera County (County), California. This report presents the regulatory framework, methods, and results of the delineation of aquatic resources within the proposed groundwater recharge projects at four properties in the County—Wine Group, Waterland Vineyard, Brock Moore, and Root Creek. Survey areas were created for each property and focused on the area of the proposed groundwater recharge projects along with a 100-foot buffer to account for moving wildlife and hydrological resources (**Figure 1 and 2**). The purpose of the delineation was to determine the extent of state and federal jurisdiction within each survey area potentially subject to regulation by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA), Regional Water Quality Control Board (RWQCB) under Section 401 of the CWA, and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) and California Department of Fish and Wildlife (CDFW) under Section 1602 of the California Fish and Game Code. The aquatic resources delineation was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008a), *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008b), and State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB 2019), where applicable.

This aquatic resource delineation report was prepared in accordance with USACE Sacramento District Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE 2017), Updated Map and Drawing Standards for the South Pacific Division Regulatory Program (USACE 2016), and Aquatic Resource Delineation Report Submittal Workshop (USACE 2019).

1.1 Project Description

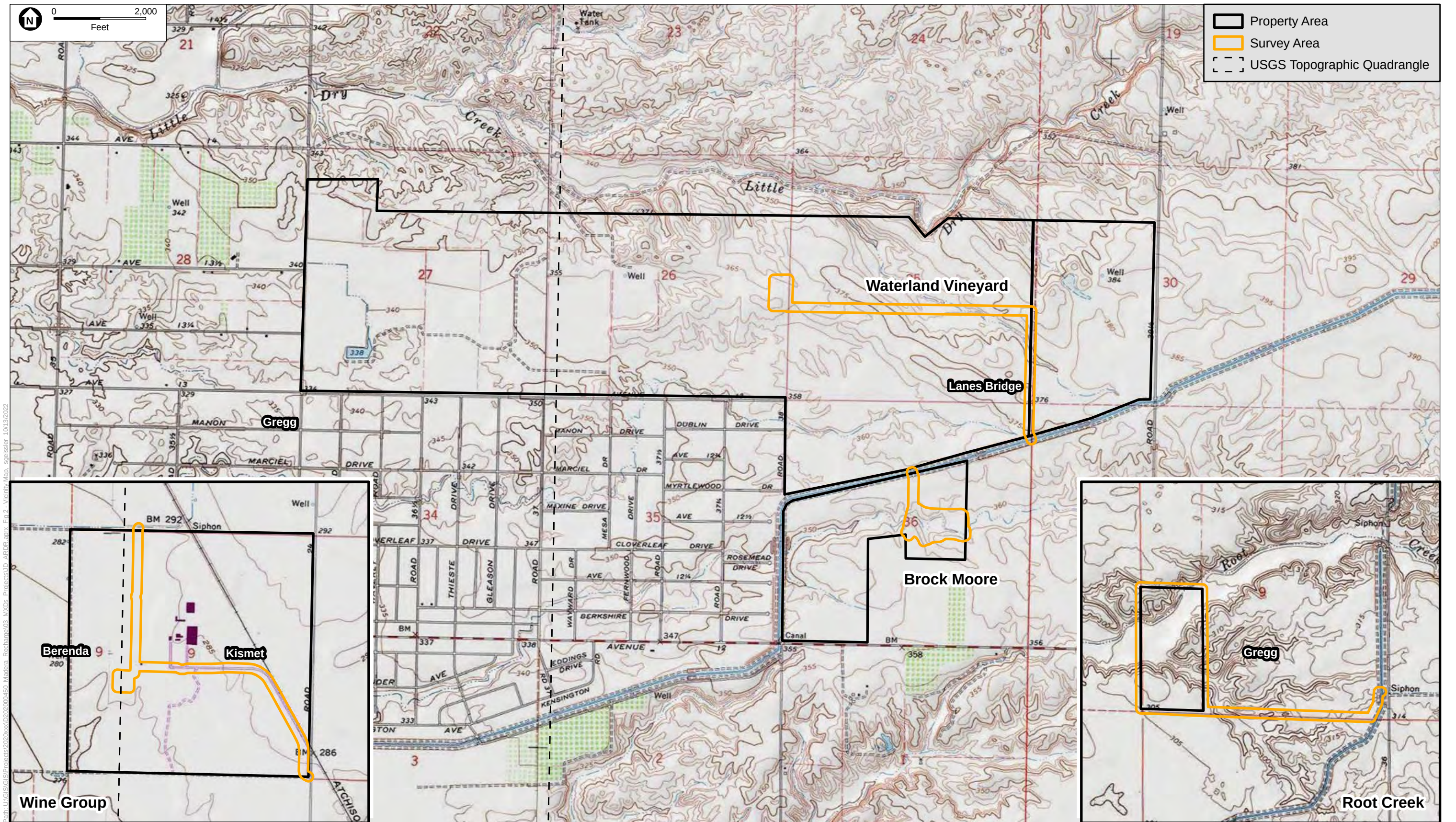
Groundwater overdraft has been occurring in the eastern part of the County for many years, and the need for recharge projects to address the problem has been formally identified at least as far back as 2014. The Madera Subbasin GSP details existing overdraft conditions and identifies areas in the subbasin where undesirable results have affected beneficial users of groundwater. Lowering of groundwater levels in the eastern portion of the County have led to establishing measurable objectives and minimum thresholds to avoid undesirable results in the future. Conditions have also led to the development of projects focused on achieving the measurable objectives and minimum thresholds in this area and across the Subbasin as a whole.



SOURCE: ESRI; National Hydrography Dataset; DWR

East Madera Subbasin Recharge Phase 1

Figure 1
Regional Location



SOURCE: USGS Topographic Series (Gregg, Lanes Bridge, Berenda, Kismet, CA); ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 2
Vicinity Map

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To contribute to sustainable groundwater management in the Madera Subbasin, the Madera County GSAs are beginning to implement a phased flood water recharge program to utilize flood flows available as Section 215 available from the Friant Division. Section 215 water is defined under Section 215 of the Reclamation Reform Act of 1982, as un-storable irrigation water to be released due to flood control criteria or un-managed flood flows. Section 215 water obtained from the Bureau of Reclamation (Reclamation) will be recharged on lands in the Madera County GSA.

The Madera Subbasin Recharge Project 1 consists of a group of recharge projects that, taken together, can recharge large amounts of water when it is available. The combination of recharge basins and flood managed aquifer recharge (Flood-MAR) in a single project allows for a larger total recharge capacity while maintaining much of that capacity in productive farmland when water is not being applied for recharge.

The Madera Subbasin Recharge Project 1 groundwater recharge projects include the following:

- Wine Group Property:
 - Construction of one turnout on Madera Irrigation District's (MID's) Lateral 32.2
 - Removal of point of diversion at MID's Lateral 32.2
 - Construction of the delivery infrastructure for Flood-MAR
 - Landowners to facilitate the connection to existing on-farm irrigation systems for application
- Waterland Vineyard, including neighboring Brock Moore Property:
 - Construction of one turnout on MID's Lateral 6.2
 - Construction of the delivery infrastructure for Flood-MAR
 - Landowners to facilitate the connection to existing on-farm irrigation systems for application
- Root Creek Property:
 - Construction of one turnout on MID's Lateral 6.2
 - Construction of the delivery infrastructure for Flood-MAR
 - Construction of one recharge basins, capable of capturing flood flows that would be conveyed through the existing MID canals
- Approximately 2,500 acres of Flood-MAR at varying locations utilizing existing infrastructure

1.2 Survey Location

The Madera Recharge Subbasin Project 1 groundwater recharge projects are proposed to occur on four properties in the County: Wine Group, Waterland Vineyard, Brock Moore, and Root Creek properties. Each property is discussed below.

Wine Group Property

The Wine Group property is located northeast of the City of Berenda and north of Berenda Creek. It is bordered on the south by Avenue 22, on the east by Road 24, on the north by Avenue 23 and MID Lateral 32.2, and by vineyards to the west. The Santa Fe Railroad cuts through the northern corner of the property. The Wine Group property is located in the Kismet 7.5-minute quadrangle map with an elevational range of 275 to 290 feet (**Figures 1 and 2**).

Waterland Vineyard including Brock Moore Property

The Waterland Vineyard including the Brock Moore property is located east of the City of Borden and north of the San Joaquin River. The properties are bound by Road 36 to the west, Avenue 13 and MID Lateral 6.2 to the south, Road 39 ½ to the east, and open space to the north. The Waterland Vineyard including the Brock Moore Property is found within the Lanes Bridge 7.5-minute quadrangle map and have an elevational range of 340 to 375 feet (Figures 1 and 2).

Root Creek Property

The Root Creek property is located south of the Waterland Vineyard property and east of State Route (SR) 99. It is bound by residential property to the north and agricultural fields on the west, east, and south. The San Joaquin River is located to the south of the property. The Root Creek property is located in the Gregg 7.5-minute quadrangle map and has an elevational range of 285 to 310 feet (Figures 1 and 2).

Directions to the Survey Areas

Wine Group Property

The Wine Group property can be accessed from SR-99 by taking exit 159 for Avenue 18 ½ and heading east and turning onto Road 24.

Waterland Vineyard and Brock Moore Properties

The Waterland Vineyard and Brook Moore properties can be accessed from SR-99 by taking exit 131 for SR-41, exiting on Avenue 12, heading east to Road 39 ½, turning left onto Road 38, and continuing for 0.6 miles. The Brock Moore property is located to the west and south of Waterland Vineyard between Bella Vista Drive to the east and Road 38 to the west.

Root Creek Property

The Root Creek property can be accessed from SR-99 by taking exit 144 for Avenue 7 toward Road 33, turning right onto Avenue 9, then continuing for 1 mile to Road 36 heading west to Avenue 11 and then heading south on Road 35 (Root Creek Road).

1.3 Contact Information

Applicant

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2 Existing Conditions

The aquatic resources delineation occurred for the proposed groundwater recharge projects on four properties in the County—Wine Group, Waterland Vineyard, Brock Moore, and Root Creek properties. Survey areas were created for each property and focused on the area of the proposed groundwater recharge projects along with a 100-foot buffer to account for moving wildlife and hydrological resources

The four properties are located in southeastern Madera County and are generally bounded by SR-99 to the west, the San Joaquin River to the south, Millerton Lake to the east, and the community of Chowchilla to the north (**Figure 1**). The average annual precipitation in the project area is 14.71 inches and temperatures range from 76.6°F to 48.0°F (see Table 4 for details).

Land use surrounding the project area can be characterized as a mosaic of rural development, agriculture, and urban areas that support the surrounding residential neighborhoods. Agriculture including orchards, vineyards, and dry land farming receive water via a series of irrigation canals supplied by the San Joaquin River and Millerton Lake. This area has been altered by drought and increased urbanization within the watershed over the past few decades.

The Wine Group and Waterland Vineyard properties consist of vineyards and the associated infrastructure including irrigation, water pump house, and recharge basins. The Brock Moore is a developed orchard and the Root Creek property is undeveloped and surrounded by orchards. They are dominated by non-native vegetation with scattered native forbs; the ephemeral Root Creek traverses the Root Creek property site in the northern corner.

2.1 Aquatic Resources Delineation Survey Areas

The four properties —Wine Group, Waterland Vineyard, Brock Moore, and Root Creek Properties encompass approximately 239.6 acres. The survey areas were investigated for potential jurisdictional wetland and non-wetland habitats. The survey areas were accessible by foot or vehicle and were walked during surveys taking care to stay within the 100-foot buffer area and within approved lands. Each property is discussed below.

Wine Group Survey Area

The Wine Group survey area encompasses approximately 44.5 acres including a 100-foot buffer. The survey area excluded active vineyards, fallow fields, and developed areas including vineyard infrastructure. This property is dominated by vineyards with no naturally occurring vegetation. It has the potential to receive water from MID Lateral 32.2 along the northern boundary and a recharge basin located in the southwestern section of the property encompassing 205 linear feet. Developed areas are located along the eastern edge of the property and dirt access roads traverse the survey area.

Waterland Vineyard Survey Area

The Waterland Vineyard survey area encompasses approximately 46 acres including a 100-foot buffer. The survey area excluded active vineyards and developed areas including vineyard infrastructure. This property is dominated by vineyards with naturally occurring vegetation found within MID Lateral 6.2 and associated with a fallow field along the eastern boundary of the survey area. A recharge basin is located in the western portion of the survey area and dirt access roads traverse the survey area.

Brock Moore Survey Area

The Brock Moore property survey area encompasses approximately 27 acres including a 100-foot buffer. This property is dominated by disturbed soils and non-native vegetation with vineyards and orchards found in the surrounding area. MID Lateral 6.2 is located at the northern end of the survey area, covering approximately 222 feet.

Root Creek Survey Area

The Root Creek survey area encompasses approximately 121 acres and includes an 80-acre undeveloped parcel, a dirt access road that connects to MID Lateral 6.2 along Road 36 plus a 100-foot buffer on the western boundary. The 80-acre parcel is dominated by non-native grasslands and supports a vernal pool in the center; The Root Creek drainage runs through the property in the northeast corner. The dirt access road is bare, with orchards to the north and south.

MID Lateral 6.2 is part of the survey area and includes a vegetated ditch (predominately non-native grasses) and a fallow field to the south.

2.2 Vegetation Communities and Land Cover Types

Twelve vegetation communities and land cover types were mapped in the survey areas (**Figure 3a** and **Figure 3b**) and include three native vegetation communities, one non-native dominated community, two agricultural crops, two irrigation canals, and two areas mapped as Disturbed Habitat and Developed (includes roads, parking areas and trailheads, buildings, and other bare and unvegetated areas). Over half of agricultural crops within the survey areas include orchards and vineyards. Most of the Developed land cover type occurs along paved roads and includes residences and urban infrastructure. The non-native dominated vegetation community includes the *Avena* spp.–*Bromus* spp. Alliance, which is a non-native grassland dominated by wild oat (*Avena* spp.), ripgut grass (*Bromus diandrus*), barley (*Hordeum murinum*), and mustards (*Brassica* spp., *Hirschfeldia incana*). The acreages of vegetation communities and land cover types are summarized by survey area in **Table 1** and are discussed in further detail below.

Vegetation communities and cover types within the survey areas were classified according to *A Manual of California Vegetation* (2nd ed) by Sawyer et al. (2009), with modifications to describe site-specific cover types related to the region and aquatic resources. A list of plant species observed during surveys can be found in **Appendix A, Floral Compendium**.

TABLE 1
VEGETATION COMMUNITIES AND LAND COVER TYPES WITHIN THE SURVEY AREAS

Vegetation Community/Land Cover Type	Acreage
Open Water (Canals, Recharge Basins) and Wetlands^a	
MID Lateral 6.2 - RC	0.673
MID Lateral 6.2 - WV	0.129
MID Lateral 6.2 - BM	0.150
MID Lateral 32.2 - WG	0.122
Open Water (recharge basin) – WV	0.694
Open Water (recharge basin) – WG	1.76
<i>Lasthenia fremontii</i> – <i>Downingia</i> Alliance (vernal pool)	0.60
Uplands	
<i>Avena</i> spp.– <i>Bromus</i> spp. Herbaceous Semi-Natural Alliance	89.60
<i>Centromadia</i> Herbaceous Alliance	0.009
<i>Eleocharis macrostachya</i> Herbaceous Alliance	0.043
Vineyard - WV	29.36
Vineyard - WG	16.68
Orchard – RC	22.71
Orchard - BM	10.98
Fallow	5.07

Vegetation Community/Land Cover Type	Acreage
Other Land Cover Types	
Disturbed - WV	0.275
Disturbed – BM	12.82
Disturbed – Roads and Trails - RC	6.13
Disturbed – Roads and Trails – WV	6.58
Disturbed – Roads and Trails – BM	3.62
Disturbed – Roads and Trails – WG	12.12
Developed – RC	1.52
Developed – WV	4.27
Developed – WG	13.66

NOTE: MID = Madera Irrigation District; RC = Root Creek; WV = Waterland Vineyard; WG = Wine Group; BM = Brock Moore

^a U.S. Fish and Wildlife Service definition of wetland

SOURCE: Table compiled by ESA, 2022.

Open Water, Irrigation Canals, and Wetlands

Open Water (Recharge Basins)

This vegetation classification consists of year-round bodies of fresh water in the form of lakes, streams, ponds, or rivers and irrigation canals. This includes those portions of water bodies that are usually covered by water and contain less than 10 percent vegetative cover. Within the survey areas, open water refers to existing recharge subbasins and includes survey areas with irrigation canals; MID Lateral 6.2 and MID Lateral 32.2. Within the Wine Group survey area, one existing recharge basin is present and covers 1.76 acres. The Waterland Vineyard survey area supports one existing recharge basin that covers less than 1 acre.

Irrigation Canal

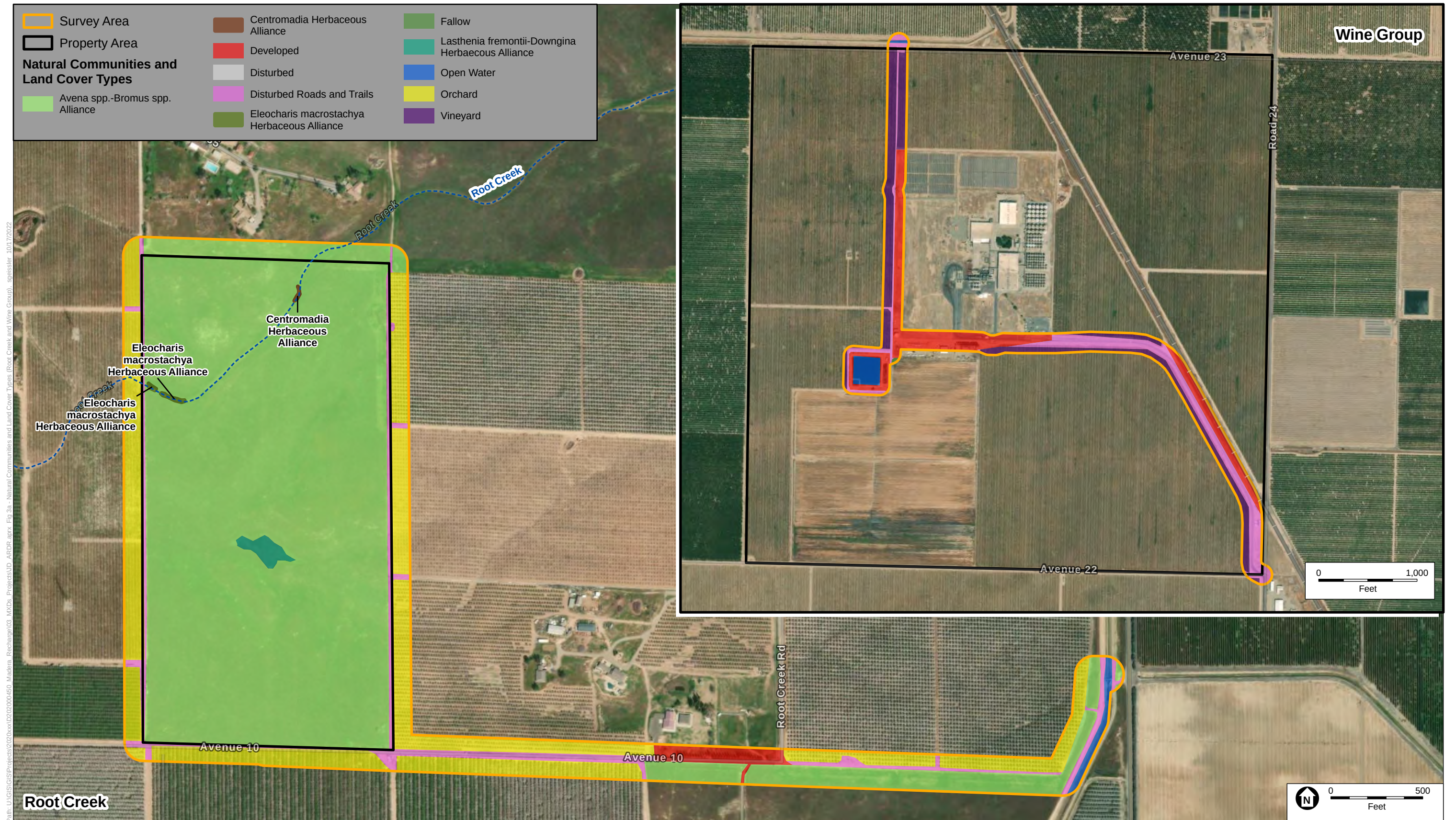
Irrigation canals are characterized by steep banks bare of vegetation and a narrow, well-maintained channel that typically supports a low cover of wetland species along the edges; the bare, low-flow channels include the sandy, gravelly, or rocky fringe of waterways or flood channels. Irrigation canals are typically unvegetated on a relatively permanent basis as a result of variable water lines inhibiting the growth of vegetation; however, some species may grow along the outer edges of the channel but is usually less than 10 percent total cover. Within the survey areas, two MID canals—Irrigation Canals MID Lateral 6.2 and MID Lateral 32.2—are present and discussed below.

Irrigation Canal MID Lateral 6.2

Irrigation Canal MID Lateral 6.2 is a lateral channel that receives water from the Madera Canal and traverses several properties above and below the subject project properties. MID Lateral 6.2 is found in the Waterland Vineyard, Brook Moore and Root Creek Property project sites.

Waterland Vineyard

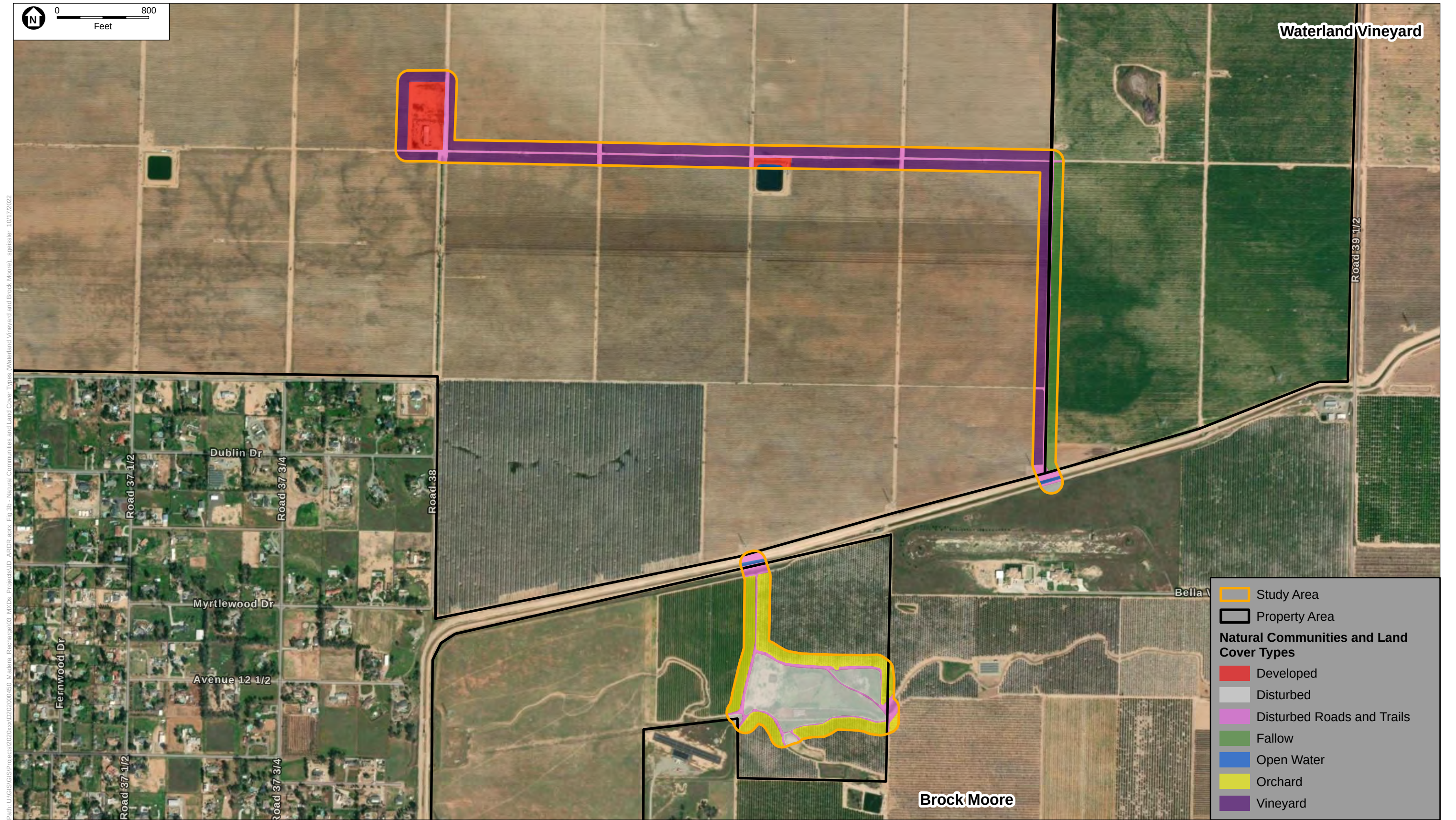
Where Irrigation Canal MID Lateral 6.2 crosses the survey areas at Waterland Vineyard the canal supports a thin layer of silt and patches of pale spike-rush and needle spike rush (*Eleocharis acicularis*). MID Lateral 6.2 covers 0.129 acres on the Waterland Vineyard survey area.



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 3a
Natural Communities and Land Cover Types
(Root Creek and Wine Group)



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 3b
Natural Communities and Land Cover Types
(Waterland Vineyard and Brock Moore)

Brock Moore

Where Irrigation Canal MID Lateral 6.2 crosses the survey area the canal supports a thin layer of silt and shallow slow-moving water. MID Lateral 6.2 covers 0.15 acres on the Brock Moore survey area.

Root Creek

Within the Root Creek survey area, Irrigation Canal MID Lateral 6.2 is predominantly bare (unvegetated) with small areas of sand that support low-growing emergent vegetation. The canal covers 0.673 acres on the Root Creek property survey area.

Irrigation Canal MID Lateral 32.2

Irrigation Canal MID Lateral 32.2 is found within the Wine Group survey area and receives water upstream from the Madera Canal and traverses several properties above and below the Wine Group property. This canal supports a well-maintained channel with a low cover of vegetation found along the edges of the bare, low-flow channel and covers 1.89 acres.

Eryngium (vaseyi, castrense) Association [Lasthenia fremontii–Downingia (bicornuta) Herbaceous Alliance]

The *Lasthenia fremontii–Downingia* Alliance is the recognized vegetation class for vernal pool vegetation and includes the *Eryngium* Association in the Great Valley (Sawyer et. al. 2009). The *Eryngium* Association encompasses shallow vernal pools and pool edges on hardpan and volcanic substrates. These specialized seasonal depressions include vernal pool indicator plant species such as dwarf woollyheads (*Psilocarphus brevissimus* var. *brevissimus*), adobe popcornflower (*Plagiobothrys acanthocarpus*), water pygmy-weed (*Crassula aquatica*), and Great Valley coyote thistle (*Eryngium castrense*), among other wetland species. A vernal pool occurs within the Root Creek property survey area covering 0.60 acres.

Eleocharis macrostachya Herbaceous Alliance

The *Eleocharis macrostachya* Herbaceous Alliance occurs in seasonally wet areas within vernal pools, swales, streambeds, and wet meadows. This alliance is dominated by pale spike rush (*Eleocharis macrostachya*), where it creates a dense network of rhizomes usually resulting in homogenous stands. In the Great Valley, the *Eleocharis macrostachya* Herbaceous Alliance occurs in the deepest parts of vernal pools and swales, which sustain a longer inundation period. The *Eleocharis macrostachya* Herbaceous Alliance is found within the Root Creek property survey area in shallow pools within Root Creek covering 0.043 acres.

Centromadia (pungens) Herbaceous Alliance

The *Centromadia (pungens)* Herbaceous Alliance occurs in vernal wet habitats that are subject to intermittent inundation and typically found on clay soils. Fitch's tar plant (*Centromadia fitchii*) occurs commonly throughout California and is considered a vernal pool plant indicator species in the *Lasthenia fremontii–Downingia* Alliance (Sawyer et.al. 2009). Fitch's tar plant is found throughout Root Creek where it forms stands with a moderate to high cover in shallow areas and along the flood plain. The *Centromadia* Alliance covers 0.009 acres within the Root Creek property survey area.

Uplands

***Avena* spp.–*Bromus* spp. Herbaceous Semi-Natural Alliance**

The *Avena* spp.–*Bromus* spp. Alliance accounts for the largest acreage of non-native grassland vegetation in cismontane California (Sawyer et.al. 2009). Annual invasive non-native grasses such as wild oat (*Avena* spp.), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), red brome (*Bromus rubens*), and short-pod mustard (*Hirschfeldia incana*) dominate this vegetation community. Annual native herb species, such as Fitch’s tarweed (*Centromadia fitchii*), vinegar weed (*Trichostema lanceolatum*), and fiddleneck (*Amsinckia* spp.) are also scattered intermittently within this vegetation community. This alliance is the dominant vegetation community within the Root Creek property and Waterland Vineyard survey areas, where it is found along the western edge of the existing east-west dirt access road. As the dominant vegetation community on the Root Creek property, this alliance covers 89.56 acres and encompasses a majority of the survey area.

Vineyards and Orchards

Vineyards and orchards typically consist of artificially irrigated habitat dominated by one or more tree or shrub species. Vineyards include single crops planted in rows that are supported by wood and wire trellises. The Wine Group and Waterland Vineyard properties include and are surrounded by active vineyards. Vineyards cover 15.20 acres within the Wine Group survey area and 29.38 acres within the Waterland Vineyard survey area. Orchards cover 22.72 acres within the Root Creek property survey area and 10.80 acres within the Brock Moore survey area.

Fallow

Fallow fields are typically a dense habitat with nearly 100 percent cover of non-native invasive species such as filaree (*Erodium* spp.), brome grasses (*Bromus* spp.), and mustards (*Brassica* spp.). Fallow fields are no longer seeded or planted and receive no irrigation; light maintenance may be performed for fire safety and weed control, but the land is not developed or converted to another land use. The Waterland Vineyards survey area supports approximately 5.06 acres of fallow field along its eastern edge.

Other Land Cover Types

Disturbed Habitat

Disturbed habitat is characterized by predominately introduced non-native species in native habitat areas as a result of human actions and does not include areas that are artificially irrigated. Typically, vegetation is low growing and consists of non-native ruderal species such as oat, purple false brome (*Brachypodium distachyon*), ripgut brome, red brome, short-pod mustard, thistles (*Cirsium* spp.), fennel (*Foeniculum vulgare*), stinkwort (*Dittrichia graveolens*), and crown daisy (*Glebionis coronaria*). Disturbed habitat is the dominant vegetation community and occurs throughout the Brock Moore survey area, covering 12.82 acres. The Waterland Vineyard survey area supports 0.275 acres of Disturbed habitat, mostly within areas where disturbances have previously occurred.

Disturbed – Roads and Trails

Disturbed – Roads and Trails are areas that have been physically disturbed by human activity and are no longer recognizable as a native or naturalized vegetation association but continue to retain a native soil substrate. Typically, vegetation in these areas, if present, is nearly exclusively composed of non-native plant species such as ornamentals or exotic species that are able to grow on exposed disturbed soils. Examples of Disturbed – Roads and Trails include areas that have been graded or experienced repeated use that prevents natural revegetation (i.e., dirt roads, dirt parking lots, trails that have been present for several decades), recently graded firebreaks, graded construction pads, construction staging areas, and off-road vehicle trails. Disturbed – Roads and Trails occurs on all survey areas covering 11.83 acres within the Wine Group survey area, 6.58 acres within the Waterland Vineyard survey area, 3.62 acres within the Brock Moore survey area, and 6.13 acres within the Root Creek property survey area.

Developed

Developed landscapes are areas that have been physically altered to an extent that they no longer support native vegetation. Developed land is characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas typically associated with urban areas. Developed land occurs throughout the survey areas as paved roads, residential infrastructure, parking lots, and commercial development. Developed land occurs on 15.58 acres of the Wine Group survey area and on 4.81 acres on the Waterland Vineyard survey area.

2.3 Soils

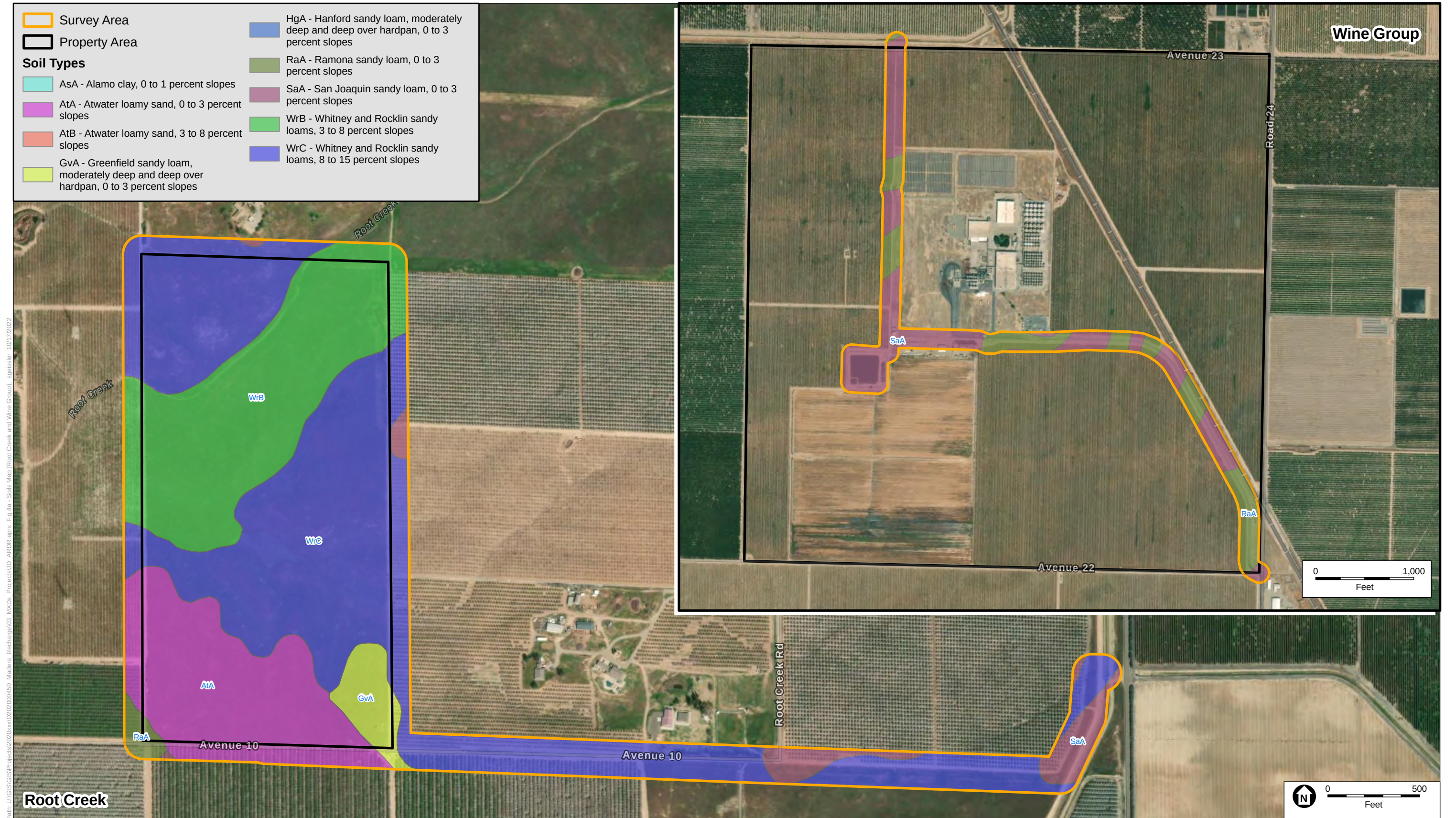
Soils within the survey areas are shown in **Figure 4a** through **Figure 4b** (USDA 2022). The project area contains six soil series (Alamo, Atwater, Greenfield, Ramona, San Joaquin-Alamo complex, Whitney and Rocklin complex). Five of these soil series are considered hydric, according to the Natural Resources Conservation Service (NRCS 2018). Additional soil details can be found in **Table 2**.

The following soils-related resources were reviewed:

- *Hydric Soils List of California*, 2018 (NRCS 2018, <https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/>)
- Natural Resources Conservation Service’s *Web Soil Survey*, queried to determine the soils that have been mapped within the survey areas (<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>; NRCS 2022)
- U.S. Department of Agriculture’s Soil Conservation Service Soil Survey Madera Area California, 1962 (USDA 1962)

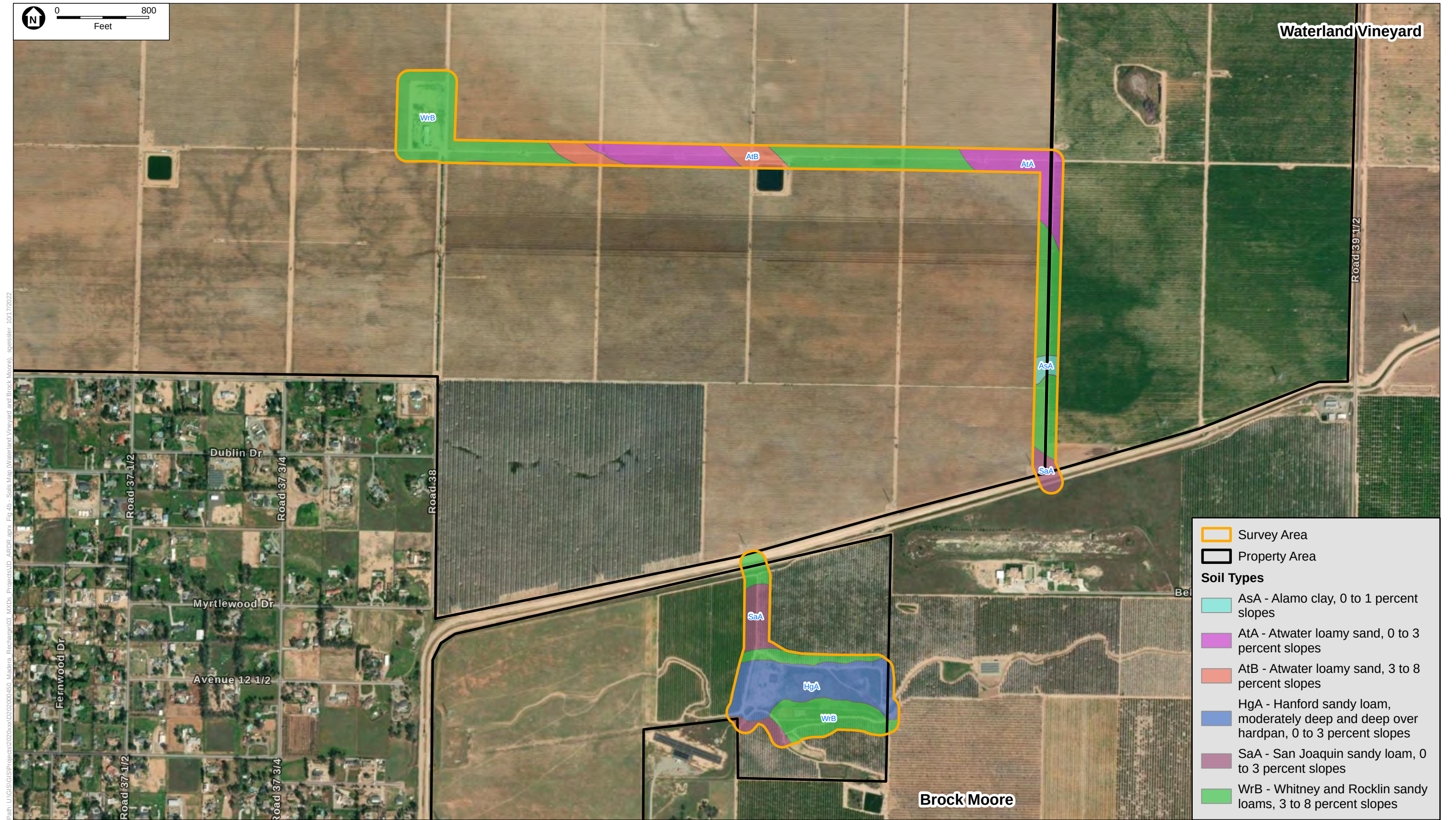
TABLE 2
SURVEY AREA SOILS

Soil Series	Description	Location	Hydric soil list Y/N
Alamo Clay (AsA) 0%–1% slopes	Occurs in small depressions on hardpan soils; poorly drained and runoff is ponded. This series is slightly acidic.	Waterland Vineyard	Y
Atwater Loamy Sand (AwA) 0%–3% slopes	Moderately deep over hardpan; well drained on gentle slopes with slow runoff. This series is slightly acidic to mildly alkaline.	Waterland Vineyard	Y
Atwater Loamy Sand (AwB) 3%–8% slopes	Moderately deep over hardpan; well drained on gentle slopes with slow runoff. This series is slightly acidic to mildly alkaline.	Waterland Vineyard	Y
Greenfield Sandy Loam (over hardpan) (GuA) 0%–3% slopes	Well drained on gentle slopes, in streams and low terraces. This series is mildly alkaline.	Root Creek	N
Ramona Sandy Loam (RaA) 0%–3% slopes	An old soil found on low terraces in the northern limit of the series, good drainage with slow runoff. This series is alkaline.	Wine Group; Root Creek	Y
San Joaquin-Alamo Complex (SbA) 0%–3% slopes	Small areas of Alamo clay within San Joaquin sandy loams with shallow hardpan soils on gently rolling alluvial deposits. This series is alkaline.	Wine Group; Waterland Vineyard; Root Creek	Y
Whitney and Rocklin Sandy Loam (WrB) 3%–8% slopes	Occurs on old terraces in undulating landscapes with low clay content and good drainage and slow runoff. This series is slightly acidic to mildly alkaline.	Waterland Vineyard; Root Creek	Y
Whitney and Rocklin Sandy Loam (WrC) 8%–15% slopes	Occurs on old terraces in undulating landscapes with low clay content and good drainage and slow runoff. This series is slightly acidic to mildly alkaline.	Root Creek	Y



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 4b
Soils Map
(Waterland Vineyard and Brock Moore)

2.4 Hydrology

The survey areas lie within the Middle San Joaquin-Lower Chowchilla Watershed (U.S. Geological Survey Hydrologic Unit Code 18040001) with a drainage area of 1,676 square miles that drains into the San Joaquin River. The San Joaquin River hydrologic cycle is driven by snowmelt from the Sierra Nevada and flows northward to drain the portion of the Central Valley south of the Sacramento-San Joaquin Delta and north of the Tulare Lake Basin. The majority of the survey area is drained by built agricultural ditches or streams or retain water in place until it percolates to the groundwater table. Irrigation water during the dry season (late spring, summer, fall) is a major source of flow for the stream channels and agricultural ditches in the survey area, and the reason that many of these features are characterized as “intermittent” rather than ephemeral. The surface hydrology in the survey area has been substantially altered by urban and agricultural development. All of the streams in the survey area have been channelized, relocated, or altered in a variety of ways.

The San Joaquin River stream gage is located below Friant Dam, upstream from the survey area on the San Joaquin River. Precipitation from January 1, 2022, through October 4, 2022 (the last day of field work) at the weather station survey area totaled 1.29 inches, which is about 17 percent of the average annual rainfall for the period. The USACE Antecedent Precipitation Tool was run for September 14, 2022, the day most of the data points were taken (**Appendix B**). A nominal amount of precipitation in September skewed the results to wetter than normal, when during delineations in September and October the field site had normal late dry season conditions for California. The survey area had drier than normal conditions during the 2021–2022 wet season.

2.5 Climate

The USACE Antecedent Precipitation Tool was used to query the field survey dates and Hydrologic Unit Code 18 Watershed (18040001). The results are included as **Appendix B**. The tool indicated that field surveys were conducted during the dry season with an average score of 14 (normal conditions). The monthly average streamflow for the San Joaquin River is provided in **Table 3**. In addition, the Agricultural Applied Climate Information System (AgACIS) and Natural Resources Conservation Service’s Climate Analysis for Wetlands Table (WETS table) for the Lake Madera 1.3 NNE Field Station is included below (**Table 4**; NOAA 2022). Precipitation in the year prior to the survey (September 2021 to September 2022), and within the three months prior to the field survey, was below normal. The total precipitation for the period of June through September, based on records from 2000 to 2022, is typically between 0.0 and 0.01 inches, but in 2022 was 0.02 inches.

TABLE 3
MONTHLY MEAN DISCHARGE (CFS) FOR USGS [11251000] SAN JOAQUIN RIVER

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	409	133	132	172	694	1291	1308	1310	1089	169	158	144
2015	147	136	166	195	227	273	877	1169	195	205	168	167
2016	147	184	240	312	334	339	729	585	453	399	313	185
2017	4351	7080	73336	4028	3952	6991	1428	361	387	370	389	388
2018	411	420	314	405	386	399	433	444	433	413	393	391
2019	405	548	1666	656	2600	3562	855	422	402	385	396	377
2020	382	472	214	363	518	381	443	427	420	403	413	393
2021	392	312	259	337	396	267	278	276	261	-	-	-
Mean of Monthly Discharge	831	117	955	809	1138	1688	794	624	455	293	279	256

SOURCE: USGS 2022a.

NOTES: CFS – Cubic Feet per Second

TABLE 4
WETS TABLE: MONTHLY TOTAL PRECIPITATION FOR LAKE MADERA 1.3 NNE, CA

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2017	5.17	3.85	0.61	0.47	0.01	0.00	0.00	T	0.08	0.08	0.24	0.09	10.60
2018	1.14	0.21	4.75	0.71	T	0.00	0.00	0.00	0.00	T	2.12	0.87	9.80
2019	1.77	2.81	2.08	0.19	1.58	0.00	0.00	0.00	T	0.00	0.55	1.71	10.69
2020	0.64	T	1.53	1.38	0.21	0.00	0.00	T	T	0.00	0.16	0.61	4.53
2021	0.28	0.14	0.36	0.01	0.00	0.00	0.00	0.00	T	0.57	0.08	0.81	2.25
2022	0.06	0.04	0.08	0.46	0.00	0.11	0.00	T	0.54	0.00	M	M	1.29
Mean (2017–2022)	1.51	1.41	1.57	0.54	0.36	0.02	0	T	0.21	0.13	0.63	0.82	6.53

NOTES: M = missing and is used when more than one day of data is missing for a month; T = trace and is used when a precipitation is <0.01 inch.

SOURCE: USDA 2022.

Antecedent Precipitation Tool

The USACE developed the Antecedent Precipitation Tool to compare recorded precipitation levels at a given location and date to the normal precipitation range at that location over the preceding 30 years. This tool analyzes similar data found in the WETS table above; however, it averages precipitation from several monitoring stations and generates calculations that compare precipitation levels over time. Under USACE procedures, a jurisdictional determination for a waterbody is generally informed by understanding conditions in a “typical year” (i.e., the normal periodic range of precipitation and other climate variables for that waterbody) and the Antecedent Precipitation Tool aids in achieving that determination.

Two types of analyses can be conducted using the Antecedent Precipitation Tool: single-point and watershed. Given that the survey area encompasses a large portion of the Middle San Joaquin-Lower Chowchilla watershed, watershed analyses were completed for the dates of the delineation (September 14–15, 2022, October 4, 2022). The Antecedent Precipitation Tool outputs are provided in **Appendix B**. The single-point analysis concentrates on a centralized locational point within the survey areas, while the watershed analysis is based on the Palmer Drought Severity Index and includes an approximate 14.8-square-mile area of the watershed including the survey area. The resulting outputs include the following information:

- **Palmer Drought Severity Index.** The Palmer Drought Severity Index is a monthly dataset published by the National Oceanic and Atmospheric Association and is intended to measure the duration and intensity of the long-term drought-inducing circulation patterns. Long-term drought is cumulative; therefore, the results of a current month are dependent on current weather patterns in relation to the cumulative patterns for previous months (NOAA 2022).
- **Average Antecedent Precipitation Score.** The Average Antecedent Precipitation Score is used to determine how “wet” or “dry” a particular location (i.e., sampling point and/or date) is. The final condition is determined as follows:
 - Wetter than Normal – Condition value greater than 14
 - Normal – Condition ranging from 10 to 14
 - Drier than Normal – Condition value less than 10

The average of the dates and/or sampling points analyzed are presented as an Average Antecedent Precipitation Score and a preliminary determination is made for the sampling location. Data is provided in **Appendix B**.

The results of the Palmer Drought Severity Index indicated the region was experiencing severe drought during the 2022 surveys. However, the Average Antecedent Precipitation Score was 14, resulting in a preliminary determination of normal conditions. While it appears that the region is enduring a drought, conditions within the survey area generally appear to fall within the normal range.

3 Regulatory Framework

3.1 Waters of the U.S.

Clean Water Act

The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the legislation was significantly reorganized and expanded in 1972; the law plus its amendments became known as the “Clean Water Act” in 1972.

In 1986, the term “waters of the United States” was defined as follows (33 CFR 328.3[a]):

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
 - i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
 - ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - iii. Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters identified in paragraphs (a)(1) through (4) of this section;
6. The territorial seas; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1) through (6) of this section.
8. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11[m], which also meet the criteria of this definition), are not waters of the U.S.

Wetlands (including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas) are also considered waters of the U.S. (subject to the significant nexus test), and are defined by USACE as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3[b]; 40 CFR 230.3[t]). Indicators of three wetland parameters (i.e., hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by field investigation, must be present for a site to be classified as a wetland by USACE (Environmental Laboratory 1987). *Solid Waste Agency of Northern Cook County v. United States*

In 2001 and again in 2003, the agencies developed guidance to address the definition of “waters of the United States” under the CWA following the *Solid Waste Agency of Northern Cook County v. United States* Supreme Court decision. As a result of the decision, it was determined that

isolated, intrastate waters that are capable of supporting navigation by watercraft remain subject to CWA jurisdiction if they are traditional navigable waters; however, the decision eliminates CWA jurisdiction over isolated waters that are intrastate and non-navigable.

Rapanos v. United States & Carabell v. United States

The USACE and the U.S. Environmental Protection Agency (EPA) issued a set of guidance documents detailing the process for determining CWA jurisdiction over waters of the U.S. following the 2008 *Rapanos v. United States* decision. The EPA and USACE issued a summary memorandum of the guidance for implementing the Supreme Court’s decision in *Rapanos* that addresses the jurisdiction over waters of the U.S. under the CWA. The complete set of guidance documents, summarized as key points below, were used to collect relevant data for evaluation by the EPA and the USACE to determine CWA jurisdiction over the projects and to complete the “significant nexus test” as detailed in the guidelines.

Summary of Key Points

- The agencies will assert jurisdiction over the following waters:
 - Traditional navigable waters
 - Wetlands adjacent to traditional navigable waters
 - Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)
 - Wetlands that directly abut such tributaries
- The agencies will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water:
 - Non-navigable tributaries that are not relatively permanent
 - Wetlands adjacent to non-navigable tributaries that are not relatively permanent
 - Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable Tributary
- The agencies generally will not assert jurisdiction over the following features:
 - Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)
 - Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water
- The agencies will apply the significant nexus standard as follows:
 - A significant nexus analysis will assess the flow characteristics and functions of the 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 traditional navigable waters
 - Significant nexus includes consideration of hydrologic and ecologic factors

The significant nexus test includes consideration of hydrologic and ecologic factors. For certain circumstances, the significant nexus test would take into account physical indicators of flow

(evidence of an OHWM), if a hydrologic connection to a Traditionally Navigable Water (TNW) exists, and if the aquatic functions of the water body have a significant effect (more than speculative or insubstantial) on the chemical, physical, and biological integrity of a TNW. The USACEs and EPA will apply the significant nexus standard to assess the flow characteristics and functions of a potential water of the U.S. to determine if it significantly affects the chemical, physical, and biological integrity of the downstream TNW.

3.2 Waters of the State

Most projects involving water bodies or drainages are regulated by the RWQCB, the principal state agency overseeing water quality of the state at the local/regional level. The survey areas are located within the jurisdiction of the Central Valley, Fresno Office RWQCB. Where waters of the state overlap with waters of the U.S., pending verification from the USACE, those waters would be regulated under Section 401 of the CWA.

In the absence of waters of the U.S., waters may be regulated under the Porter-Cologne Act if project activities, discharges, or proposed activities or discharges could affect California's surface, coastal, or ground waters. The permit submitted by the applicant and issued by RWQCB is either a Water Quality Certification in the presence of waters of the U.S. or a Waste Discharge Requirement in the absence of waters of the U.S.

The State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State, as prepared by the SWRCB (2019), include a definition for wetland waters of the state that include 1) all wetland waters of the U.S. and 2) aquatic resources that meet both the soils and hydrology criteria for wetland waters of the U.S. but lack vegetation.¹

3.3 Rivers, Streams, and Lakes

Pursuant to Division 2, Chapter 6, Section 1600 et seq. of the Fish and Game Code, CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. A notification of a Lake or Streambed Alteration Agreement must be submitted to CDFW for “any activity that may substantially change the bed, channel, or bank of any river, stream, or lake.” In addition, CDFW has authority under the Fish and Game Code over wetland and riparian habitats associated with lakes and streams. CDFW reviews proposed actions, and if necessary, submits to the applicant a proposal that includes measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by CDFW and the applicant is the Lake or Streambed Alteration Agreement.

3.4 Local Aquatic Resource Regulations/Policies

The County has several regional aquatic resource plans and policies that help define, conserve, and manage water resources in the area. Additionally, the County is a participant in the Sustainable Groundwater Management Act Joint Groundwater Sustainability Plan (Davids Engineering 2020).

¹ Less than 5 percent areal coverage at the peak of the growing season.

4 Methodology

4.1 Pre-Field Review

Prior to conducting the aquatic resources delineation, ESA conducted a review of available background information pertaining to the survey areas to obtain information on the hydrology, including information on the local geography and topography.

The following resources were reviewed:

- National Wetland Plant List, version 3.4: 2020 wetland ratings (USACE 2020)
- *Hydric Soils List of California* (NRCS 2018)
- *Web Soil Survey*, queried to determine the soils that have been mapped within the survey areas (NRCS 2022)
- The National Wetlands Inventory (USFWS 2022) (**Figure 5**)
- U.S. Geological Survey topographic maps: Kismet, Lanes Bridge, and Gregg (USGS 2022b)
- Current and historical aerial imagery (Google, Inc., 2022);
- Historical aerial photography: 1957 (Historic Aerials 2022)

National Wetlands Inventory

Aerial maps (Google, Inc., 2022) and the National Wetlands Inventory (NWI) were used to conduct a preliminary assessment of the limits of aquatic features in the survey areas. As shown in **Figure 5**, NWI and National Hydrography Data is mapped showing freshwater emergent wetland and riverine habitats within the survey areas.

4.2 Field Survey Methods

The aquatic resource delineations were conducted by ESA biologists Brenda McMillan and Brennan Mulrooney on September 14 and 15, 2022, and by Anna Schwyter and Amanda Segura-Moon on October 4, 2022. The delineation consisted of walking the survey areas and identifying potentially jurisdictional aquatic features using visual observations of vegetation types and changes in hydrology to locate areas for evaluation. Weather conditions during the delineations were conducive to conducting field surveys and were generally sunny and clear. Temperatures ranged from 75°F to 90°F and winds ranged from 0 to 1 mile per hour. Data was collected in field and resources and features mapped using a hand-held GPS device. All plant species observed on-site were also noted, and plants that could not be identified in the field were identified later using a taxonomic key (Baldwin et al. 2012). Vegetation communities were mapped using GPS and follow *A Manual of California Vegetation* (Sawyer et. al. 2009)

Waters of the U.S.

Delineation of potential non-wetland waters of the U.S., as determined by the presence of an OHWM, was based on the guidance in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008a).

Waters type was determined based on observed hydrological regime and the hydrological connection between the watercourse and a downstream TNW.

Delineation of potential wetland waters of the U.S. used the “Routine Determination Method” as described in the 1987 *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), hereafter called the “1987 Manual.” The 1987 Manual was used in conjunction with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE 2008b), hereafter called the “Arid West Supplement.” For areas where the 1987 Manual and the Arid West Supplement differ, the Arid West Supplement was followed.

Wetlands and waters were classified using commonly accepted habitat types. The Cowardin classification (Cowardin et al. 1979) of each feature type was also determined.

Waters of the U.S. have been mapped to reflect current conditions (described below) of wetland and non-wetland waters based on presence of all three wetland parameters and/or an OHWM, and a significant nexus to the downstream TNW, where applicable. Intermittent or ephemeral tributaries that exhibited an OHWM but did not have a significant nexus to the TNW were considered as non-federal (i.e., not waters of the U.S.) and therefore, RWQCB and CDFW jurisdictional only.

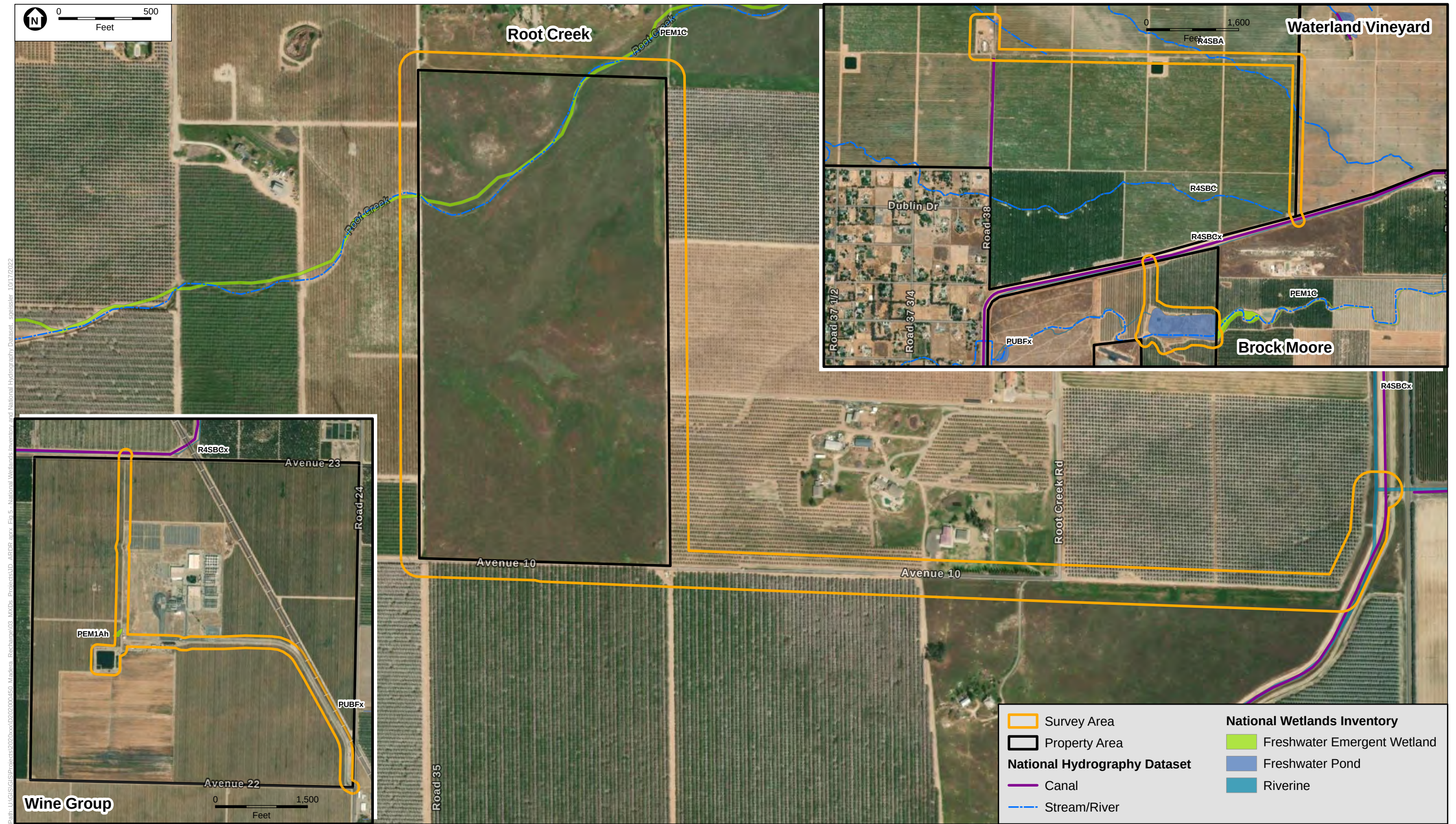
Waters of the State

Waters of the state regulated under CWA Section 401 were delineated using the same methodology as waters of the U.S. Waters of the state outside of CWA Section 401 jurisdiction and subject to the Porter-Cologne Act were delineated. Within the survey areas, waters of the state under the Porter-Cologne Act were considered congruent with CDFW jurisdiction.

State wetlands were delineated pursuant to the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB 2019). State wetlands are defined as areas where, under normal circumstances, (1) the continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both occurs; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area’s vegetation is dominated by hydrophytes or the area lacks vegetation. Unlike federal wetlands, state wetlands require no connection to waters of the U.S. and areas lacking vegetation may still be considered wetlands where hydric soils and wetland hydrology are present.

Rivers, Streams, and Lakes

River, stream, and lake resources were delineated based on the presence of features that could meet CDFW’s broadly applied interpretation of streams and lakes, including areas that exhibit regular and natural ponding and drainage features that exhibit a bed and bank. CDFW resources were also delineated to include streambanks up to the top of the bank (for natural channel banks), and associated wetlands and riparian vegetation, to the outer dripline.



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 5
National Wetlands Inventory and National Hydrography Dataset

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5 Results

5.1 Aquatic Resources

A summary of potential wetlands and other waters of the U.S. by survey area within the survey areas are provided in **Table 5** and described below by jurisdiction and separately by survey area.

Aquatic resources discussed in this section are shown on **Figures 6a** through **6b** (showing wetlands, other waters of the U.S., other waters of the state/Fish and Game Code Section 1600 resources). Details of each feature are specified in Tables 5 and 6. Datasheets are provided in **Appendix C**. ORM Spreadsheet is provided in **Appendix D**. Representative photographs of aquatic resources are provided in **Appendix E**.

Four aquatic features were found within three survey areas—Wine Group, Waterland Vineyard, Brock Moore, and Root Creek—including three non-wetland waters and one wetland. Additional detail by property and survey area alignment is provided below.

TABLE 5
AQUATIC RESOURCES WITHIN THE SURVEY AREAS

Aquatic Feature	Cowardin Type	Dominant Vegetation/ Land Cover Type	OHWM (feet) (range from within survey area)	Linear Feet	Acres
Wetlands					
Vernal pool-RC	PEM	<i>Lasthenia fremontii</i> – <i>Downingia</i> Herbaceous Alliance	NA	NA	0.6
Total Wetlands					0.6
Other Waters					
Root Creek (waters) - RC	PEM1C	<i>Avena</i> spp.– <i>Bromus</i> spp. Herbaceous Alliance	6.91	1,301.8	0.13
Irrigation Canal MID Lateral 6.2 – RC	R4SBCx	Orchard/Vineyard	22	784	0.67
Irrigation Canal MID Lateral 6.2 – WV	R4SBCx	Vineyard	27	200	0.13
Irrigation Canal MID Lateral 6.2 – BM	R4SBCx	Disturbed	30	222	0.15
Irrigation Canal MID Lateral 32.2 - WG	R4SBCx	Vineyard	23	205	0.12
Total Aquatic Features				2,712.80	1.8
NOTES: MID = Madera Irrigation District; RC = Root Creek; WV = Waterland Vineyard; BM = Brock Moore; WG = Wine Group R4SBC – Riverine Intermittent Streambed Seasonally Flooded; PEM - Palustrine Emergent Wetland					
PEM1C – Palustrine Emergent Wetland Persistent Seasonally Flooded					

5.2 Waters of the U.S.

Clean Water Act Analysis

One ephemeral depression within the Root Creek survey area was investigated and found to support vernal pool indicator plant species, exhibit typical vernal pool hydrology, and support hydric soils. The vernal pool meets the three wetland parameters but is isolated from other aquatic resources and has no hydrologic connection to them. Therefore, the isolated vernal pool is not considered a potential water of the U.S. under Section 404 of the CWA; however, it is considered a water of the state.

Irrigation Canal MID Lateral 6.2 occurs within the Root Creek, Waterland Vineyard, and Brock Moore survey areas and Irrigation Canal MID Lateral 32.2 occurs within the Wine Group survey area. Diversions to the MID distribution system are largely from the Madera Canal downstream of the diversion point from Millerton Lake. Most diversions from the Madera Canal go directly to the MID conveyance system. These canal features are considered potentially jurisdictional non-wetland waters of the U.S. and state as they show an upstream connection to a canal coming out of Friant Dam and they exhibit a physical connection downstream via an extended canal system.

Root Creek is an isolated ephemeral aquatic feature with no downstream connection and is therefore not considered a potentially jurisdictional non-wetland waters of the U.S.; however, it may be considered a potentially jurisdictional waters of the state.

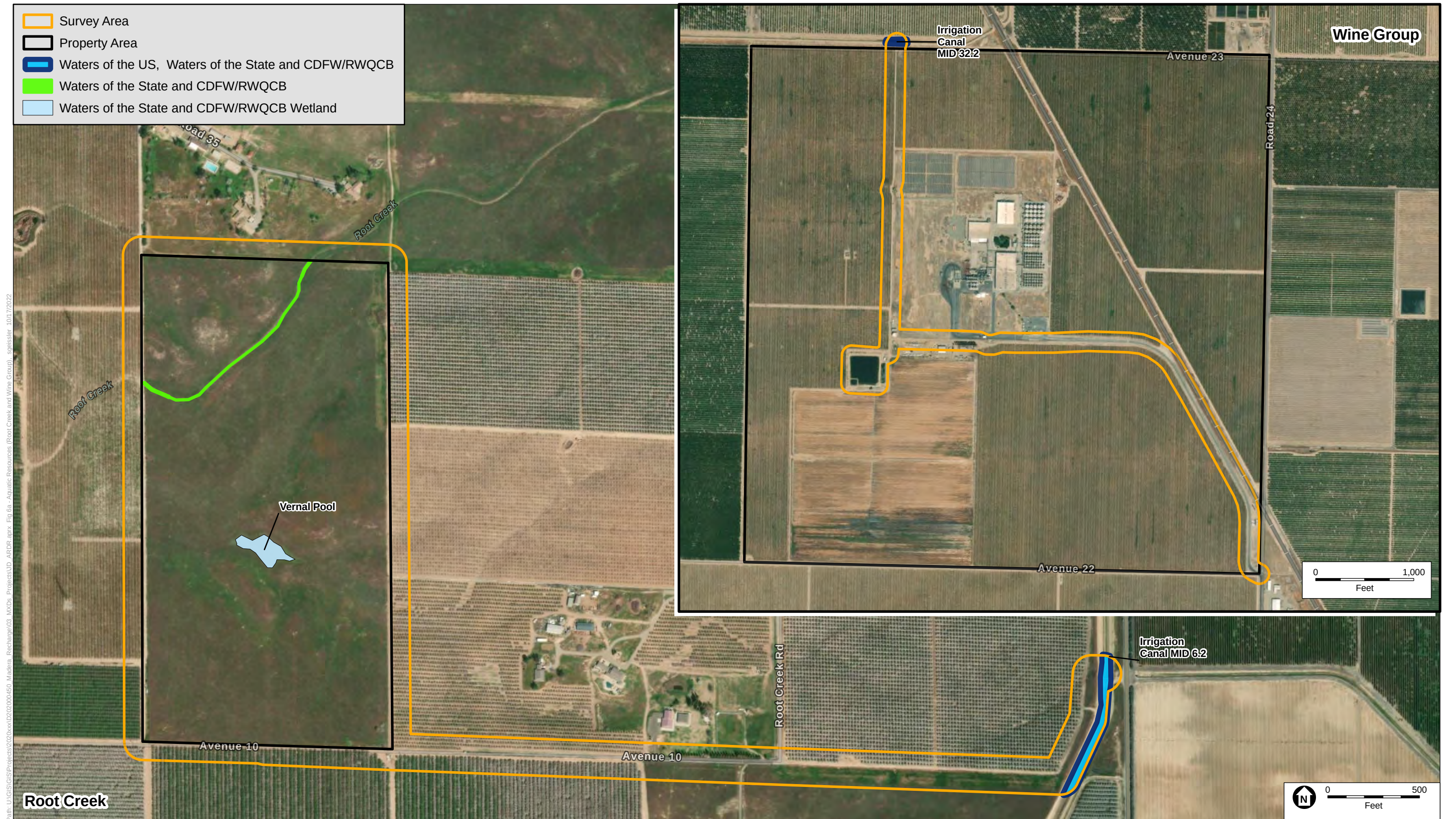
The Brock Moore site included a large field that, according to historic imagery, appeared to be hydrologically connected to a creek. Although historic aerial imagery showed standing water at the lowest elevation (elevation 350 feet) wetland investigation found that it did not meet or support any wetland criteria. Discussions with the landowner revealed that this site was artificially dug out for use as a retention basin, but water quickly percolated into the ground so that idea was abandoned. Currently, this area is used to store large equipment and may serve as an informal recharge basin due to the high infiltration rates.

Vegetated ditches were found in the Root Creek and Brock Moore survey areas and were investigated for the presence of aquatic features. The vegetated ditch at Root Creek, adjacent to Irrigation Canal MID Lateral 6.2, is isolated and did not meet wetland criteria. The vegetated ditch in the Brock Moore survey area supports a pipe culvert, disturbed vegetation and outflow area however it did show evidence of recent flows and was overgrown with upland species., Additionally, it is not connected to a downstream water and did not meet wetland criteria nor did it exhibit OHWM features.

Vegetated ditches and excavated areas within the Root Creek and Brock Moore survey areas are considered uplands due to their lack of wetland indicators or presence of an OHWM.

Potential Other Waters of the U.S.

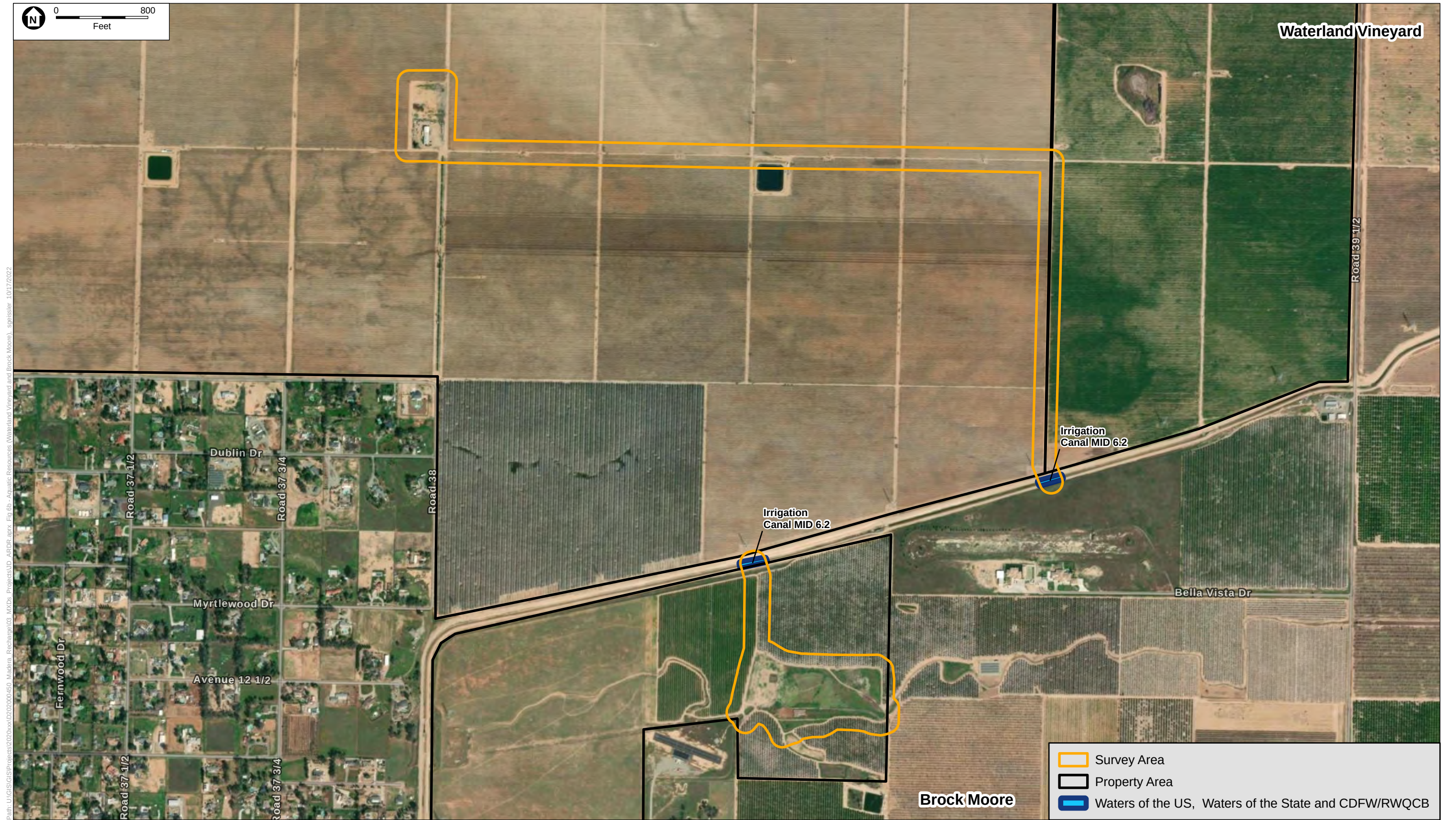
Potential non-wetland waters of the U.S. within the East Madera Recharge Subbasin Phase 1 Projects area consist of two non-wetland waters: Irrigation Canal MID 6.2 and MID 32.2 (Table 5).



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 6a
Aquatic Resources
(Root Creek and Wine Group)



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1

Figure 6b
Aquatic Resources
(Waterland Vineyard and Brock Moore)

Irrigation Canal/Ditches

Irrigation Canal MID Lateral 6.2

Irrigation Canal MID Lateral 6.2 is located in the Root Creek, Waterland Vineyard, and the Brock Moore survey areas. Water flows into the channel from upstream flows originating from urban runoff and water released from Friant Dam by way of the Madera Canal. The canal is depicted as a blue line stream on the Gregg and Lane's Bridge 7.5-minute topographical maps. This feature is classified in the NWI as Riverine with intermittent hydrology and temporary flooding, as well as excavated, indicating it as an artificial feature. The OHWM indicators include a distinct bed and bank, drainage patterns, a change in vegetation cover, and flowing water with a sparsely vegetated low-flow channel. OHWM measurements were determined by comparing aerial imagery during the flood season to field observations. It was assumed that under normal conditions, the active floodplain would not support wetland vegetation due to the steep banked channel bathymetry, flood control features, and surrounding land use conversion to orchards and vineyards.

Within the Root Creek survey area, the low-flow channel was approximately 5 feet wide, was dry and unvegetated on the north side of the flood control gate and supported ponded water on the southside in a concrete holding area. The channel was dry beyond the flood control gate structure. Vegetation in the canal includes soft chess, short-pod mustard, white tumbleweed (*Amaranthus albus*), dallis grass (*Paspalum dilatatum*), and green bristle grass (*Setaria viridis*) at and below the OHWM. The OHWM was measured at approximately 22 feet wide, the total length measured 1301.8 linear feet, and the total areal extent was 0.13 acres. The OHWM was defined by the presence of bed and bank, benches, and change in vegetation species and cover.

Within the Waterland Vineyard and Brock Moore survey areas, the flow channel was approximately 5 feet wide with slow-moving water approximately 3 to 6 inches deep over a shallow layer of sediment and patches of pale spike rush, needle spike rush (*Eleocharis acicularis*), and rabbit's foot grass (*Polypogon monspeliensis*) below the OHWM; and white tumbleweed, soft chess, willow herb (*Epilobium ciliatum*), and green bristle grass at the OHWM. The OHWM at Waterland Vineyard was measured at approximately 36 feet wide, the total length measured 200 linear feet, and the total areal extent was 0.13 acres. The OHWM at Brock Moore was 30 feet wide, the total length measured 222 linear feet, and the total areal extent was 0.15 acres. The OHWM at both locations was defined by the presence of bed and bank, benches, and change in vegetation species and cover.

Irrigation Canal MID Lateral 6.2 is connected downstream to other aquatic features and is considered a potential waters of the U.S.

Irrigation Canal MID 32.2

Irrigation Canal MID Lateral 32.2 is located in the Wine Group survey area. Water flows into the channel from upstream flows originating from urban runoff and water released from Friant Dam by way of the Madera Canal. The canal is depicted as a blue line stream on the Kismet 7.5-minute topographical map. This feature is classified in the NWI as Riverine with intermittent hydrology and temporary flooding, as well as excavated, indicating it as an artificial feature. The OHWM indicators include a distinct bed and bank, drainage patterns, a change in vegetation cover, and

flowing water with a sparsely vegetated low-flow channel. It was assumed that under normal conditions, the active floodplain would not support wetland vegetation due to the steep banked channel bathymetry, flood control features, and surrounding land use conversion to orchards and vineyards.

The flow channel was approximately 5 feet wide. The OHWM was measured at approximately 23 feet wide, the total length measured 205 linear feet, and the total areal extent was 0.12 acres. The OHWM was defined by the presence of bed and bank, benches, and change in vegetation species and cover.

Irrigation Canal MID Lateral 32.2 is connected downstream to other aquatic features and is considered a potential waters of the U.S.

5.3 Waters of the State

All potential wetland and non-wetland waters of the U.S. summarized in Section 5.2 and Table 5 above are also potential wetland and non-wetland waters of the state. Additional waters of the state include any riparian vegetation associated with the aquatic features, culverts, and ditches; isolated wetlands; and vernal pools. Waters of the state are depicted in Figure 6a and Figure 6b and acreages are summarized in **Table 6**.

TABLE 6
FEATURES POTENTIALLY SUBJECT TO SECTION 1600 ET SEQ. OF THE FISH AND GAME CODE WITHIN THE SURVEY AREAS

Aquatic Feature	Cowardin Type	Vegetated Streambed/Pond/Lake (acres)	Unvegetated Streambed/Pond/Lake (acres)	Length (feet)	Average Width (feet)	Vegetation/Land Cover Type	GPS Coordinates (decimal degrees)
Root Creek (waters)	PEM1C	0.13	NA	1301.8	6.0	<i>Avena</i> spp.– <i>Bromus</i> spp. Alliance	36.898066 N, - 119.908052W
Vernal Pool - RC	None	0.6	NA	NA	NA	<i>Lasthenia fremontii</i> – <i>Downingia</i> Alliance	36.898029N, - 119.909681W
Irrigation Canal MID Lateral 6.2-RC	R4SBCx	NA	0.67	784	50	<i>Avena</i> spp.– <i>Bromus</i> spp. Alliance	36.896342N, - 119.893995W
Irrigation Canal MID Lateral 6.2-WV	R4SBCx	NA	0.13	200	50	Disturbed	36.935504N, - 119.839670W
Irrigation Canal MID Lateral 6.2-BM	R4SBCx	NA	0.15	222	50	Orchard	36.933356N, - 119.848472W
Irrigation Canal MID Lateral 32.2	R4SBCx	NA	0.12	205	40	Vineyard	37.083679N, - 120.129096W
Totals		0.73	1.07	2712.8	190		

NOTES: MID = Madera Irrigation District; PEM1Ch = Palustrine Emergent Persistent Seasonally Flooded Excavated; R4SBCx = Riverine Intermittent Streambed Seasonally Flooded Excavated.

Waters of the State Analysis

Potential wetland waters of the state within the East Madera Recharge Subbasin Phase 1 Projects area consist of four wetland waters: Root Creek, vernal pool, Irrigation Canal MID Lateral 6.2, and Irrigation Canal MID Lateral 32.2 (Table 5). Refer to Section 5.2 for discussion of Irrigation Canals MID Lateral 6.2 and Lateral 32.2.

Potential Wetland Waters of the State

A vernal pool was found at the Root Creek property survey area and was investigated for aquatic resources. Several vernal pool indicator plant species were observed with a distinct margin visible as a change in vegetation cover and composition. Wetland parameters, hydrology, and vegetation were observed; however, hydric soils were only tested at the surface as digging a sample pit in the vernal pool was not considered a necessity. Surface sampling showed indicators of hydric soils and the soil series is listed as a hydric soil by the regional Natural Resources Conservation Service (NRCS 2022).

Vernal Pool

The vernal pool is located in a concave area on native soil within a non-native grass-dominated community (Figures 3 and 4a). The vernal pool was found to support vernal pool indicator species woolly marbles, Great Valley coyote thistle, hyssop loosestrife, and prairie plantain (*Plantago elongata*). The vernal pool was not found to be connected to a vernal pool complex or a tributary but was found to support the three USACE wetland parameters. Hydric soils were assumed (vernal pools [F9]) and hydrology was observed as inundation and saturation (A3), water-stained leaves (B9), and sediment deposits (B2). Hydrophytic vegetation was present, as were vernal pool indicator species within the vernal pool depression.

Based on the findings, the vernal pool is a potential wetland waters of the state.

Potential Other Waters of the State

Root Creek

Root Creek is an ephemeral drainage with a small local watershed that brings water flows into the channel from upstream flows originating from urban runoff and water released from Friant Dam by way of the Madera Canal. The creek drains west towards the City of Madera where it becomes diffuse with no visible or physical connection to a TNW. This feature is classified in the NWI as a Palustrine Emergent Wetland with seasonal flooding; it is depicted as a blue line stream on the Gregg 7.5-minute topographical map.

Root Creek was found to support a few scour-type pools; however, these features are part of the Root Creek feature and are not considered separate. Wetland determination sample points 1-RC to 4-RC were recorded within the creek bed, where hydrophytic vegetation was present. Hydrologic indicators include a distinct bed and bank, drainage patterns, and a change in vegetation species and cover. Hydrophytic vegetation was found below the OHWM and include low-growing obligate wetland species. Hydric soils were also found to be present and appear

undisturbed. The sample sites met the required parameters to be considered wetlands; however, they are included in the creek and not considered isolated or wetland waters.

The active floodplain is flat to gently rolling and dominated by non-native grasses. It was assumed that under normal conditions, the active floodplain would not support wetland vegetation due to the incised channel and low-flow regime. The floodplain has been cut off from flows except during above-average precipitation; however, flows have not exceeded the banks in the past 20 years, based on ESA's review of aerial photography. Root Creek is eroded in areas with distinct banks and at the northern and western edges of the property.

Root Creek is an isolated feature that does not connect downstream to other aquatic features. The OHWM was measured at an average width of 6.97 feet, the total length measured 1,201.8 linear feet, and total areal extent was 0.13 acres. Based on aerial imagery and observed flow indicators at the time of the field survey, the creek sustains ephemeral hydrology with seasonal flooding and periodic episodic flashy events.

Based on the findings, this aquatic feature is considered a potential water of the state and could be subject to CDFW Section 1600 regulations.

5.4 Rivers, Streams, and Lakes

Features potentially subject to regulation under Fish and Game Code Section 1602 are shown in Figure 6a and Figure 6b. Potential CDFW resources include all waters of the state (see Table 6) described above except the vernal pool. The total acreages potentially subject to CDFW jurisdiction for each survey area are provided in Table 6.

5.5 Conclusions

This report documents the aquatic resources boundary delineation and best professional judgment of ESA investigators. All conclusions presented should be considered preliminary and subject to change pending official review and a jurisdictional determination in writing by the USACE and/or state. All aquatic resources and extent of jurisdictional boundaries identified in this report are considered preliminary pending verification from the appropriate regulatory agencies. This aquatic resource study found four aquatic features within the four survey areas and includes three non-wetland waters and one isolated wetland feature classified as a vernal pool.

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Appendix A

Floral Compendium

APPENDIX A: FLORAL COMPENDIUM

EUDICOTS

Scientific Name	Common Name
Adoxaceae	Muskroot Family
<i>Sambucus nigra</i> ssp. <i>caerulea</i>	blue elderberry
Amaranthaceae	Amaranth Family
* <i>Amaranthus albus</i>	tumbling pigweed
Anacardiaceae	Sumac Family
* <i>Schinus molle</i>	Peruvian pepper tree
Apiaceae	Carrot Family
<i>Eryngium castrense</i>	Great Valley coyote thistle
* <i>Foeniculum vulgare</i>	fennel
Asteraceae	Aster Family
<i>Ambrosia psilostachya</i>	western ragweed
<i>Baccharis salicifolia</i>	mule fat
* <i>Centaurea solistalis</i>	yellow star-thistle
<i>Centromadia fitchii</i>	Fitch's tar weed
* <i>Cotula coronopifolia</i>	common brassbuttons
* <i>Erigeron bonariensis</i>	flax leaf fleabane
<i>Erigeron canadensis</i>	Canadian horseweed
<i>Helianthus annuus</i>	western sunflower
<i>Heterotheca grandiflora</i>	Telegraph weed
* <i>Hypochaeris glabra</i>	Smooth cat's ears
* <i>Lactuca serriola</i>	prickly lettuce
<i>Pseudognaphalium</i> spp.	cud-weed
<i>Psilocarphus brevissimus</i>	woolly marbles
* <i>Sonchus</i> spp.	sow thistle
<i>Xanthium strumarium</i>	cocklebur
Boraginaceae	Borage Family
<i>Amsinckia menziesii</i>	Menzies' fiddleneck
<i>Heliotropium curassavicum</i>	salt heliotrope
<i>Plagiobothrys acanthocarpus</i>	adobe popcornflower
<i>Plagiobothrys undulatus</i>	wavy stemmed popcornflower
Brassicaceae	Mustard Family
* <i>Brassica nigra</i>	black mustard
* <i>Hirschfeldia incana</i>	short-pod mustard
* <i>Raphanus sativus</i>	wild radish

EUDICOTS

Scientific Name	Common Name
Caryophyllaceae	Pink Family
* <i>Cerastium fontanum ssp. vulgare</i>	common chickweed
* <i>Silene gallica</i>	common catchfly
Chenopodiaceae	Goosefoot Family
* <i>Atriplex semibaccata</i>	Australian saltbush
* <i>Bassia hyssopifolia</i>	Five-hook bassia
* <i>Salsola tragus</i>	Russian thistle
Crassulaceae	Stonecrop Family
<i>Crassula aquatica</i>	water pygmyweed
Euphorbiaceae	Spurge Family
<i>Croton setiger</i>	doveweed
* <i>Ricinus communis</i>	castor bean
Fabaceae	Legume Family
* <i>Medicago polymorpha</i>	bur clover
* <i>Medicago sativa</i>	alfalfa
* <i>Melilotus albus</i>	white sweetclover
Geraniaceae	Geranium Family
* <i>Erodium botrys</i>	longbeak stork's bill
* <i>Erodium brachycarpum</i>	shortfruit stork's bill
Lamiaceae	Mint Family
* <i>Marrubium vulgare</i>	horehound
<i>Trichostema lanceolatum</i>	vinegar weed
Malvaceae	Mallow Family
* <i>Malva parviflora</i>	cheeseweed
Montiaceae	Purslane Family
* <i>Portulaca oleracea</i>	common purslane
Myrsinaceae	Myrsine Family
* <i>Anagallis arvensis</i>	scarlet pimpernel
Onagraceae	Evening Primrose Family
<i>Epilobium ciliatum</i>	slender willow herb
Plantaginaceae	Plantain Family
* <i>Plantago major</i>	English plantain
Polygonaceae	Buckwheat Family
* <i>Polygonum aviculare ssp. depressum</i>	common knotweed
* <i>Rumex crispus</i>	curly dock

EUDICOTS

Scientific Name

Salicaceae

Populus fremontii ssp. *fremontii*
Salix gooddingii
Salix laevigata
Salix lasiolepis

Solanaceae

Datura wrightii

Tamaricaceae

* *Tamarix parviflora*

Urticaceae

Urtica dioica

Verbenaceae

! *Verbena lasiostachya*

Zygophyllaceae

* *Tribulus terrestris*

Common Name

Willow Family

Fremont's cottonwood
black willow
red willow
arroyo willow

Nightshade Family

jimson weed

Tamarix Family

small-flowered tamarisk

Nettle Family

stinging nettle

Vervain Family

western vervain

Caltrop Family

puncture vine

MONOCOTYLEDONS

Scientific Name

Areaceae

* *Phoenix canariensis*
* *Washingtonia robusta*

Cyperaceae

Eleocharis acicularis
Eleocharis macrostachya

Poaceae

* *Avena barbata*
* *Brachypodium distachyon*
* *Bromus diandrus*
* *Bromus hordeaceus*
* *Bromus rubens*
* *Cynodon dactylon*
Distichlis spicata
* *Hordeum murinum* ssp. *leporinum*
* *Festuca perennis*
* *Festuca myuros*
* *Paspalum dilatatum*

Common Name

Palm Family

Canary Island date palm
Mexican fan palm

Sedge Family

needle-stemmed spikerush
pale spike-rush

Grass Family

slender oat
purple false-brome
ripgut brome
soft chess
red brome
Bermuda grass
saltgrass
barley
Italian ryegrass
rattail fescue
dallis grass

MONOCOTYLEDONS

Scientific Name

- * *Polypogon monspeliensis*
- * *Schismus barbatus*
- * *Setaria viridis*
- * *Stipa miliacea*

Typhaceae

Typha latifolia

* = Non-native plant species

Common Name

- rabbit's foot grass
- Mediterranean schismus
- green bristle grass
- Smilo grass

Cattail Family

broad-leaved cattail

Appendix B

Antecedent Precipitation Tool Outputs

Antecedent Precipitation Tool v.1.0 - Watershed Sampling Summary

Generated on 2022-10-07

User Inputs

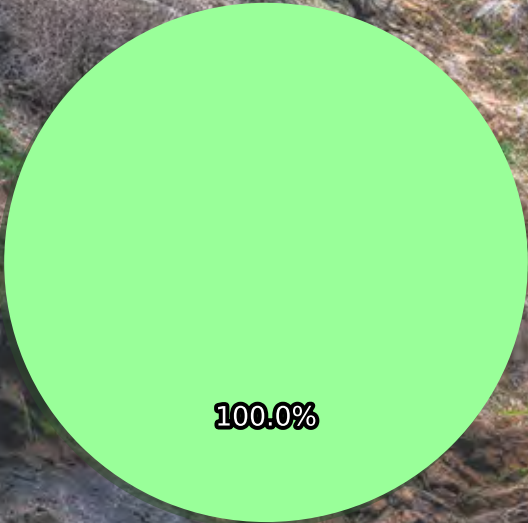
Coordinates	36.898019, -119.909647
Date	2022-09-14
Geographic Scope	HUC12

Intermediate Data

Hydrologic Unit Code	180400010801
Watershed Size	14.8 mi ²
# Random Sampling Points	5

Preliminary Result

Average Antecedent Precipitation Score	14.0
Preliminary Determination	Normal Conditions



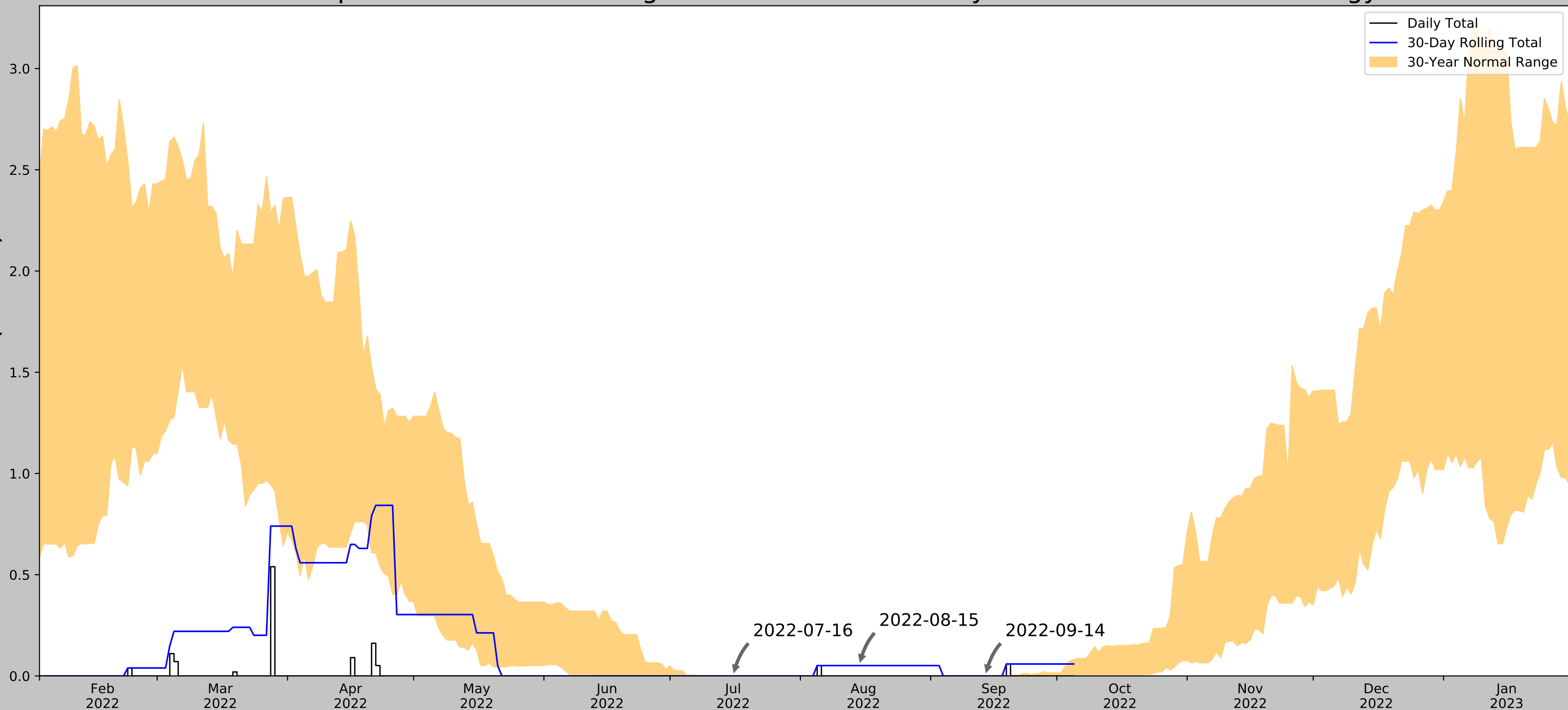
Normal Conditions

Sampling Point Breakdown

Antecedent Precipitation Score	Antecedent Precipitation Condition	WebWIMP H ₂ O Balance	Drought Index (PDSI)	# of Points
14	Normal Conditions	Dry Season	Extreme drought (2022-08)	5

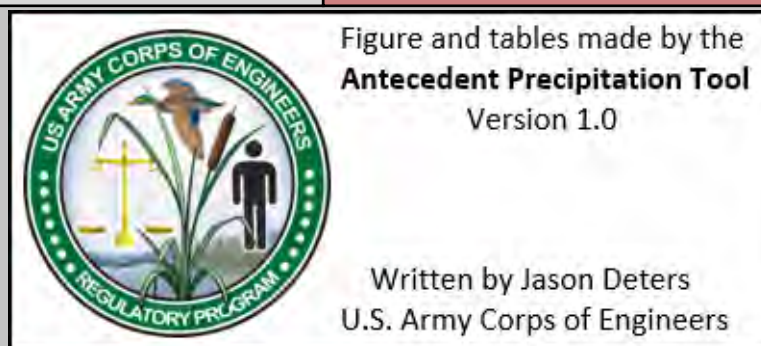
Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network

Rainfall (Inches)



Coordinates	36.898019, -119.909647
Observation Date	2022-09-14
Elevation (ft)	291.47
Drought Index (PDSI)	Extreme drought (2022-08)
WebWIMP H ₂ O Balance	Dry Season

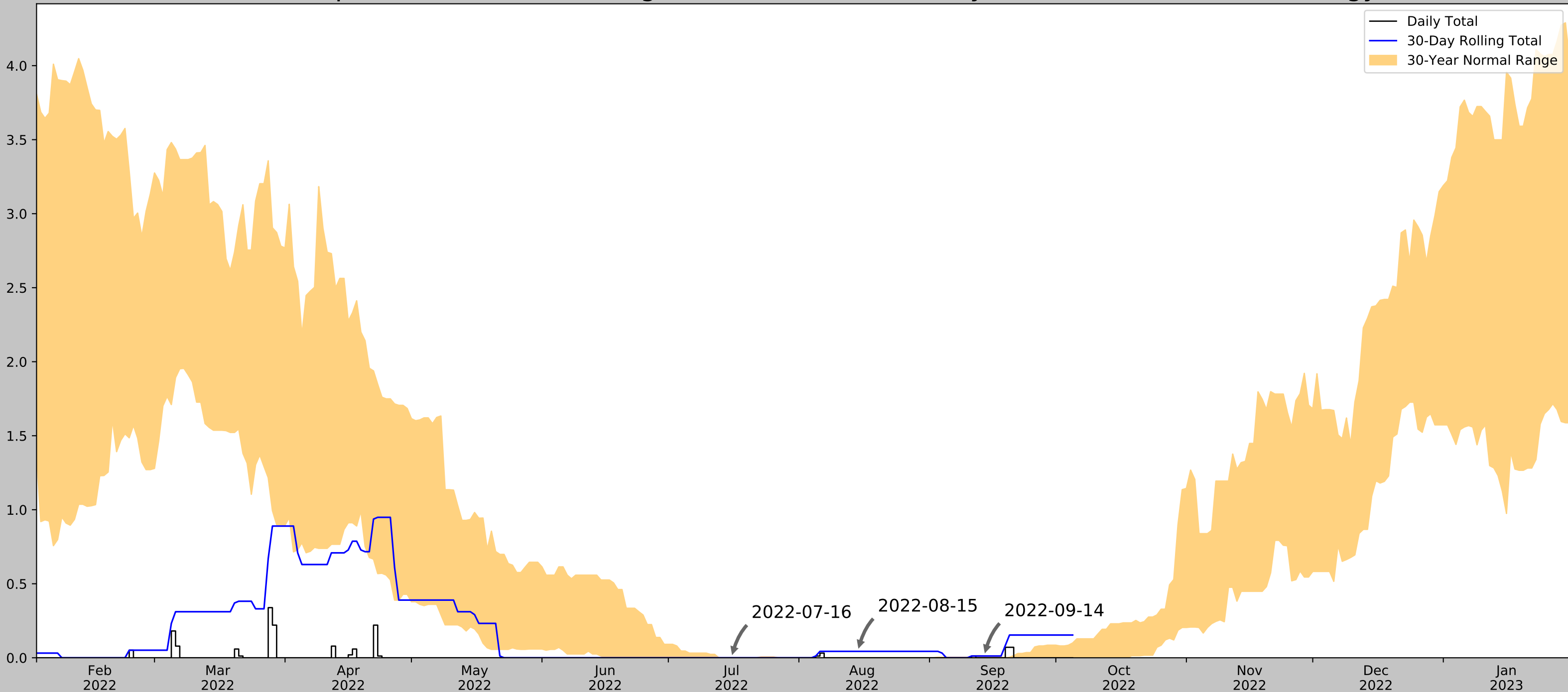
30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-09-14	0.0	0.0	0.0	Normal	2	3	6
2022-08-15	0.0	0.0	0.051181	Wet	3	2	6
2022-07-16	0.0	0.0	0.0	Normal	2	1	2
Result							Normal Conditions - 14



Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
FRESNO YOSEMITE INTL AP	36.78, -119.7194	333.005	13.31	41.535	6.542	11353	90

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network

Rainfall (Inches)



Coordinates	36.901831, -119.788898
Observation Date	2022-09-14
Elevation (ft)	291.47
Drought Index (PDSI)	Extreme drought (2022-08)
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-09-14	0.0	0.011811	0.011811	Normal	2	3	6
2022-08-15	0.0	0.0	0.043307	Wet	3	2	6
2022-07-16	0.0	0.0	0.0	Normal	2	1	2
Result							Normal Conditions - 14



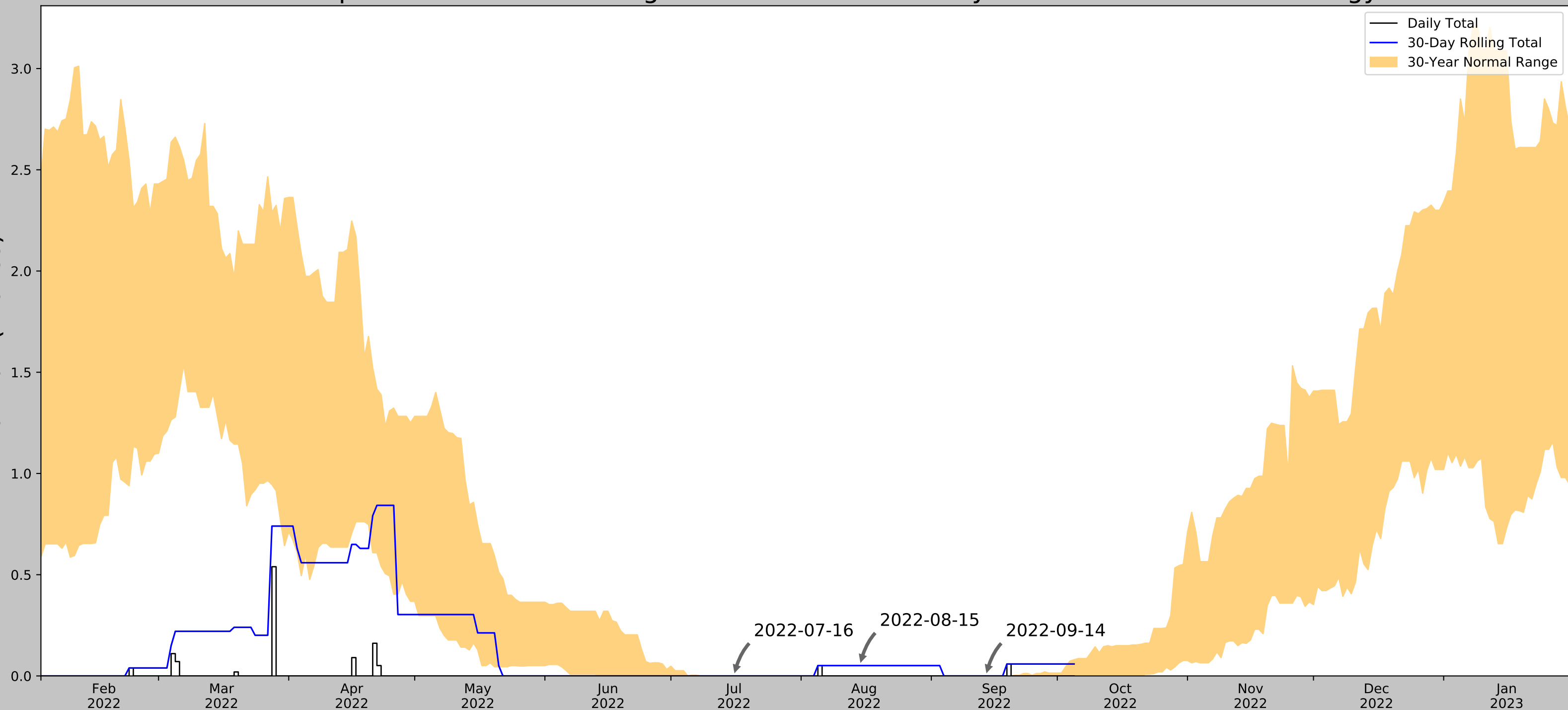
Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
FRIANT GOVERNMENT CAMP	36.9969, -119.7072	410.105	7.969	118.635	4.531	10988	89
FRESNO 3NW	36.9089, -119.8006	379.921	7.973	30.184	3.829	91	0
FRESNO 7.2 NNE	36.8768, -119.7435	386.155	8.537	23.95	4.046	0	1
CLOVIS 2.9 N	36.8611, -119.6931	381.89	9.415	28.215	4.502	73	0
FRESNO 4.3 NNW	36.8362, -119.8293	333.005	12.991	77.1	6.848	16	0
FRESNO YOSEMITE INTL AP	36.78, -119.7194	333.005	15.002	77.1	7.908	185	0

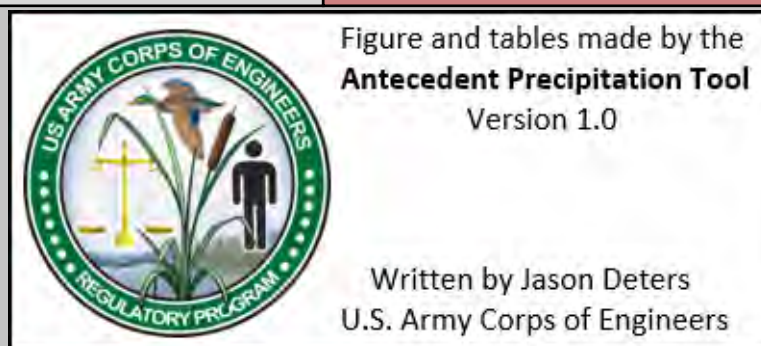
Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network

Rainfall (Inches)



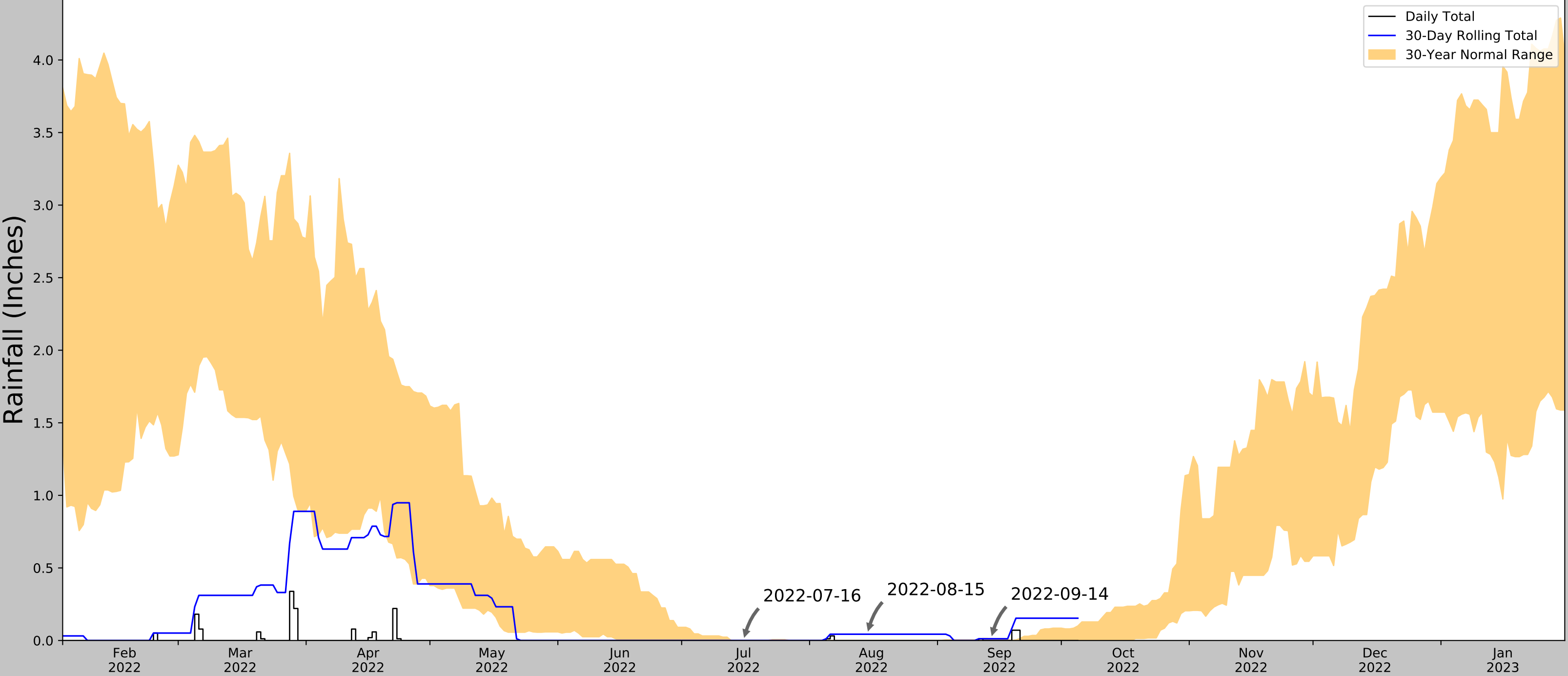
Coordinates	36.897294, -119.925975
Observation Date	2022-09-14
Elevation (ft)	286.89
Drought Index (PDSI)	Extreme drought (2022-08)
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-09-14	0.0	0.0	0.0	Normal	2	3	6
2022-08-15	0.0	0.0	0.051181	Wet	3	2	6
2022-07-16	0.0	0.0	0.0	Normal	2	1	2
Result							Normal Conditions - 14



Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
FRESNO YOSEMITE INTL AP	36.78, -119.7194	333.005	14.006	46.115	6.949	11353	90

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	36.920859, -119.859376
Observation Date	2022-09-14
Elevation (ft)	352.18
Drought Index (PDSI)	Extreme drought (2022-08)
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-09-14	0.0	0.011811	0.011811	Normal	2	3	6
2022-08-15	0.0	0.0	0.043307	Wet	3	2	6
2022-07-16	0.0	0.0	0.0	Normal	2	1	2
Result							Normal Conditions - 14

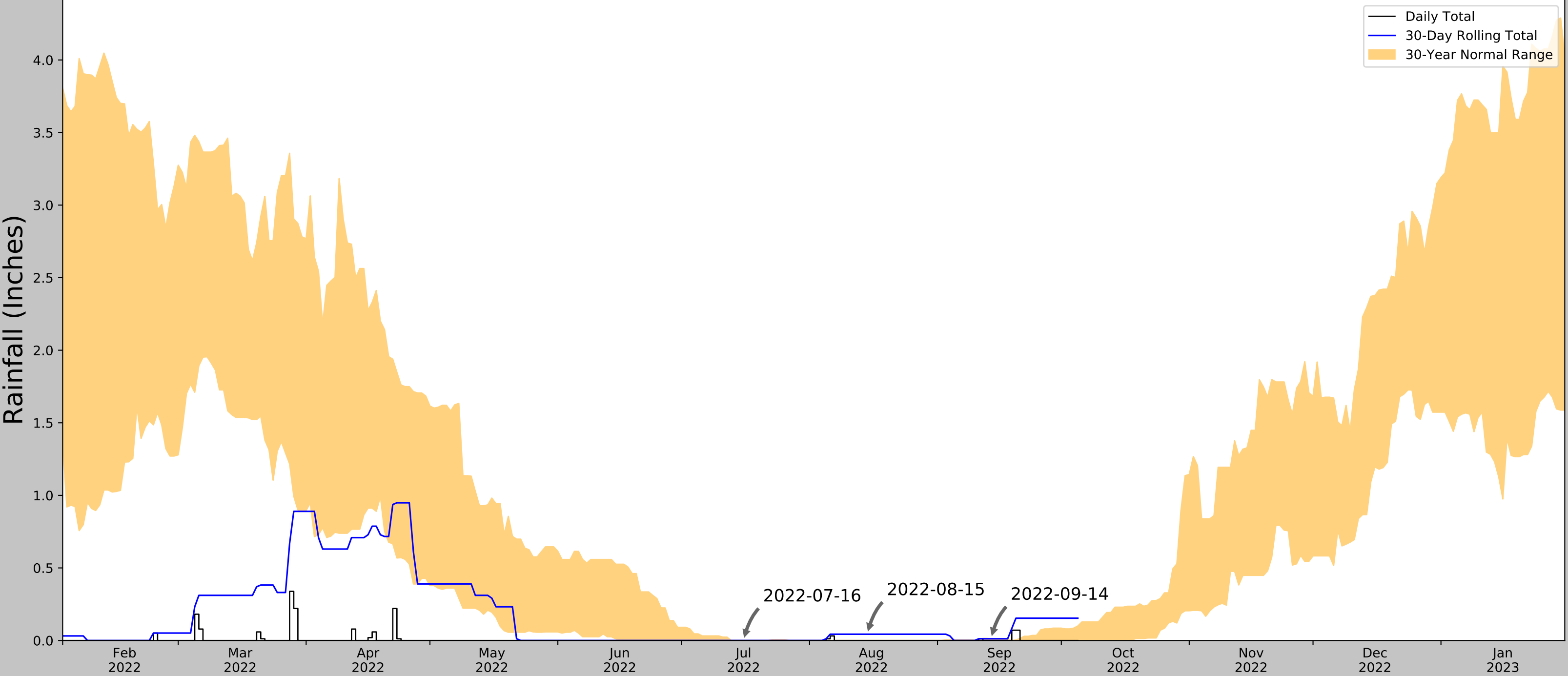


Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
FRIANT GOVERNMENT CAMP	36.9969, -119.7072	410.105	9.909	57.925	5.033	10988	89
FRESNO 3NW	36.9089, -119.8006	379.921	7.973	30.184	3.829	91	0
FRESNO 7.2 NNE	36.8768, -119.7435	386.155	8.537	23.95	4.046	0	1
CLOVIS 2.9 N	36.8611, -119.6931	381.89	9.415	28.215	4.502	73	0
FRESNO 4.3 NNW	36.8362, -119.8293	333.005	12.991	77.1	6.848	16	0
FRESNO YOSEMITE INTL AP	36.78, -119.7194	333.005	15.002	77.1	7.908	185	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	36.954372, -119.769693
Observation Date	2022-09-14
Elevation (ft)	415.55
Drought Index (PDSI)	Extreme drought (2022-08)
WebWIMP H ₂ O Balance	Dry Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-09-14	0.0	0.011811	0.011811	Normal	2	3	6
2022-08-15	0.0	0.0	0.043307	Wet	3	2	6
2022-07-16	0.0	0.0	0.0	Normal	2	1	2
Result							Normal Conditions - 14



Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
FRIANT GOVERNMENT CAMP	36.9969, -119.7072	410.105	4.531	5.445	2.064	10988	89
FRESNO 3NW	36.9089, -119.8006	379.921	7.973	30.184	3.829	91	0
FRESNO 7.2 NNE	36.8768, -119.7435	386.155	8.537	23.95	4.046	0	1
CLOVIS 2.9 N	36.8611, -119.6931	381.89	9.415	28.215	4.502	73	0
FRESNO 4.3 NNW	36.8362, -119.8293	333.005	12.991	77.1	6.848	16	0
FRESNO YOSEMITE INTL AP	36.78, -119.7194	333.005	15.002	77.1	7.908	185	0

Appendix C

Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: East Madera Subbasin Recharge Phase 1 City/County: SE Madera County Sampling Date: 10/04/22
 Applicant/Owner: Madera County State: CA Sampling Point: 1-DP
 Investigator(s): Amanda Segura-Moon; Anna Scwyter Section, Township, Range: S36 T11S R19E
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): C Lat: 36.930627 Long: -119.847847 Datum: WGS84
 Soil Map Unit Name: Whitney and Rocklin Complex NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☒, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present? Yes ☐ No ☒	
Wetland Hydrology Present? Yes ☒ No ☐	
Remarks: Depression was manually built and water was added, but the area did not hold water	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>10ft</u>) 1. <u>TRICHOSTEMMA LANCEOLATUM</u> <u>3</u> <u>Y</u> <u>FACU</u> 2. <u>BASSIA HYSSOPIFOLIA</u> <u>8</u> <u>Y</u> <u>FACU</u> 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ _____ = Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum <u>89</u> % Cover of Biotic Crust <u>0</u>				
Remarks:				Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
				Hydrophytic Vegetation Present? Yes ☐ No ☒

SOIL

Sampling Point: 1-DP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	2.5YR 5/6	100					loamy sand	
7-12	2.5Y 5/3	94	7.5YR 6/8	3	C	M		
			10YR 5/3	3	D	M	loamy sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

recently dug/alterd by farmers, water added artificially

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☒ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☒ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____
Water Table Present? Yes _____ No ☒ Depth (inches): _____
Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

water visible in some imagery but this area has been manually flooded

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: East Madera Subbasin Recharge Phase 1 City/County: SE Madera County Sampling Date: 9/13/22
 Applicant/Owner: Madera County State: CA Sampling Point: 1-RC
 Investigator(s): Brenda McMillan Section, Township, Range: S9 T11S R19E
 Landform (hillslope, terrace, etc.): channel Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): C Lat: 36.902287 Long: -119.909490 Datum: _____
 Soil Map Unit Name: Whitney and Rocklin Complex NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No ☒	Is the Sampled Area within a Wetland? Yes ☒ No _____
Hydric Soil Present? Yes ☒ No _____	
Wetland Hydrology Present? Yes ☒ No _____	
Remarks: Hydric soils not present. Area under severe drought therefore no water not released into system from Madera Canal. Depression at fence line 3.5 ft deep, bare (<30% veg cover). Area under severe drought therefore no water not released into system from Madera Canal.; has not topped banks in >20 years pers comm. Depression within Root Creek channel	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ _____ = Total Cover Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover Herb Stratum (Plot size: <u>10ft</u>) 1. <u>Lythrum hyssopifolia</u> <u>3</u> <u>Y</u> <u>OBL</u> 2. <u>ELEOCHARIS MACROSTACHYA</u> <u>2</u> <u>Y</u> <u>OBL</u> 3. <u>CENTROMADIA FITCHII</u> <u>5</u> <u>Y</u> <u>FACU</u> 4. <u>TRICHOSTEMMA LANCEOLATUM</u> <u>8</u> <u>Y</u> <u>FACU</u> 5. <u>XANTHIUM STRUMARIUM</u> <u>1</u> <u>N</u> <u>FAC</u> 6. <u>PLAGIOBOTHRYIS ACANTHOCARPUS</u> <u>1</u> <u>N</u> <u>OBL</u> 7. <u>BROMUS HORDACEUS</u> <u>1</u> <u>N</u> <u>FACU</u> 8. <u>HELIANTHUS ANNUUS</u> <u>1</u> <u>N</u> <u>FACU</u> _____ = Total Cover Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover % Bare Ground in Herb Stratum <u>70</u> % Cover of Biotic Crust <u>0</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B) Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>6</u> x 1 = <u>6</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>1</u> x 3 = <u>3</u> FACU species <u>15</u> x 4 = <u>60</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>22</u> (A) <u>69</u> (B) Prevalence Index = B/A = <u>3.13</u> Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes _____ No ☒
Remarks: 3% LITTER; Assoc sp.: Rumex crispus FAC, Lotus americanus UPL, Croton setiger UPL	

SOIL

Sampling Point: 1-RC

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	7.5YR 4/2	100					SCL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: hardpan
Depth (inches): 8

Hydric Soil Present? Yes ☒ No ☐

Remarks:

SCL=sandy clay loam. seasonally ponds water, annual OBL sp present; located w/in channel. Hydric Soil list

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NWI mapped as PEM1C

Remarks:

evidence of seasonal ponding w/in ephemeral stream

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: East Madera Subbasin Recharge Phase 1 City/County: SE Madera County Sampling Date: 9/13/22
 Applicant/Owner: Madera County State: CA Sampling Point: 2-RC
 Investigator(s): Brenda McMillan Section, Township, Range: S9 T12S R19E
 Landform (hillslope, terrace, etc.): channel Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): C Lat: 36.901845 Long: -119.909162 Datum: WGS84
 Soil Map Unit Name: Whitney and Rocklin Complex NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☒, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks: Area under severe drought therefore no water not released into system from Madera Canal; Area under severe drought therefore no water not released into system from Madera Canal.; has not topped banks in >20 years pers comm. Depression within Root Creek channel. Depression within Rott Creek channel					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ _____ = Total Cover Sapling/Shrub Stratum (Plot size: _____) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover Herb Stratum (Plot size: <u>10ft</u>) 1. <u>Lythrum hyssopifolia</u> <u>25</u> <u>Y</u> <u>OBL</u> 2. <u>ELEOCHARIS MACROSTACHYA</u> <u>5</u> <u>N</u> <u>OBL</u> 3. <u>CENTROMADIA FITCHII</u> <u>5</u> <u>N</u> <u>FACU</u> 4. <u>TRICHOSTEMMA LANCEOLATUM</u> <u>20</u> <u>Y</u> <u>FACU</u> 5. <u>HORDEUM MURINUM</u> <u>1</u> <u>N</u> <u>FACU</u> 6. <u>PLAGIOBOTHRYIS ACANTHOCARPUS</u> <u>10</u> <u>Y</u> <u>OBL</u> 7. <u>CROTON SETIGER</u> <u>1</u> <u>N</u> <u>UPL</u> 8. _____ _____ = Total Cover Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover % Bare Ground in Herb Stratum <u>30</u> % Cover of Biotic Crust <u>0</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.67</u> (A/B) Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>40</u> x 1 = <u>40</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>26</u> x 4 = <u>104</u> UPL species <u>1</u> x 5 = <u>5</u> Column Totals: <u>67</u> (A) <u>149</u> (B) Prevalence Index = B/A = <u>2.22</u> Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ☒ Prevalence Index is ≤3.0 ¹ ☒ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes ☒ No ☒
Remarks: 5% LITTER; SEVERE DROUGHT AFFECTING COVER AND SPECIES COMPOSITION. ELEO MAC HAS SHALLOW FINE ROOTS ADAPTED TO RAPIDLY ABSORB AVAILABLE SURFACE AND SUBSURFACE WATER	

SOIL

Sampling Point: 2-RC

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 4/2	98	5YR 4/6	2	D	M	clay loam	
3-12	10YR 4/2	80	5YR 4/6	20	D	M	clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: hardpan

Depth (inches): 12

Hydric Soil Present? Yes ☒ No ☐

Remarks:

low chroma in matrix. seasonally ponds water, annual OBL sp present; located w/in channel. NRCS Hydric Soil list

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☐ No ☒ Depth (inches):

Saturation Present? Yes ☐ No ☒ Depth (inches):
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NWI mapped as PEM1C

Remarks:

evidence of seasonal ponding w/in ephemeral stream

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: East Madera Subbasin Recharge Phase 1 City/County: SE Madera County Sampling Date: 9/13/22
 Applicant/Owner: Madera County State: CA Sampling Point: 3-RC
 Investigator(s): Brenda McMillan Section, Township, Range: S9 T12S R19E
 Landform (hillslope, terrace, etc.): channel Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): C Lat: 36.900296 Long: -119.911705 Datum: WGS84
 Soil Map Unit Name: Whitney and Rocklin Complex NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☒, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐		
Wetland Hydrology Present?	Yes ☒ No ☐		
Remarks: Area under severe drought therefore no water not released into system from Madera Canal; Area under severe drought therefore no water not released into system from Madera Canal.; has not topped banks in >20 years pers comm. Depression within Root Creek channel. Depression within Root Creek channel			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.33</u> (A/B)	
4. _____	_____	_____	_____		
_____ = Total Cover					
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:	
1. _____				Total % Cover of: _____ Multiply by: _____	
2. _____				OBL species <u>22</u> x 1 = <u>22</u>	
3. _____				FACW species <u>0</u> x 2 = <u>0</u>	
4. _____				FAC species <u>1</u> x 3 = <u>3</u>	
5. _____				FACU species <u>16</u> x 4 = <u>64</u>	
_____ = Total Cover				UPL species <u>0</u> x 5 = <u>0</u>	
				Column Totals: <u>39</u> (A) <u>89</u> (B)	
				Prevalence Index = B/A = <u>2.28</u>	
Herb Stratum (Plot size: <u>10ft</u>)				Hydrophytic Vegetation Indicators:	
1. <u>ELEOCHARIS MACROSTACHYA</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	☐ Dominance Test is >50%	
2. <u>RUMEX CRISPUS</u>	<u>3</u>	<u>N</u>	<u>FAC</u>	☒ Prevalence Index is ≤3.0 ¹	
3. <u>CENTROMADIA FITCHII</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>	☒ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
4. <u>TRICHOSTEMMA LANCEOLATUM</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
5. <u>POLYGONUM AVICULARE</u>	<u>1</u>	<u>N</u>	<u>FAC</u>		
6. <u>PLAGIOBOTHRYIS ACANTHOCARPUS</u>	<u>1</u>	<u>N</u>	<u>OBL</u>		
7. <u>CERASTIUM FONTANUM</u>	<u>1</u>	<u>N</u>	<u>FACU</u>		
8. <u>Lythrum hyssopifolia</u>	<u>1</u>	<u>N</u>	<u>OBL</u>		
_____ = Total Cover					
Woody Vine Stratum (Plot size: _____)					
1. _____					
2. _____					
_____ = Total Cover					
% Bare Ground in Herb Stratum <u>40</u> % Cover of Biotic Crust <u>0</u>				Hydrophytic Vegetation Present? Yes ☒ No ☐	

Remarks:

10% LITTER; SEVERE DROUGHT AFFECTING COVER AND SPECIES COMPOSITION. ELEO MAC HAS SHALLOW FINE ROOTS ADAPTED TO RAPIDLY ABSORB AVAILABLE SURFACE AND SUBSURFACE WATER. ASSOC. SP: CYNODON DACTYLON (1% COVER/FACU)

SOIL

Sampling Point: 3-RC

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	7.5YR 3/2	90	5YR 4/6	10	D	M	clay	SOME CS IN MATRIX (<1%)
2-9	10YR 3/3	95	5YR 4/6	5	D	M	sandy loar	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☒ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☒ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: hardpan

Depth (inches): 9

Hydric Soil Present? Yes ☒ No ☐

Remarks:

low chroma in matrix. seasonally ponds water, annual OBL sp present; located w/in channel. NRCS Hydric Soil list

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- | | |
|---|---|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☒ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence of Reduced Iron (C4) |
| ☒ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☒ Inundation Visible on Aerial Imagery (B7) | ☒ Thin Muck Surface (C7) |
| ☒ Water-Stained Leaves (B9) | ☐ Other (Explain in Remarks) |

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (Riverine)
- ☒ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

- | | | |
|--|---|-----------------------------------|
| Surface Water Present? | Yes ☐ No ☒ | Depth (inches): <u> </u> |
| Water Table Present? | Yes ☐ No ☒ | Depth (inches): <u> </u> |
| Saturation Present?
(includes capillary fringe) | Yes ☐ No ☒ | Depth (inches): <u> </u> |

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NWI mapped as PEM1C

Remarks:

evidence of seasonal ponding w/in ephemeral stream

Project/Site: East Madera Subbasin Recharge Phase 1 City/County: SE Madera County Sampling Date: 9/13/22
Applicant/Owner: Madera County State: CA Sampling Point: 4-RC
Investigator(s): Brenda McMillan Section, Township, Range: S9 T12S R19E
Landform (hillslope, terrace, etc.): channel Local relief (concave, convex, none): concave Slope (%): 1
Subregion (LRR): C Lat: 36.900296 Long: -119.911705 Datum: WGS84
Soil Map Unit Name: Whitney and Rocklin Complex NWI classification: PEM1C

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			
Remarks:					
Area under severe drought therefore no water not released into system from Madera Canal.; has not topped banks in >20 years pers comm. Depression within Root Creek channel					

<u>Tree Stratum</u> (Plot size: _____)		<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A/B)																								
1. _____ 2. _____ 3. _____ 4. _____		_____	_____	_____	Prevalence Index worksheet: <table border="0"> <tr> <td colspan="2"><u>Total % Cover of:</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td><u>49</u></td> <td>x 1 = <u>49</u></td> </tr> <tr> <td>FACW species</td> <td><u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species</td> <td><u>0</u></td> <td>x 3 = <u>3</u></td> </tr> <tr> <td>FACU species</td> <td><u>26</u></td> <td>x 4 = <u>104</u></td> </tr> <tr> <td>UPL species</td> <td><u>2</u></td> <td>x 5 = <u>10</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>77</u></td> <td>(A) <u>166</u> (B)</td> </tr> <tr> <td colspan="3">Prevalence Index = B/A = <u>2.15</u></td> </tr> </table>	<u>Total % Cover of:</u>		<u>Multiply by:</u>	OBL species	<u>49</u>	x 1 = <u>49</u>	FACW species	<u>0</u>	x 2 = <u>0</u>	FAC species	<u>0</u>	x 3 = <u>3</u>	FACU species	<u>26</u>	x 4 = <u>104</u>	UPL species	<u>2</u>	x 5 = <u>10</u>	Column Totals:	<u>77</u>	(A) <u>166</u> (B)	Prevalence Index = B/A = <u>2.15</u>		
<u>Total % Cover of:</u>		<u>Multiply by:</u>																											
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UPL species	<u>2</u>	x 5 = <u>10</u>																											
Column Totals:	<u>77</u>	(A) <u>166</u> (B)																											
Prevalence Index = B/A = <u>2.15</u>																													
<u>Sapling/Shrub Stratum</u> (Plot size: _____)		_____	_____	_____																									
1. _____ 2. _____ 3. _____ 4. _____ 5. _____		_____	_____	_____																									
		_____	_____	_____																									
<u>Herb Stratum</u> (Plot size: <u>10ft</u>)		_____	_____	_____																									
1. <u>ELEOCHARIS MACROSTACHYA</u> 2. <u>HORDEUM MURINUM</u> 3. <u>CENTROMADIA FITCHII</u> 4. <u>CROTON SERTIGER</u> 5. <u>Lythrum hyssopifolia</u> 6. <u>BROMUS HORACEUS</u> 7. <u>HIRSCHFELDIA INCANA</u> 8. _____		<u>48</u> <u>20</u> <u>5</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u>	<u>Y</u> <u>Y</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u> <u>N</u>	<u>OBL</u> <u>FACU</u> <u>FACU</u> <u>UPL</u> <u>OBL</u> <u>FACU</u> <u>UPL</u>																									
		<u>77</u>	_____	_____																									
<u>Woody Vine Stratum</u> (Plot size: _____)		_____	_____	_____																									
1. _____ 2. _____		_____	_____	_____																									
		_____	_____	_____																									
% Bare Ground in Herb Stratum <u>25</u>		% Cover of Biotic Crust <u>0</u>																											

1% LITTER; SEVERE DROUGHT. LOW GROWING EMERGENT SP. DOMINANT. ELEO MAC HAS SHALLOW FINE ROOTS ADAPTED TO RAPIDLY ABSORB AVAILABLE SURFACE AND SUBSURFACE WATER.

SOIL

Sampling Point: 4-RC

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	7.5YR 3/2	97	5YR 4/6	3	RM	M	CLAY	CHUNKY
5-6	7.5YR 3/3	98	5YR 4/6	2	C	M	CLAY	
6-7	7.5 YR 4/4	100					loamy sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☒ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☒ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: hardpan
Depth (inches): 7

Hydric Soil Present? Yes ☒ No ☐

Remarks:

low chroma in matrix. seasonally ponds water, annual OBL sp present; located w/in channel. NRCS Hydric Soil list. RED ALGAE LAYER ON SOIL SURFACE W/HIGH CLAY CONTENT, thin layer of loamy sand on top of hardpan layer at 7 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☒ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water Marks (B1) (Riverine)
- ☒ Sediment Deposits (B2) (Riverine)
- ☒ Drift Deposits (B3) (Riverine)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☒ No ☐ Depth (inches): 7
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NWI mapped as PEM1C

Remarks:

evidence of seasonal ponding w/in ephemeral stream. Concrete chunks along present as rip rap where Root Creek crosses dirt road; (3) 3 ft. culvert pipes under road; 2 w/saturated soil from irrigation (orchard) backflow on neighboring prop.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: East Madera Subbasin Recharge Phase 1 City/County: SE Madera County Sampling Date: 9/13/22
 Applicant/Owner: Madera County State: CA Sampling Point: 1VP-RC
 Investigator(s): Brenda McMillan Section, Township, Range: S9 T12S R19E
 Landform (hillslope, terrace, etc.): valley Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): C Lat: 36.898111 Long: -119.907456 Datum: WGS84
 Soil Map Unit Name: Whitney and Rocklin Complex 8-15% NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☒, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐		
Wetland Hydrology Present?	Yes ☒ No ☐		
Remarks: Area under severe drought therefore no water not released into system from Madera Canal; Area under severe drought therefore no water not released into system from Madera Canal.; has not topped banks in >20 years pers comm. Depression within Root Creek channel. Depression within Rott Creek channel			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>2</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>0.67</u> (A/B)
4. _____	_____	_____	_____		
_____ = Total Cover					
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:	
1. _____	_____	_____	_____	Total % Cover of:	Multiply by:
2. _____	_____	_____	_____	OBL species <u>31</u>	x 1 = <u>31</u>
3. _____	_____	_____	_____	FACW species <u>0</u>	x 2 = <u>0</u>
4. _____	_____	_____	_____	FAC species <u>0</u>	x 3 = <u>0</u>
5. _____	_____	_____	_____	FACU species <u>5</u>	x 4 = <u>20</u>
_____ = Total Cover				UPL species <u>20</u>	x 5 = <u>100</u>
Herb Stratum (Plot size: <u>10ft</u>)				Column Totals:	<u>56</u> (A) <u>151</u> (B)
1. <u>ERYNGIUM CASTRENSE</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	Prevalence Index = B/A = <u>2.69</u>	
2. <u>ELEOCHARIS MACROSTACHYA</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators:	
3. <u>CENTROMADIA FITCHII</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	☒ Dominance Test is >50%	
4. <u>PSILOCARPPHUS BREVISSIMUS</u>	<u>1</u>	<u>N</u>	<u>OBL</u>	☒ Prevalence Index is ≤3.0 ¹	
5. <u>PLAGIOBOTHRYIS UNDULATUS</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	☒ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
6. <u>PLAGIOBOTHRYIS ACANTHOCARPUS</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
7. <u>ERODIUM BRACHYCARPUM</u>	<u>20</u>	<u>Y</u>	<u>UPL</u>		
8. _____	_____	_____	_____		
_____ = Total Cover					
Woody Vine Stratum (Plot size: _____)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
1. _____	_____	_____	_____	Hydrophytic Vegetation Present?	
2. _____	_____	_____	_____	Yes ☒ No ☐	
_____ = Total Cover					
% Bare Ground in Herb Stratum <u>50</u>	% Cover of Biotic Crust <u>0</u>				

Remarks:

5% LITTER; SEVERE DROUGHT AFFECTING COVER AND SPECIES COMPOSITION. ELEO MAC HAS SHALLOW FINE ROOTS ADAPTED TO RAPIDLY ABSORB AVAILABLE SURFACE AND SUBSURFACE WATER; ERYCAS, PLAACA, PLAUND, PSIBRE ARE VERNAL POOL INDICATOR SPECIES.

SOIL

Sampling Point: 1VP-RC

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 3/2	98	5YR 4/6	2	RM	M	sandy clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☒ Redox Depressions (F8)
- ☒ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

seasonally ponds water, annual OBL sp present; no pit dug because it is a vernal pool; NRCS Hydric Soil list

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☒ Surface Soil Cracks (B6)
- ☒ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NWI not mapped as an aquatic feature.

Remarks:

evidence of seasonal ponding with distinct edge evidenced by change in species composition, cover and densities.

Appendix D

**ORM Aquatic Resources
Spreadsheet**

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	NWPR_Determine_Code	Latitude	Longitude	Local_Waterway
MID Canal 6.2	CALIFORNIA	R4SB	RIVERINE	Linear	1206	FOOT	A2TRIBINT		36.89634200	-119.893995.00000000	
MID Canal 32.2	CALIFORNIA	R4SB	RIVERINE	Linear	205	FOOT	A2TRIBINT		37.08367900	-120.12909600	
Root Creek	CALIFORNIA	PEM	RIVERINE	Linear	1301.8	FOOT	B3EPHEMERAL		36.89806610	-119.90805200	
vernal pool	CALIFORNIA	U	DEPRESS	Area	0.6	ACRE	B1WETNONADJ		36.89802900	-119.90968100	

Appendix E

Representative Site Photographs



Photo 1: Root Creek survey area looking north.



Photo 2: Root Creek survey area looking south.



Photo 3: Looking southwest at the Root Creek channel.



Photo 4: Wetland sample point 1-RC looking north at property fence line.

SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1 Projects

Appendix E Representative Site Photos 1 through 4



Photo 5: Wetland sample point 1-RC close up of soils.



Photo 6: Wetland sample point 2-RC looking south down Root Creek.



Photo 7: Wetland sample point 2-RC looking east at Root Creek.



Photo 8: Wetland sample point 3-RC looking at emergent wetland vegetation species pale spike rush.

SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1 Projects

Appendix E
Representative Site Photos 5 through 8



Photo 9: Wetland sample point 3-RC close-up of soils.



Photo 10: Wetland sample point 4-RC looking west at Root Creek.



Photo 11: Culvert pipes under access road at wetland sample point 4-RC.



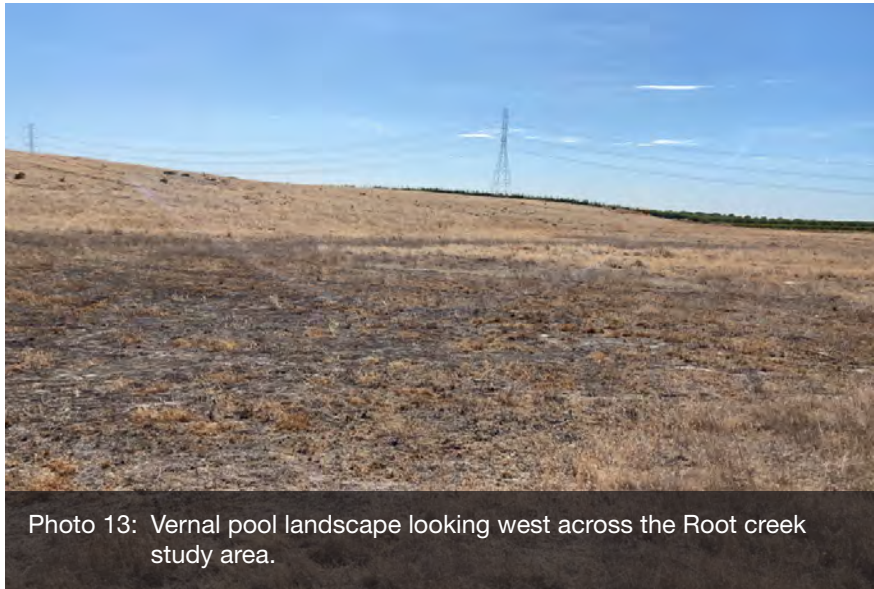
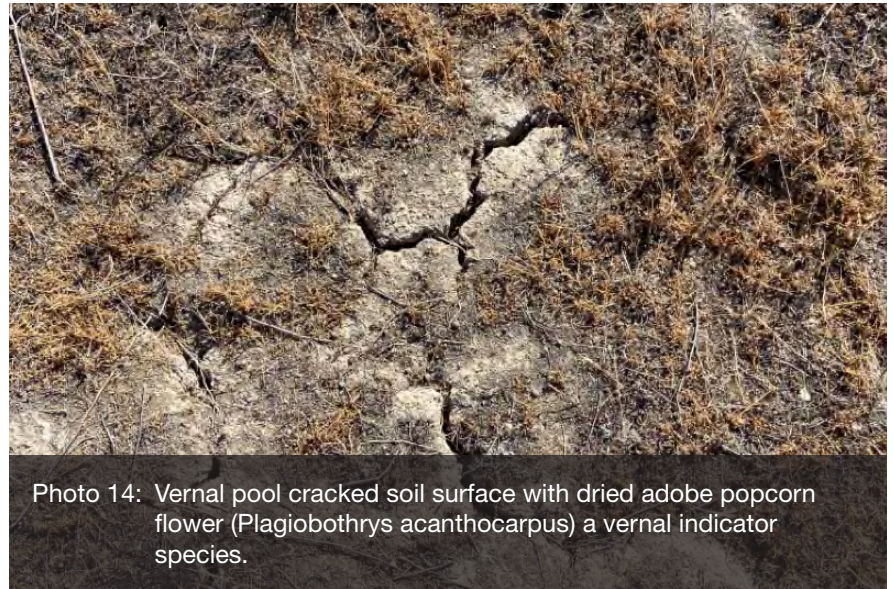
Photo 12: Red algae on soil surface at wetland sample point 4-RC.

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SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1 Projects

Appendix E Representative Site Photos 9 through 12



SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1 Projects

Appendix E Representative Site Photos 13 through 16



Photo 17: Vegetated ditch adjacent to MID canal 6.2 in Root Creek the study area.



Photo 18: MID canal 6.2 at the Waterland Vineyards study area.



Photo 19: Existing flood control gate to be replaced at the Wine Group site.

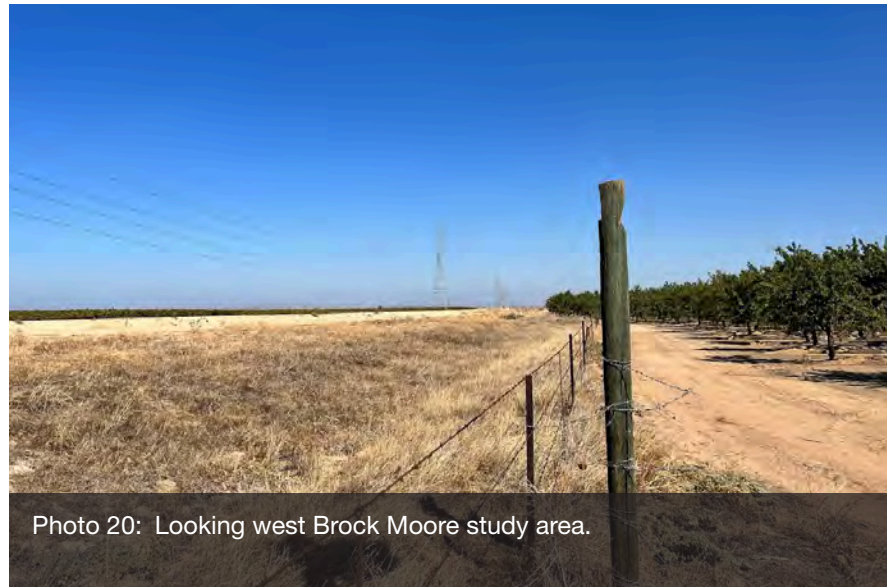


Photo 20: Looking west Brock Moore study area.

SOURCE: ESA, 2022

East Madera Subbasin Recharge Phase 1 Projects

Appendix E
Representative Site Photos 17 through 20



Photo 20: Wetland sample point DP5 looking southwest at the Brock Moore site.



Photo 22: Brock Moore culvert at southern end of study area.

SOURCE: ESA, 2022

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Appendix E
Representative Site Photos 21 and 22