County of Madera

MD-1 Hidden Lakes Water Distribution Project

Draft Initial Study / Mitigated Negative Declaration

March 2022

Prepared for:
County of Madera

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Acronyms and Abbreviations

AB	Assesmbly Bill
AMR	Automated Meter Reading
AWWA	American Water Works Association
BPS	Best Performance Standards
Cal Fire	California Office of the State Fire Marshall
Cal/OSHA	California Occupational Safety and Health Administration
CalEEMod	California Emissions Estimator Modeling (software)
CalEPA	California Environmental Protection Agency
CAP	Climate Action Plan
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCAP	Climate Change Action Plan
CDFW	California Fish and Wildlife
CEQA	California Environmental Quality Act
CO	carbon dioxide
County	County of Madera
dBA	A-weighted decibels
DI pipe	Ductile iron pipe
DPM	Diesel Particulate Matter
DTSC	(California) Department of Toxic Substances Control
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
GC	Government Code
GHG	Greenhouse Gas
GIS	Geographic Information System
gpcd	gallons per capita day
gpm	gallons per minute
GSA	Groundwater Sustainability Agency
IPaC	U.S. Fish and Wildlife Service's Information for Planning and Consultation system

IS ..... Initial Study
IS/MND ..... Initial Study/Mitigated Negative Declaration
km ..... kilometers
Ldn ..... Day/Night Average Sound Level
LOA ..... Live Oak Associates, Inc.
MD-1 ..... Maintenance District Number 1
MMRP ..... Mitigation Monitoring and Reporting Program
MND ..... Mitigated Negative Declaration
MTCO2e ..... Metric tons of carbon dioxide equivalent
NAAQS ..... National Ambient Air Quality Standards
NAHC ..... Native American Heritage Commission
ND ..... Negative Declaration
NEPA ..... National Environmental Policy Act
NO_2 ..... nitrogen dioxide
NOx ..... Nitrogen oxides
NPDES ..... National Pollutant Discharge Elimination System
NRCS ..... Natural Resources Conservation Service
O3 ..... Ozone
PG&E ..... Pacific Gas and Electric Company
PM_{10} ..... particulate matter 10 microns in size
$PM_{2.5}$ ..... particulate matter 2.5 microns in size
ppb ..... parts per billion
ppm ..... parts per million
PRC ..... Public Resources Code
Project ..... MD-1 Hidden Lakes Water Distribution Project
PRV ..... pressure reducing valve
PVC ..... Polyvinyl chloride
Reclamation ..... United States Bureau of Reclamation
ROG ..... Reactive Organic Gases
RWQCB ..... Regional Water Quality Control Board
SGMA ..... Sustainasble Groundwater Management Act
SHPO ..... (CA) State Historic Preservation Officer
SJVAB ..... San Joaquin Valley Air Basin
SJVAPCD ..... San Joaquin Valley Air Pollution Control District
SO_2 ..... Sulfur Dioxide

SR ..... State Route
SWPPP..... Storm Water Pollution Prevention Plan
SWRCB..... State Water Resources Control Board
SWTP..... surface water treatment plant
TAC ..... Toxic Air Contaminants
Tons/Year..... Tons per Year
TPY ..... tons per year
TPZ ..... Traffic Pattern Zone
USACE..... United States Army Corps of Engineers
USBR ..... United States Bureau of Reclamation
USDA ..... United States Department of Agriculture
USFWS ..... United States Fish and Wildlife Service
UST ..... underground storage tank
µg/m3..... micrograms per cubic meter

Chapter 1 Introduction

Provost & Pritchard Consulting Group (Provost & Pritchard) has prepared this Initial Study/Mitigated Negative Declaration (IS/MND) on behalf of the County of Madera to address the environmental effects of the proposed MD-1 Hidden Lakes Water Distribution Project (Project). This document has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Section 21000 *et seq.* The County is the CEQA lead agency for the Project.

The site and the proposed Project are described in detail in the **Chapter 2 Project** Description.

1.1 Regulatory Information

An Initial Study (IS) is a document prepared by a lead agency to determine whether a project may have a significant effect on the environment. In accordance with California Code of Regulations Title 14 (Chapter 3, Section 15000, *et seq.*) also known as the CEQA Guidelines--Section 15064 (a)(1) states that an environmental impact report (EIR) must be prepared if there is substantial evidence in light of the whole record that the proposed project under review may have a significant effect on the environment and should be further analyzed to determine mitigation measures or project alternatives that might avoid or reduce project impacts to less than significant levels. A negative declaration (ND) may be prepared instead if the lead agency finds that there is ***no*** substantial evidence in light of the whole record that the project may have a significant effect on the environment. An ND is a written statement describing the reasons why a proposed project, not otherwise exempt from CEQA, would not have a significant effect on the environment and, therefore, why it would not require the preparation of an EIR (CEQA Guidelines Section 15371). According to CEQA Guidelines Section 15070, a ND or *mitigated* ND shall be prepared for a project subject to CEQA when either:

a. The IS shows there is no substantial evidence, in light of the whole record before the agency, that the proposed project may have a significant effect on the environment, or

b. The IS identified potentially significant effects, but:

    1. Revisions in the project plans or proposals made by or agreed to by the applicant before the proposed MND and IS is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur is prepared, and

    2. There is no substantial evidence, in light of the whole record before the agency, that the proposed project *as revised* may have a significant effect on the environment.

1.2 Document Format

This IS/MND contains four chapters and four appendices, **Chapter 1 Introduction**, provides an overview of the proposed Project and the CEQA process.
Chapter 2 Project Description, provides a detailed description of Project components and objectives. **Chapter 3 Impact Analysis**, presents the CEQA checklist and environmental analysis for all impact areas, mandatory findings of significance, and feasible mitigation measures. If the Project does not have the potential to significantly impact a given issue area, the relevant section provides a brief discussion of the reasons why no impacts are expected. If the Project could have a potentially significant impact on a resource, the issue area discussion provides a description of potential impacts, and appropriate mitigation measures and/or permit requirements that would reduce those impacts to a less than significant level. **Chapter 3** concludes with the Lead Agency's determination based upon this initial evaluation. **Chapter 4 Mitigation Monitoring and Reporting Program** (MMRP), provides the proposed mitigation measures, implementation timelines, and the entity/agency responsible for ensuring implementation.
The CalEEMod Output Files, Biological Evaluation Report, Cultural Resources Information, NRCS Soil Resource Report, and Geotechnical Engineering Investigation Report are provided as technical **Appendix A, Appendix B, Appendix C, Appendix D, and Appendix E**, respectively, at the end of this document.

Chapter 2 Project Description

2.1 Project Background and Objectives

2.1.1 Project Title

MD-1 Hidden Lakes Water Distribution Project

2.1.2 Lead Agency Name and Address

County of Madera
200 West 4th Street
Madera, CA 93637

2.1.3 Contact Person and Phone Number

Lead Agency Contact
Raymundo Gutierrez, Project Manager
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2.1.4 Project Location

The Project is located in unincorporated Madera County, California, approximately 147 miles southeast of Sacramento and 123 miles north of Bakersfield (see **Figure 2-1** and **Figure 2-2**). The proposed Project site is located in the Hidden Lakes Estates residential subdivision located on the north shoreline of Millerton Lake within public rights-of-way and County-owned outlots where water distribution and treatment facilities exist.

2.1.5 Latitude and Longitude

The centroid of the Project area is Latitude 37° 3' 7.9452" N, Longitude 119° 39' 6.0732" W.

2.1.6 General Plan Designation and Zoning

Table 2-1. County General Plan Land Use and Zone District

Project Area	Assessor's Parcel Number / Legal Description	General Plan Designation	Zone District
Storage Tank	051-073-010	Agricultural Exclusive (40-acre minimum lot size)	ARE-40 (Agricultural, rural, exclusive (forty acre) district)
Residential Lots	Lots 1-86 of Hidden Lakes Estates Lots 1-131 of Hidden Lakes Estates No. 2	Very Low Density Residential	RMS (Residential, mountain, single family district)
Outlots	Outlot E and L of Hidden Lakes Estates	Very Low Density Residential	CRH (Residential, mountain, single family district)

2.1.7 Description of Project

2.1.7.1 Project Background and Purpose

Madera County (County) Maintenance District Number 1 (MD-1) encompasses Hidden Lakes Estates, a residential development located on the northern side of Millerton Lake in Madera County in the foothills of California's Sierra Nevada Mountain range, approximately 20 miles east of the City of Madera as shown in **Figure 2-1**. The elevation of MD-1 ranges from approximately 600 feet to 1,150 feet above mean sea level. The terrain is rugged and littered with granite outcroppings. Figure 2-2 shows the location of MD-1 and the surrounding area.

MD-1 provides water service for the residents in Hidden Lakes Estates. MD-1 service area covers an area consisting of 203 residential lots, of which 49 lots are developed and receive potable water from the existing water distribution system.

The sole water source for MD-1 is from Millerton Lake, a man-made reservoir and primary storm water run-off collection facility of the federal Central Valley Project which feeds surface water into the Friant Kern Canal. Millerton Lake collects runoff from the Sierra Nevada Mountain range. Madera County executed an agreement with the United States Bureau of Reclamation (USBR) for rights to 200 acre-feet per year of Class 1 surface water from Millerton Lake for domestic use in MD-1.

The water distribution system was constructed in the 1950s and consists of nearly 26,000 linear feet (lf) of lead caulked, cement lined and unlined steel pipe and fittings that range from 4-inch to 8-inch in diameter. Record drawings provided by the County show that in addition to the pipe and fittings, the existing distribution system has seven (7) blow-off assemblies and twenty-three (23) fire hydrants. According to a review of the State Water Resources Control Safe Drinking Water Information System (SDWIS) database information the existing distribution system has two (2) sampling stations.

The MD-1 system has a single 110,000-gallon, welded steel, water storage tank located along Hidden Lakes Boulevard near the intersection of Hidden Lakes Boulevard and Anza Drive. The tank is located at approximately 1,150 feet elevation at the top (hydraulically) of the system. The tank is filled from the system when the surface water treatment plant (SWTP) is operating and delivers water supply back to existing connections by gravity.

The existing MD-1 system is in poor condition and has exceeded its useful life. County maintenance staff has reported repeated leaking pipes and fittings in the system. These leaks are believed to be caused by the old age of the system and potential corrosion due to the surface water chemistry. While no detection of lead in the drinking water have been reported, the system is comprised of lead packed joints which could potentially leach into the drinking water.

The County has reported numerous leaks along most of the water distribution mains in the MD-1 system. As stated in the previous section, the system contains cement lined and unlined steel pipes and fittings; the pipe joints have caulking that contains lead. It is possible a portion of the leaks have been caused by the corrosivity of the source water. Additionally, the maintenance staff with the County have reported uneven ground settlement and movement of granite boulders as having a role in the deterioration of the water mains, which could cause degradation of the pipeline bedding and lead to leaks.

While the water supply has not shown any detections nor exceedances of the current regulatory water quality standard in lead levels, it is possible as the pipes continue to deteriorate due to age and the aggressive nature of the finished water that the lead caulking in the joints may begin to leach into the system and cause health concerns later. Ingestion of lead has been known to slow physical and mental development in children and cause kidney and blood pressure concerns in adults.

The (SWTP) serving the MD-1 system is expected to be relocated and upgraded as part of a different project (State Clearinghouse No. 2019069076). This Initial Study does not analyze the impacts of the SWTP as the implementation of this Project does not require the implementation of the other, or vice-versa.

2.1.7.2 Project Description

The Project, over the course of six phases, involves the abandonment and replacement of the entire existing water distribution system, which consists of approximately 26,000 linear feet of potable water distribution mains, 49 active water services, 51 fire hydrants, valves, appurtenances, 2,600 linear feet of raw water main and 300 linear feet of flexible intake piping. The new water distribution system will be designed to comply with requirements from the County, American Water Works Association (AWWA), Title 22 of the California Code of Regulations, and the USBR. See **Figure 2-3**.

Dry barrel type fire hydrants will be placed every 500 feet per County standards to accommodate fire protection. All existing system services and meters will be replaced. The new meters will have automatic read capabilities and be compatible with the existing County meter software. For undeveloped lots within the service area, a service lateral will be constructed from the County right-of-way to the edge of the private property for later connection to the future residence; however, no meter will be installed at undeveloped parcels. Existing users would receive a pressure reducing valve (PRV) assembly that would include pressures gauges both upstream and downstream of the PRV to protect existing house plumbing. Undeveloped lots will receive new meters and PRV assemblies (where required) at the time they are developed.

The new water distribution system will be designed to provide the maximum day demand plus fire flow of approximately 1,411 gpm while maintaining a minimum 20 psi in the system. During non-fire flow events, the system will be designed to operate above 30 psi.

The 4-inch flexible discharge mains, presently in a submerged condition in the lake, will be replaced in kind. Water levels in Millerton Lake will be investigated during design of the improvements to determine the exact amount of pipe required to keep the pumps at a proper submergence level. The 6-inch steel raw water main will be replaced with 6-inch high-density polyethylene pipe (HDPE) pipe.

Improvements to be made during each phase are as follows:

- Phase 1
    - Approximately 4,300 linear feet of 8-inch AWWA C900 PVC or DI pipe
    - Approximately 2,600 feet of 6-inch HDPE-raw water transmission main
    - Distribution system PRVs
    - Dry barrel fire hydrants
    - Blow off assemblies at dead end pipes, low points, and other critical locations

  - Combination valves at system high points and other critical locations for pipeline protection
  - New water services with AMR water meters and localized PRVs
  - Abandonment of existing system adjacent to Phase 1 facilities
  - Two, 150-foot lengths of 4-inch flexible raw water pump station discharge mains (one for each pump)

- Phase 2
  - Approximately 4,200 linear feet of 8-inch AWWA C900 PVC or DI pipe
  - Dry barrel fire hydrants
  - Blow off assemblies at dead end pipes, low points, and other critical locations
  - Combination valves at system high points and other critical locations for pipeline protection
  - Abandonment of existing system adjacent to Phase 2 facilities
  - New water services with AMR water meters and localized PRVs
- Phase 3
  - Approximately 3,200 linear feet of 8-inch AWWA C900 PVC or DI pipe
  - Dry barrel fire hydrants
  - Blow off assemblies at dead end pipes, low points, and other critical locations
  - Combination valves at system high points and other critical locations for pipeline protection
  - Abandonment of existing system adjacent to Phase 3 facilities
  - New water services with AMR water meters and localized PRVs

- Phase 4
  - Approximately 4,700 linear feet of 8-inch AWWA C900 PVC or DI pipe
  - Dry barrel fire hydrants
  - Blow off assemblies at dead end pipes, low points, and other critical locations
  - Combination valves at system high points and other critical locations for pipeline protection
  - Abandonment of existing system adjacent to Phase 4 facilities
  - New water services with AMR water meters and localized PRVs

- Phase 5
  - Approximately 4,700 linear feet of 8-inch AWWA C900 PVC or DI pipe
  - Dry barrel fire hydrants
  - Blow off assemblies at dead end pipes, low points, and other critical locations
  - Combination valves at system high points and other critical locations for pipeline protection
  - Abandonment of existing system adjacent to Phase 5 facilities
  - New water services with AMR water meters and localized PRVs

- Phase 6
  - Approximately 4,100 linear feet of 8-inch AWWA C900 PVC or DI pipe
  - Dry barrel fire hydrants
  - Blow off assemblies at dead end pipes, low points, and other critical locations
  - Combination valves at system high points and other critical locations for pipeline protection
  - Abandonment of existing system adjacent to Phase 6 facilities
  - New water services with AMR water meters and localized PRVs

2.1.7.3 Construction, Operation, and Maintenance

Construction of each phase of the Project is anticipated to be completed within three months, however due to cost constraints, each phase is expected to occur three years apart, with an estimated total completion time of 18 years. Construction will likely commence in January 2024. Construction equipment will likely include an excavator, backhoe/loader, concrete truck, and concrete pumper.

Generally, construction will occur between the hours of 7:00 am and 7:00 pm, Monday through Friday, and 9:00 am and 5:00 pm on Saturday, as allowed by Madera County Municipal Code Section 9.58.020. Post-construction activities will include system testing, commissioning, and site clean-up. Construction will require temporary staging and storage of materials and equipment. Staging areas will be located onsite.

Although construction is not expected to generate hazardous waste, field equipment used during construction has the potential to contain various hazardous materials such as diesel fuel, hydraulic oil, grease, solvents, adhesives, paints, and other petroleum-based products.

Operation and maintenance of the system components at the Project site will continue to be performed by County of Madera maintenance staff. No new staff positions are expected to be created as a result of the Project.

2.1.8 Surrounding Land Uses and Setting

Table 2-2. Surrounding Land Uses and Settings

Direction	Existing Land Use	General Plan	Zoning
North	Grazing Land	Agricultural Exclusive	ARE-40 (Agricultural, rural, exclusive (forty acre) district)
South	Single-Family Residential, Millerton Lake	Very Low Density Residential	RMS (Residential, mountain, single family district)
East	Single-Family Residential		
West			

See **Figure 2-6** and **Figure 2-5** for the zoning and general plan designations, respectively.

2.1.9 Other Public Agencies Whose Approval May Be Required

United States Bureau of Reclamation
San Joaquin Valley Air Pollution Control District
State Water Resources Control Board

2.1.10 Consultation with California Native American Tribes

Public Resources Code Section 21080.3.1, *et seq. (codification of AB 52, 2013-14)*) requires that a lead agency, within 14 days of determining that it will undertake a project, must notify in writing any California Native American Tribe traditionally and culturally affiliated with the geographic area of the project if that Tribe has previously requested notification about projects in that geographic area. The notice must briefly describe the project and inquire whether the Tribe wishes to initiate request formal consultation. Tribes have 30 days from receipt of notification to request formal consultation. The lead agency then has 30 days to initiate the consultation, which then continues until the parties come to an agreement regarding necessary mitigation or agree that no mitigation is needed, or one or both parties determine that negotiation occurred in good faith, but no agreement will be made.

The County of Madera has received written correspondence from the North Fork Rancheria of Mono Indians Tribe pursuant to Public Resources Code Section 21080.3.1 requesting notification of proposed project. Further details are discussed in Section 3.19.

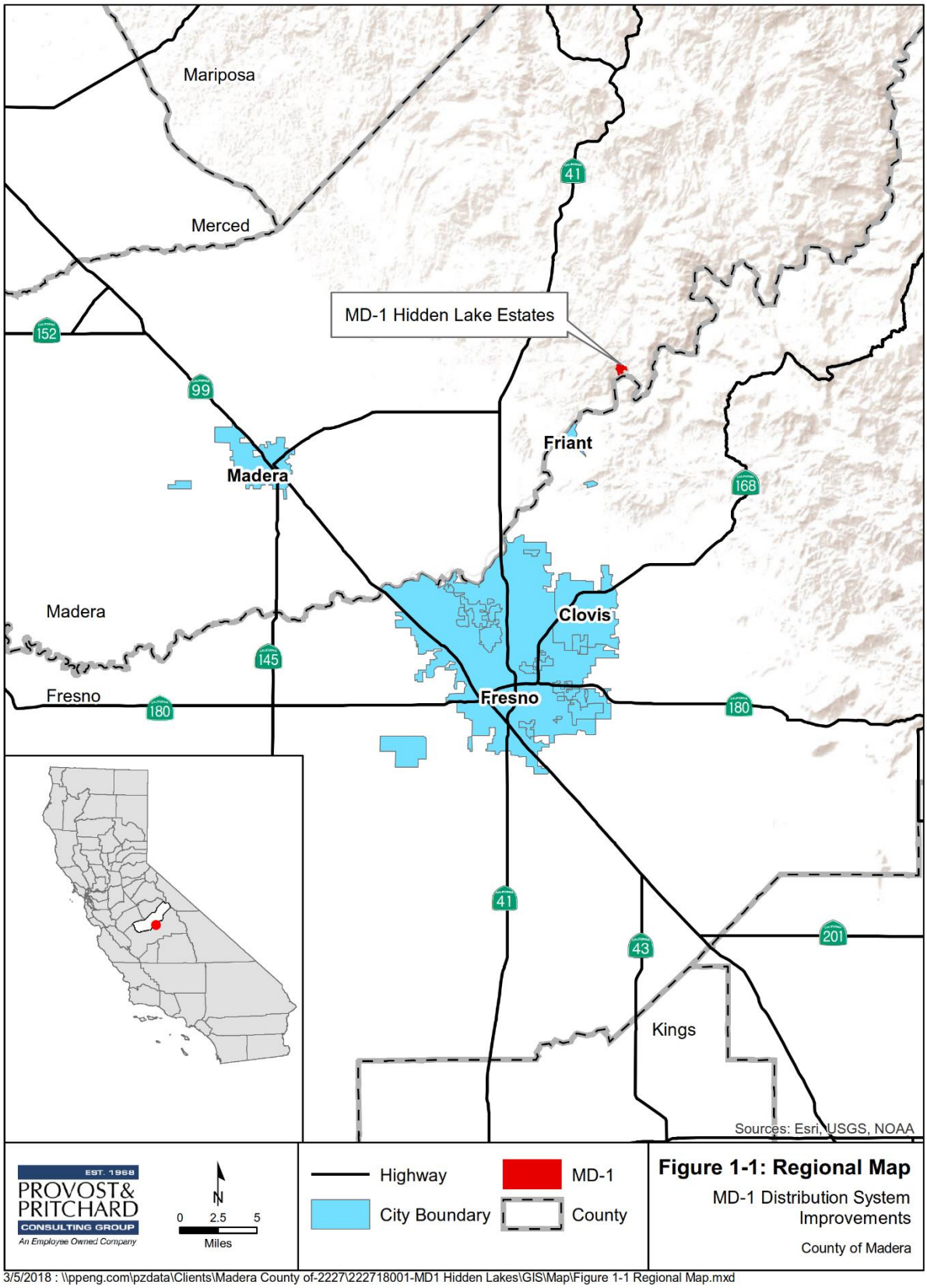

Figure 2-1. Regional Location

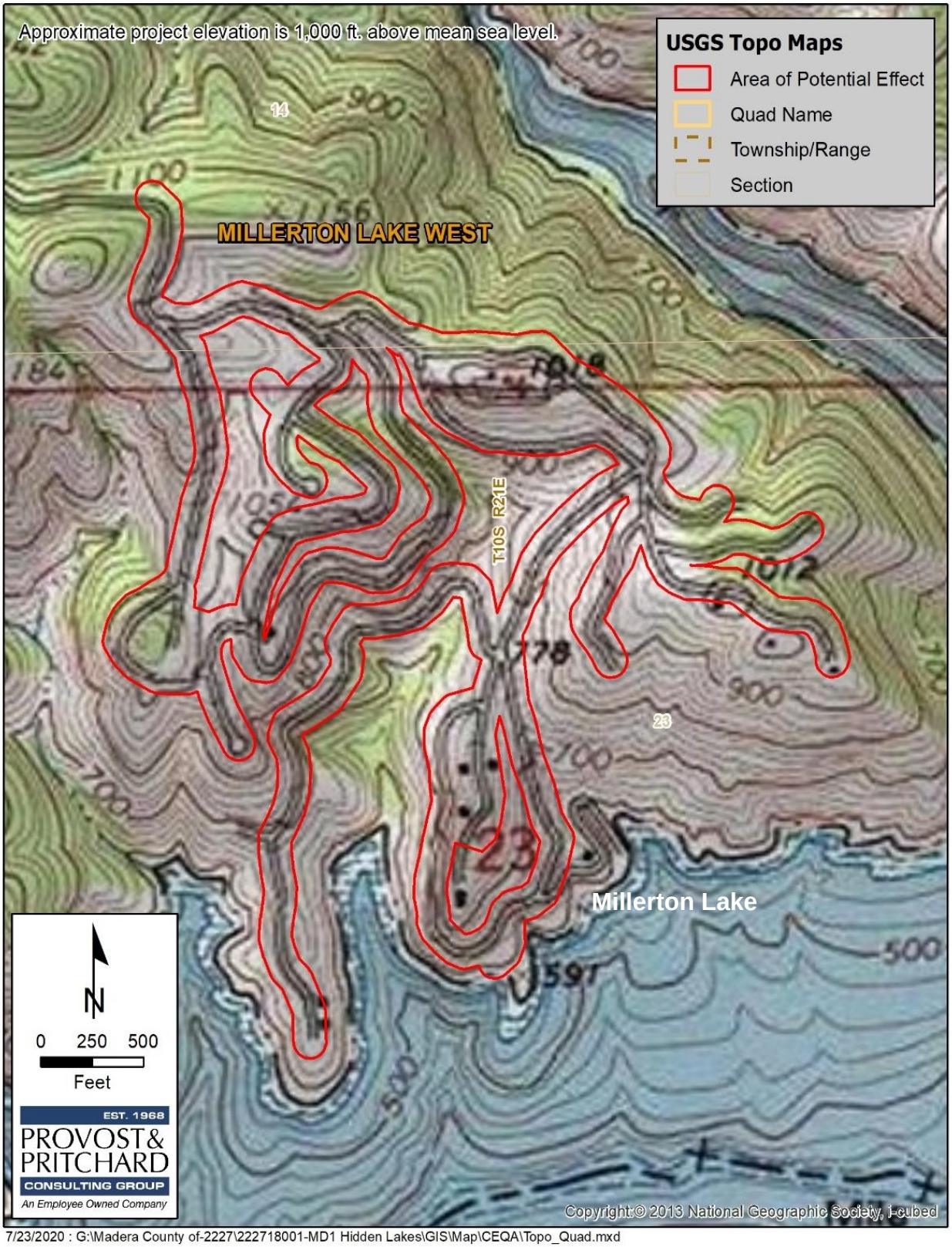

Figure 2-2. Topographic Quadrangle Map

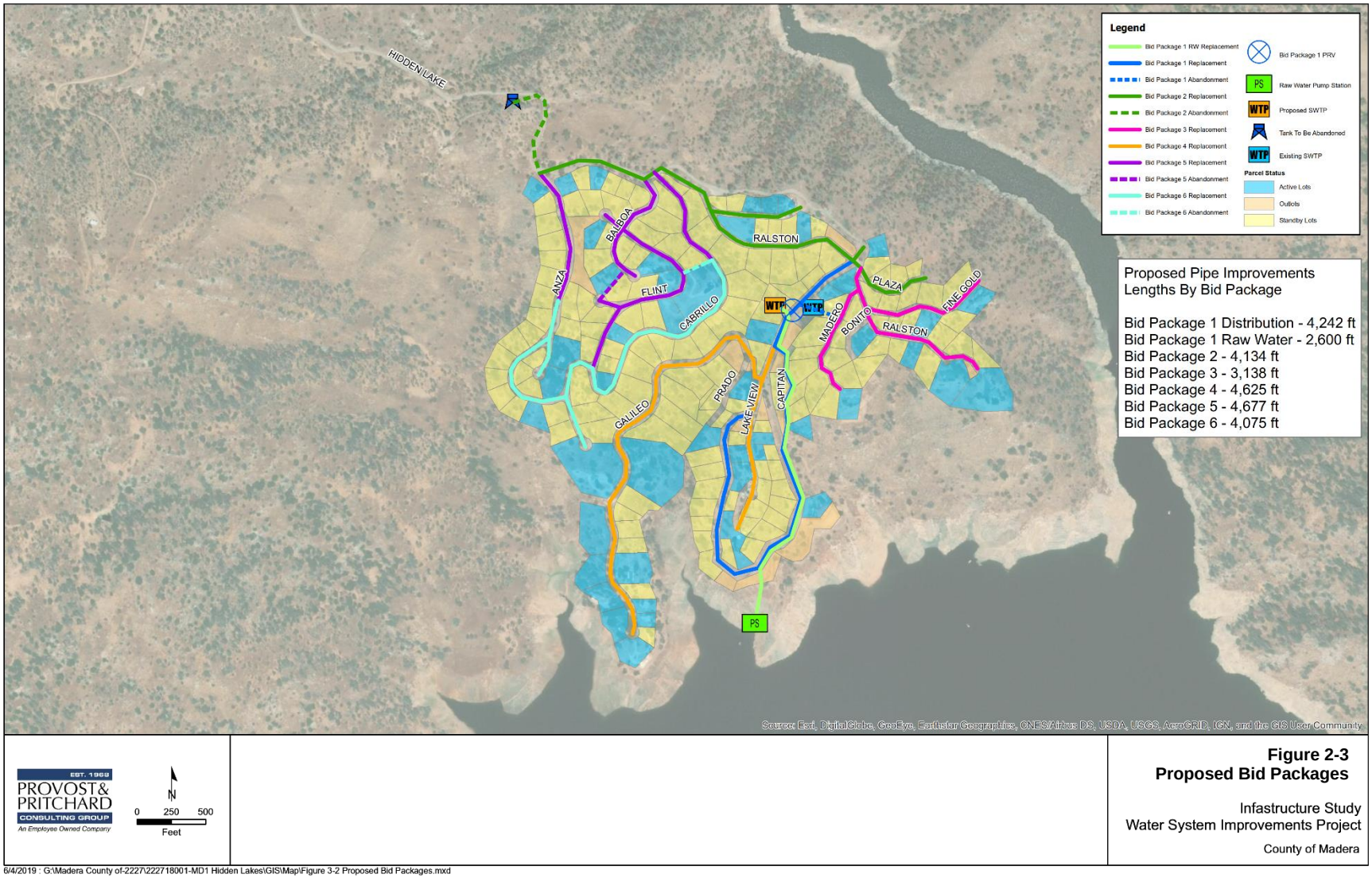

Figure 2-3. Project Phasing Plan

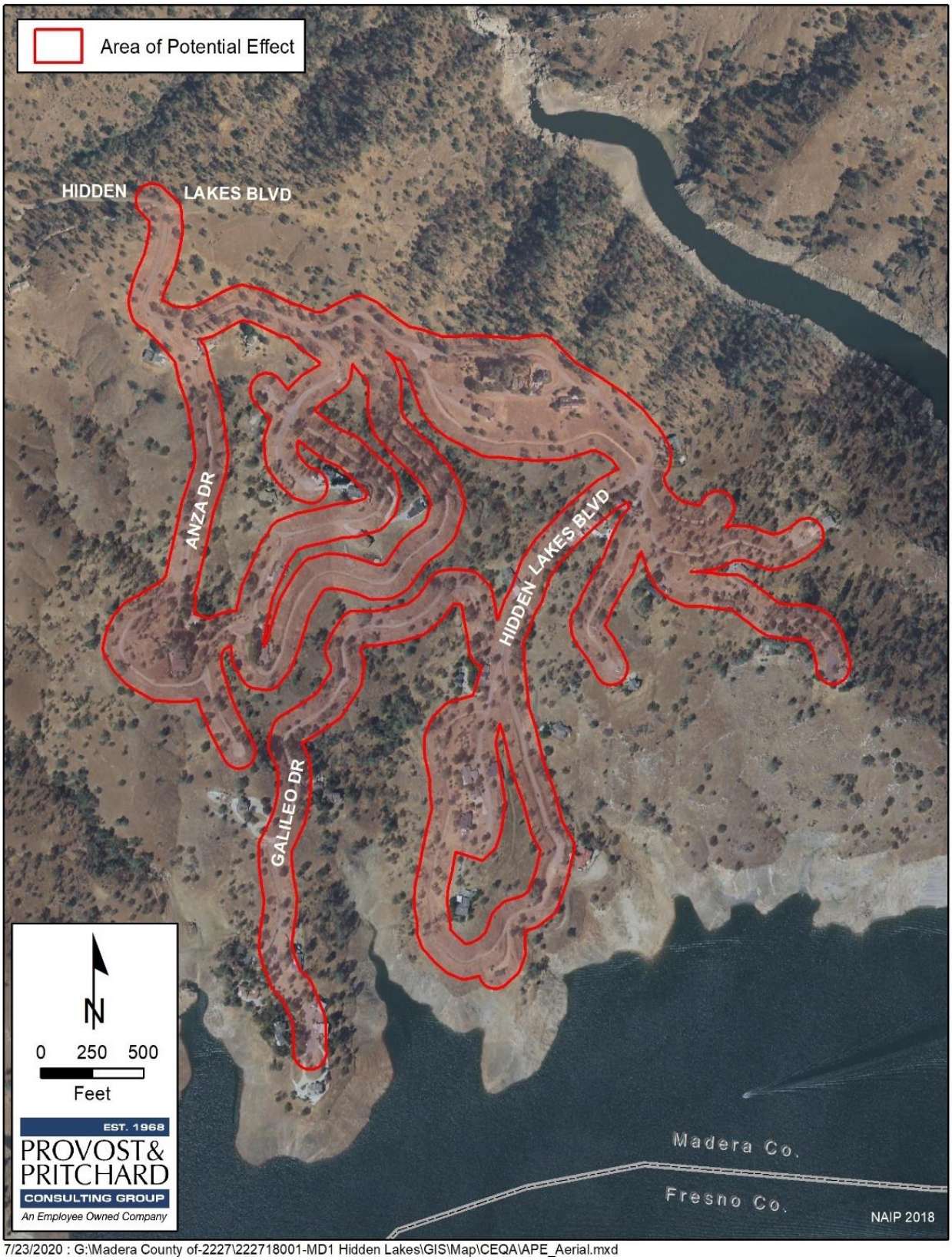

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Figure 2-4. Area of Potential Effect

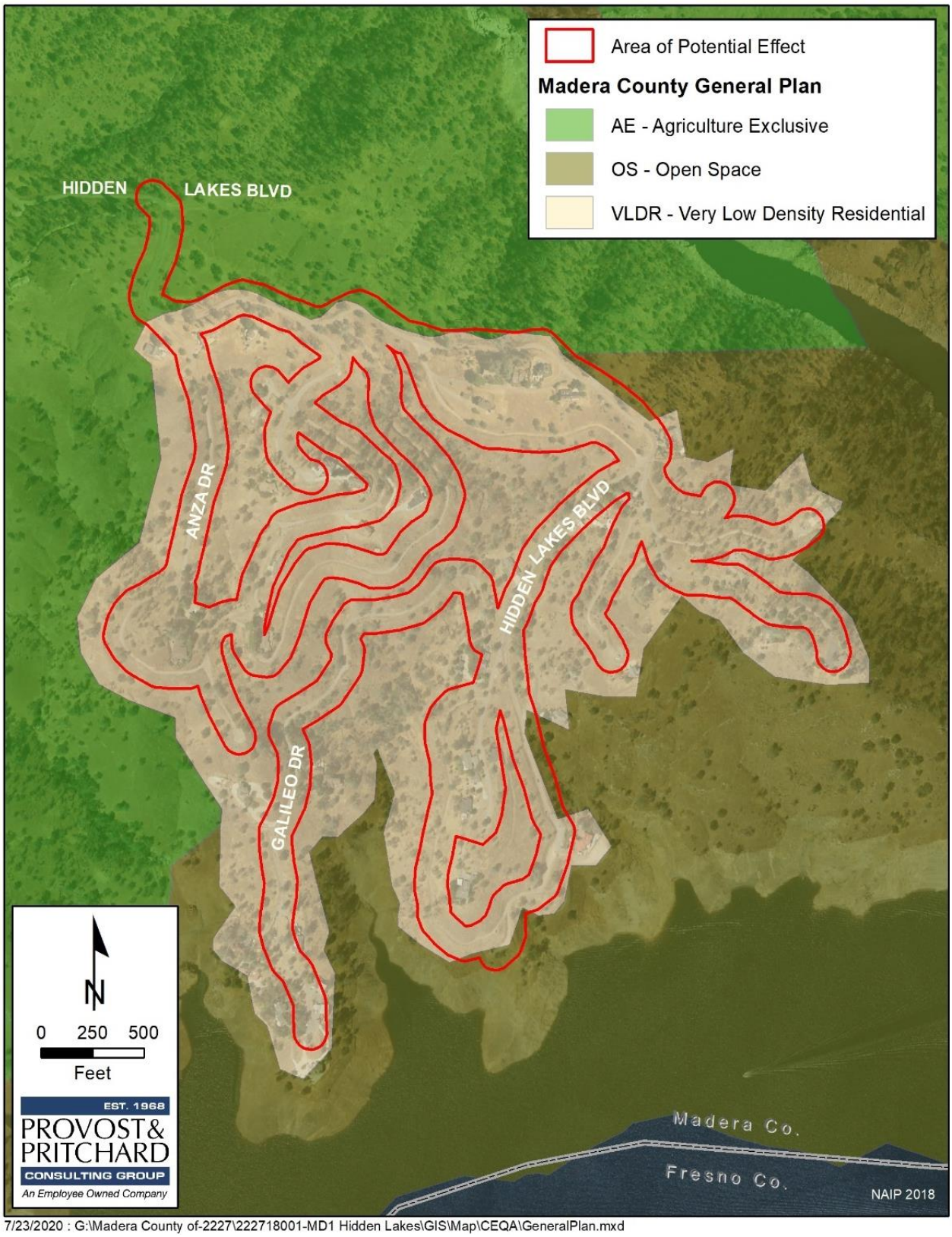

Figure 2-5. General Plan Land Use Designation Map

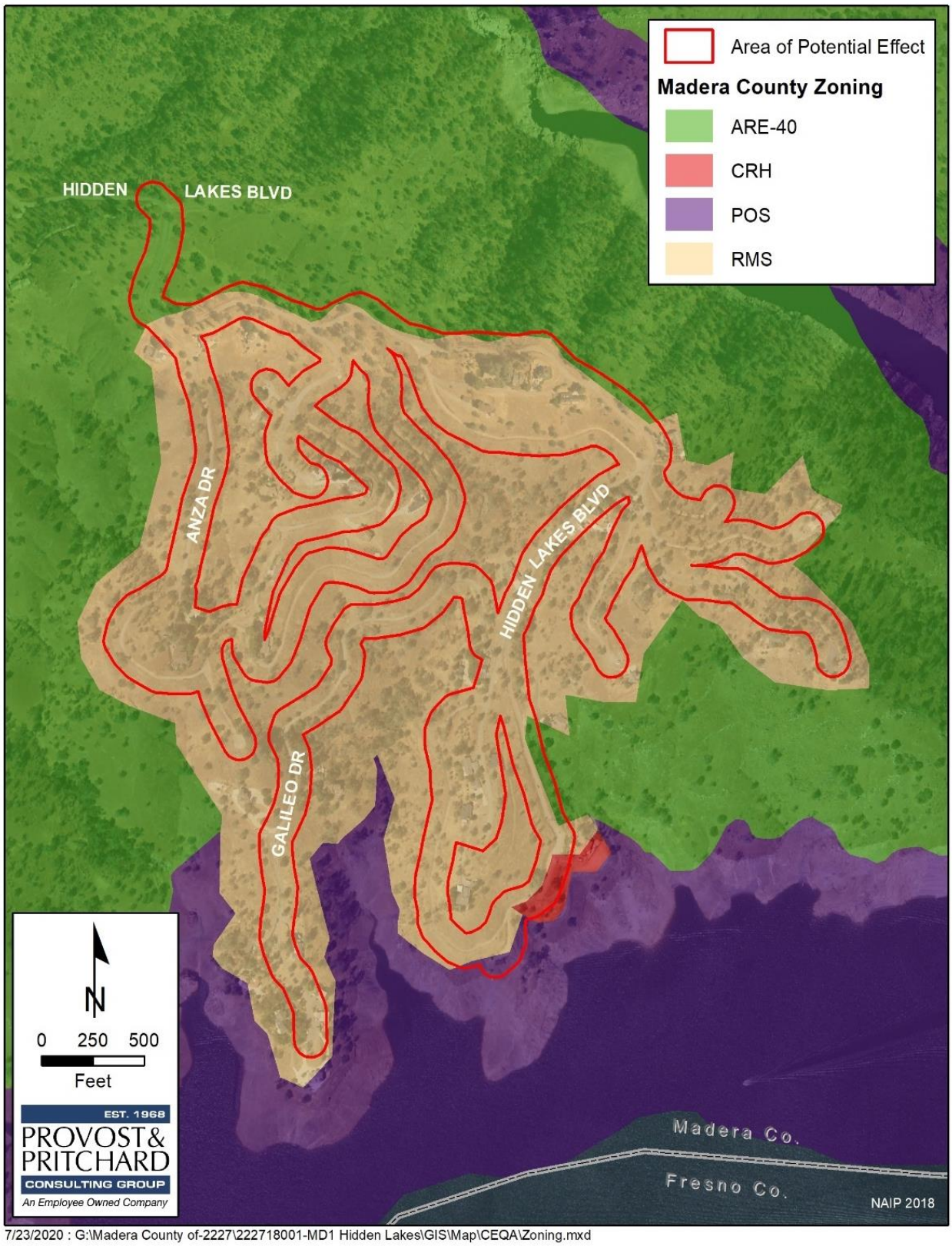

Figure 2-6. Zone District Map

Chapter 3 Impact Analysis

3.1 Environmental Factors Potentially Affected

As indicated by the discussions of existing and baseline conditions, and impact analyses that follow in this Chapter, environmental factors not checked below would have no impacts or less than significant impacts resulting from the project. Environmental factors that are. checked below would have potentially significant impacts resulting from the project. Mitigation measures are recommended for each of the potentially significant impacts that would reduce the impact to less than significant.

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

The analyses of environmental impacts here in **Chapter 4 Mitigation Monitoring and Reporting Program** are separated into the following categories:

Potentially Significant Impact. This category is applicable if there is substantial evidence that an effect may be significant, and no feasible mitigation measures can be identified to reduce impacts to a less than significant level. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

Less than Significant with Mitigation Incorporated. This category applies where the incorporation of mitigation measures would reduce an effect from a "Potentially Significant Impact" to a "Less than Significant Impact." The lead agency must describe the mitigation measure(s), and briefly explain how they would reduce the effect to a less than significant level (mitigation measures from earlier analyses may be cross-referenced).

Less than Significant Impact. This category is identified when the proposed Project would result in impacts below the threshold of significance, and no mitigation measures are required.

No Impact. This category applies when a project would not create an impact in the specific environmental issue area. "No Impact" answers do not require a detailed explanation if they are adequately supported by the information sources cited by the lead agency, which show that the impact does not apply to the specific project (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis)

3.2 Aesthetics

Table 3-1. Aesthetics Impacts

Aesthetics Impacts				
Except as provided in Public Resources Code Section 21099, would the project:	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

3.2.1 Environmental Setting and Baseline Conditions

The Project is located in the southeastern part of Madera County in the foothill area of the Sierra Nevada Mountain range. Lands in the vicinity consist of undeveloped steeper slopes and pockets of residential subdivisions or scattered rural residential development associated with low intensity agricultural practices limited to small rural animal raising/husbandry or grazing. There are no State Designated Scenic Highways within the vicinity of the Project, nor visible from the Project site. An approximate 46-mile segment of SR 168 located in central and eastern Fresno County is *eligible* as a State Scenic Highway but lies approximately 8 miles west of the Project site. The Project site is located approximately 5.5 miles northeast of the unincorporated community of Friant (lying just downstream of Millerton Lake Dam), and adjacent to the northern extent of Millerton Lake's north shore. The proposed Project will replace the existing water distribution system for Hidden Lakes Estates and is therefore consistent with the aesthetics of the area.

3.2.2 Impact Assessment

a) Would the project have a substantial adverse effect on a scenic vista?

No Impact. The proposed project will occur within roadway rights-of-way and will not be visible when completed. Therefore, visibility of project construction will be temporary, but once constructed will not interrupt or block any scenic vistas or public viewsheds of any sensitive aesthetic resources. Scenic features in the vicinity include the vast expanse of rural foothill landscape and occasional pockets of residential development and limited associated homestead type agricultural uses and the Sierra Nevada Mountains to the East. There would be no impact.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. The State Scenic Highway Program was created to preserve and protect designated scenic highway corridors from change which would diminish the aesthetic value of lands adjacent to highways. A highway may

be officially designated "scenic" depending upon how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the traveler's enjoyment of the view.

Because there are no designated scenic highways within the vicinity of the Project, or visible from the Project site, there are no trees, rock outcroppings, or historical buildings associated with such designated state scenic highway that would be modified or damaged by the Project. Project activities would occur approximately 8 miles west of the segment of SR 168 deemed eligible for Scenic Highway designation and therefore would not adversely affect the scenic qualities of that eligible segment.

c) In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public view 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?

Less than Significant Impact. The Project site is considered to be located within a non-urbanized area and consists of a rural residential subdivision. The Project will be constructed within the public road rights-of-way as well as relatively flat outlots. Construction may partially obstruct the viewing of the adjacent agricultural field; however, the Project once installed would be buried and not visible from the residences or passing vehicles. During construction there may be some temporary impacts to the residential street with equipment, but they will be short term and less than significant. Additionally, the Project does not conflict with the existing zoning onsite. Impacts would be less than significant**.**

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

Less than Significant Impact. The Project will occur within an existing residential subdivision and involves subterranean installation of new water distribution pipelines that will be covered over and roadway repaved. . As such, lighting is not proposed for the operation of the project nor will be used during construction since construction will not occur after dark. Vehicular traffic after construction will be limited to baseline levels of maintenance and monitoring on an as-needed basis which will be performed during daylight hours, except in an unforeseen emergency situation. Therefore, the Project will not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area or be inconsistent with existing conditions.

3.2.3 Federal Cross-Cutting Topic

Wild, Scenic, and Recreational Rivers Act

The National Wild and Scenic Rivers Act was established in 1968, to maintain the natural beauty, biology, and wildness of federally designated "wild," "scenic," or "recreational" rivers that may be threatened by construction of dams, diversions, and canals. The act seeks to preserve these designated rivers in their free-flowing condition, and to protect their immediate environments for the benefit and enjoyment of present and future generations. There are no "wild" or "scenic" rivers within 25 miles of the project site.

3.3 Agriculture and Forestry Resources

Table 3-2. Agriculture and Forest Impacts

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

3.3.1 Environmental Setting and Baseline Conditions

The Project area consists of a rural residential subdivision surrounded by grazing land. As demonstrated in , the FMMP for Madera County designates the Project area as Rural Residential and Grazing Land, neither of which are considered Prime Farmland, Farmland of Statewide Importance, or Unique Farmland..

3.3.2 Impact Assessment

a) Would the project 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?

No Impact. The Farmland Mapping and Monitoring Program (FMMP) produces maps and statistical data used for monitoring conversions of California's agricultural resources. Under the FMMP, agricultural land is categorized according to soil quality and irrigation status. The FMMP and Important Farmland maps identify eight land use categories, five of which are agriculture related ranging from the best to the lease quality as follows: prime farmland, farmland of statewide importance, unique farmland, farmland of local importance,

and grazing land. The other categories relate to non-agricultural land uses. The ones onsite or adjacent to the Project site are illustrated on **Figure 3-1** and summarized below[1]:

- Grazing Land (G): Land on which the existing vegetation is suited to the grazing of livestock. The minimum mapping unit for Grazing Land is 40 acres.
- Rural Residential Land (R): Rural Residential Land includes residential areas of one to five structures per ten acres.

As demonstrated in **Figure 3-1**, the FMMP designates the majority of the Project site as Rural Residential and two small peripheral areas as Grazing Land. The status of existing residential lots within Hidden Lakes Estates subdivision that overlap the small areas of FMMP Grazing Land designations is an existing condition and will not be changed or altered by the Project and will therefore not result in the conversion of farmland to a non-agricultural use beyond baseline conditions. There will be no impact.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The Project site is not zoned for agricultural uses, and the Project site is not subject to a Williamson Act contract. There will be no impact.

c) Would the project 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) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The Project site is zoned RMS (*Residential, mountain, single family district*) and CRH (*Commercial, rural, highway district*), with existing water system facilities and roadway occupying most of the site. Given the restrictions of zoning the land could not allow for the management of one or more forest resources or be capable of growing a crop of trees of a commercial species to produce lumber and other forest products. "Forest land" as defined by Public Resources Code Section 12220(g) 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." "Timberland" means land, other than land owned by the federal government and land designated by the Board of Supervisors 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.[2] As a result, there are no forest lands or timberlands within the Project site. There will be no impact.

e) Would the project 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?

No Impact. As discussed above in Impact Assessments II a-d, the Project involves the replacement of water distribution facilities on non-agricultural land and non-forest land. The Project changes to the parcels will not alter baseline conditions for the existing parcels' allowed uses. As there will be no changes to existing uses, the Project will not cause other changes in the existing environment that, due to the location or nature, could cause conversion of farmland or forest land outside the property, either directly or indirectly. There will be no impact.

3.3.3 Federal Cross-Cutting Topic

Farmland Protection Act

[1] California Department of Conservation. FMMP – Report and Statistics. https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed September 16, 2020.
[2] https://codes.findlaw.com/ca/public-resources-code/prc-sect-4526.html

The Farmland Protection and Policy Act (FPPA), enacted in 1981, seeks to minimize the loss of prime farmland and unique farmlands because of federal actions that convert these lands to nonagricultural uses. The Act assures that federal programs are compatible with both state and local governments, and private programs and policies to protect farmland.

The FPPA defines Prime Farmland as farmland that has the best combination of characteristics for producing food, feed, forage, fiber, and oilseed crops, and also is available for these uses. Unique Farmland is land other than Prime Farmland that is used for production of specific, high-value food and fiber crops; it has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops.

The Project is not located on land classified by the DOC as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. These classifications recognize the suitability of a site for agricultural production by considering those characteristics of the soil, such as soil temperature range, depth of the groundwater table, flooding potential, rock fragment content, and rooting depth. The classifications also consider location, growing season, and moisture available to sustain high-yield crops. Together, Important Farmland and Grazing Land are defined by the DOC as "Agricultural Land."

The proposed project would be on land that is classified as "Other Lands," which consists of lands supporting miscellaneous uses, such as low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; and water bodies smaller than forty acres. The pipeline alignment is located within the existing right-of-way, and therefore no farmland would be converted as a result of the pipeline installation. Therefore, the proposed project would not conflict with the Farmland Protection and Policy Act or adversely affect prime or unique farmland.

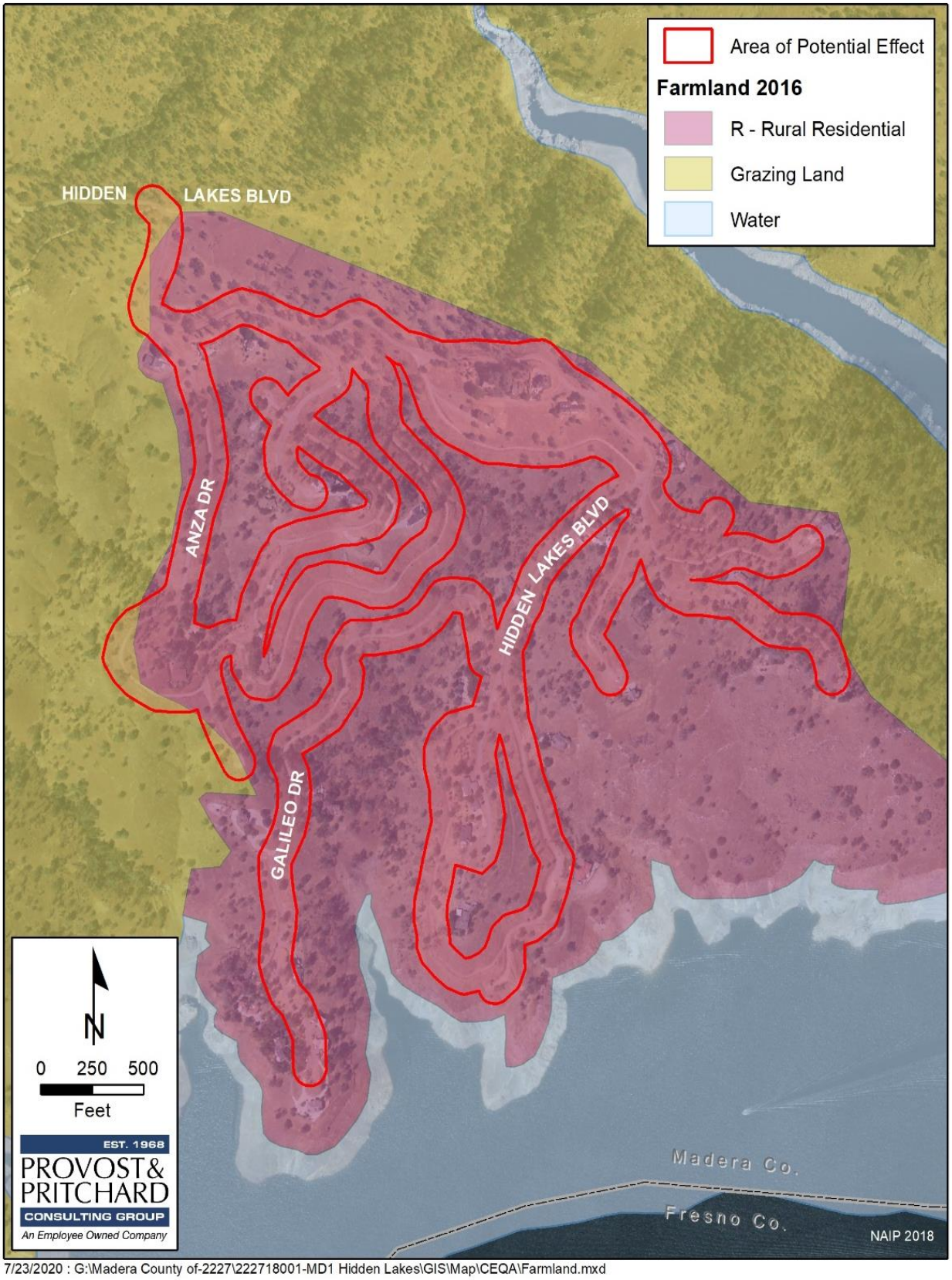

Figure 3-1. Farmland Designation Map

3.4 Air Quality

Table 3-3. Air Quality Impacts

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

3.4.1 Environmental Setting and Baseline Conditions

The existing area consists of a rural residential subdivision with aging infrastructure, which maintenance staff must repair. Existing emissions consist of automobile maintenance trips and electricity consumed to operate the water distribution equipment.

3.4.1.1 Regulatory Attainment Designations

Under the California Clean Air Act (CCAA), the California Air Resources Board (CARB) is required to designate areas of the State as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An "unclassified" designation signifies that the data does not support either an attainment or nonattainment designation. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The EPA designates areas for ozone, carbon dioxide (CO), and nitrogen dioxide (NO_2) as "does not meet the primary standards," "cannot be classified," or "better than national standards." For sulfur dioxide (SO_2), areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified," or "better than national standards." However, the CARB terminology of attainment, nonattainment, and unclassified is more frequently used. The Environmental Protection Agency (EPA) uses the same sub-categories for nonattainment status: serious, severe, and extreme. In 1991, EPA assigned new nonattainment designations to areas that had previously been classified as Group I, II, or III for Particulate Matter, 10 microns or less (PM_{10}) based on the likelihood that they would violate national PM_{10} standards. All other areas are designated "unclassified."

The State and national attainment status designations pertaining to the San Joaquin Valley Air Basin (SJVAB) are summarized in **Appendix A**. The SJVAB is currently designated as a nonattainment area with respect to the State PM_{10} standard, ozone, and $PM_{2.5}$ standards. The SJVAB is designated nonattainment for the NAAQS 8-hour ozone and $PM_{2.5}$ standards. On September 25, 2008, the EPA re-designated the San Joaquin Valley to attainment status for the PM_{10} NAAQS and approved the PM_{10} Maintenance Plan.

Table 3-4. Summary of Ambient Air Quality Standards and Attainment Designation

Pollutant	Averaging Time	California Standards*		National Standards*	
		Concentration*	Attainment Status	Primary	Attainment Status
Ozone (O_3)	1-hour	0.09 ppm	Nonattainment/ Severe	–	No Federal Standard
	8-hour	0.070 ppm	Nonattainment	0.075 ppm	Nonattainment (Extreme)**
Particulate Matter (PM_{10})	AAM	20 µg/m^3	Nonattainment	–	Attainment
	24-hour	50 µg/m^3		150 µg/m^3	
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 µg/m^3	Nonattainment	12 µg/m^3	Nonattainment
	24-hour	No Standard		35 µg/m^3	
Carbon Monoxide (CO)	1-hour	20 ppm	Attainment/ Unclassified	35 ppm	Attainment/ Unclassified
	8-hour	9 ppm		9 ppm	
	8-hour (Lake Tahoe)	6 ppm		–	
Nitrogen Dioxide (NO_2)	AAM	0.030 ppm	Attainment	53 ppb	Attainment/ Unclassified
	1-hour	0.18 ppm		100 ppb	
Sulfur Dioxide (SO_2)	AAM	–	Attainment	--	Attainment/ Unclassified
	24-hour	0.04 ppm		--	
	3-hour	–		0.5 ppm	
	1-hour	0.25 ppm		75 ppb	
Lead (Pb)	30-day Average	1.5 µg/m^3	Attainment	–	No Designation/ Classification
	Calendar Quarter	–		--	
	Rolling 3-Month Average	–		0.15 µg/m^3	
Sulfates (SO_4)	24-hour	25 µg/m^3	Attainment	No Federal Standards	
Hydrogen Sulfide (H_2S)	1-hour	0.03 ppm (42 µg/m^3)	Unclassified		
Vinyl Chloride (C_2H_3Cl)	24-hour	0.01 ppm (26 µg/m^3)	Attainment		
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient: 0.23/km-visibility of 10 miles or more due to particles when the relative humidity is less than 70%.	Unclassified		

** For more information on standards visit: https://ww3.arb.ca.gov/research/aaqs/aaqs2.pdf*
*** No Federal 1-hour standard. Reclassified extreme nonattainment for the Federal 8-hour standard [September 24, 2020].*
****Secondary Standard*
Source: CARB 2015; SJVAPCD 2015

3.4.1.2 Short-Term Construction-Generated Emissions

Short-term construction emissions will occur by phases which are expected to be approximately three (3) months each in duration, but all six (6) phases will be spread out over an 18-year period as funding becomes available for each phase. Emissions were modeled using inputs for the largest phase (Phase 6), at the earliest point in time. Air quality modeling assumes that construction vehicles become more energy efficient and will possess stricter emission controls as part of continuing regulations. Because the phases will not overlap or even occur in quick succession, modeling the largest phase was deemed a "worst case" representation of each of the other phases and therefore sufficient for estimating short-term construction emissions. Emissions were quantified based on anticipated construction schedules and construction equipment requirements provided by the Project applicant. The modeling outputs are estimates of emissions generated by off-road equipment, haul trucks, and worker commute trips associated with construction. All remaining assumptions were based on the default parameters contained in the model for this type of construction project.

3.4.1.3 Long-Term Operational Emissions

Long-term operational emissions associated with the Project will largely be attributable to trips related to periodic inspections and maintenance. Maintenance will continue to be provided on an as-needed basis by existing staff, but with the newer infrastructure replacing the older, decaying infrastructure, the level of effort for inspections and maintenance is expected to be significantly less in frequency and magnitude. The improvements to the water delivery system resulting from the Project are not anticipated by the District to increase inspection and maintenance levels and will likely reduce them significantly and therefore will not exceed baseline conditions and therefore are only qualitatively assessed.

3.4.1.4 Thresholds of Significance

To assist local jurisdictions in the evaluation of air quality impacts, the SJVAPCD has published the *Guide for Assessing and Mitigating Air Quality Impacts*. This guidance document includes recommended thresholds of significance to be used for the evaluation of short-term construction, long-term operational, odor, toxic air contaminant, and cumulative air quality impacts. Accordingly, the SJVAPCD-recommended thresholds of significance are used to determine whether implementation of the proposed Project would result in a significant air quality impact. Projects that exceed these recommended thresholds would be considered to have a potentially significant impact to human health and welfare. The thresholds of significance are summarized, as follows:

Short-Term Emissions of Particulate Matter (PM_{10}): Construction impacts associated with the proposed Project would be considered significant if the feasible control measures for construction in compliance with Regulation VIII as listed in the SJVAPCD guidelines are not incorporated or implemented, or if project-generated emissions would exceed 15 tons per year (TPY).

Short-Term Emissions of Ozone Precursors (ROG and NO_X): Construction impacts associated with the proposed Project would be considered significant if the project generates emissions of Reactive Organic Gases (ROG) or NO_X that exceeds 10 TPY.

Long-Term Emissions of Particulate Matter (PM_{10}): Operational impacts associated with the proposed Project would be considered significant if the project generates emissions of PM_{10} that exceed 15 TPY.

Long-Term Emissions of Ozone Precursors (ROG and NO_X): Operational impacts associated with the proposed Project would be considered significant if the project generates emissions of ROG or NO_X that exceeds 10 TPY.

Conflict with or Obstruct Implementation of Applicable Air Quality Plan: Due to the region's nonattainment status for ozone, $PM_{2.5}$, and PM_{10}, if the project-generated emissions of either of the ozone precursor pollutants (i.e., ROG and NO_x) or PM_{10} would exceed the SJVAPCD's significance thresholds, then the project would be considered to conflict with the attainment plans. In addition, if the project would result in a change in land use

and corresponding increases in vehicle miles traveled, the project may result in an increase in vehicle miles traveled that is unaccounted for in regional emissions inventories contained in regional air quality control plans.

Local Mobile-Source CO Concentrations: Local mobile source impacts associated with the proposed Project would be considered significant if the project contributes to CO concentrations at receptor locations in excess of the CAAQS (i.e. 9.0 ppm for 8 hours or 20 ppm for 1 hour).

Exposure to toxic air contaminants (TAC) would be considered significant if the probability of contracting cancer for the Maximally Exposed Individual (i.e., maximum individual risk) would exceed 10 in 1 million or would result in a Hazard Index greater than 1.

Odor impacts associated with the proposed Project would be considered significant if the project has the potential to frequently expose members of the public to objectionable odors.

3.4.2 Impact Assessment

The San Joaquin Valley Air Pollution Control District (SJVAPCD)-approved California Emissions Estimator Model (CalEEmod) software, Version 2016.3.2, was used to estimate construction and operational criteria air pollutant emissions and greenhouse gas emissions that could result from the Project. Modeling assumptions and output files are included in **Appendix A**.

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less than Significant Impact. As noted in Impact Assessments b and c below, implementation of the Project would not result in short-term or long-term increases in emissions that would exceed applicable thresholds of significance. Projects that do not exceed the recommended thresholds would not be considered to conflict with or obstruct the implementation of applicable air quality plans.

b) Would the project 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?

Less than Significant Impact.

Short-Term Construction-Generated Emissions

Estimated short-term construction-generated emissions are summarized in **Table 3-5**, respectively.

Table 3-5. Annual Emissions of Construction-Generated Criteria Air Pollutants

Source	Annual Emissions (Tons/Year) [1]					
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Phase 6 (worst case)	0.1137	0.9810	0.7762	0.00147	0.1903	0.1013
SJVAPCD Significance Thresholds:	*10*	*10*	*100*	*27*	*15*	*15*
Exceed SJVAPCD Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*

[1] Emissions were quantified using CalEEmod Version 2016.3.2. Refer to **Appendix A** for modeling results and assumptions. Totals may not sum due to rounding.

Long-Term Operational Emissions

The Project does not propose installation of new equipment that generates emissions, no new operational emissions are expected to be generated. The project is to replace the existing MD-1 system which currently experiences a greater than normal amount of maintenance issues, hence the Project will serve to reduce maintenance trips and associated emissions over the long-term.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Toxic Air Contaminants

Implementation of the Project would not result in the long-term operation of any major onsite stationary sources of TACs, nor would Project implementation result in a substantial increase in vehicle trips along area roadways, in comparison to existing conditions; based on assessments above, operational maintenance trips are actually anticipated to be less.

However, construction of the Project may result in temporary increases in emissions of diesel-exhaust particulate matter (DPM) associated with the use of off-road diesel equipment. More than 90% of DPM is less than one micrometer (μm) in diameter, and thus is a subset of $PM_{2.5}$.[3] Health-related risks associated with diesel-exhaust emissions are primarily associated with long-term exposure and associated risk of contracting cancer. As such, the calculation of cancer risk associated with exposure of to TACs are typically calculated based on a long-term (e.g., 70-year) period of exposure. The use of diesel-powered construction equipment, however, would be temporary and episodic. Each phase of construction activities would occur in an approximate three-month period, with all six (6) phases distributed over an 18-year time period as funding become available, which would translate to far less than one percent of the typical 70-year exposure period. As a result, exposure to construction generated DPM would not be anticipated to exceed applicable thresholds (i.e. incremental increase in cancer risk of 10 in one million).

Table 3-6. Daily Emissions of Construction-Generated Criteria Air Pollutants

Source	Annual Emissions (pounds per day) [1]					
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Individual Phase, Summer	4.3189	46.726	31.8928	0.0647	10.6750	5.4665
Individual Phase, Winter	4.3175	46.4866	31.7146	0.0644	10.6750	5.4665
SJVAPCD Screening Thresholds:	*100*	*100*	*100*	*100*	*100*	*100*
Exceed SJVAPCD Thresholds?	*No*	*No*	*No*	*No*	*No*	*No*

[1] Emissions were quantified using CalEEmod Version 2016.3.2. Refer to **Appendix A** for modeling results and assumptions. Totals may not sum due to rounding.

Although the Project is located in close proximity to single-family homes, construction of the Project is not anticipated to result in a substantial increase in DPM or other TACs. As indicated in **Table 3-6** construction of the Project would generate maximum unmitigated annual emissions less than half of the Air District's screening threshold for localized pollutant analysis. Project-related impacts to sensitive receptors would be less than significant.

Naturally Occurring Asbestos

Naturally occurring asbestos, which was identified by CARB as a TAC in 1986, is located in many parts of California and is commonly associated with ultramafic rock. The Project site is not located near any areas that are likely to contain ultramafic rock[4]. As a result, risk of exposure to asbestos during the construction process would be considered less than significant.

[3] CARB. Inhalable Particulate Matter. https://www.arb.ca.gov/research/aaqs/common-pollutants/pm/pm.htm Accessed August 2020.
[4] United States Geological Survey. Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California. https://www.conservation.ca.gov/cgs/Documents/Publications/Map-Sheets/MS_059_Plate.pdf. Accessed September 2020.

Fugitive Dust

Construction of the Project would include ground-disturbing activities which could result in increased emissions of airborne particulate matter. The Project is be required to comply with SJVAPCD Regulation VIII (Fugitive PM_{10} Prohibitions). Mandatory compliance with SJVAPCD Regulation VIII would reduce emissions of fugitive dust from the Project site.

Although the Project is located within close proximity to single-family homes, construction of the Project is not anticipated to result in a substantial increase in particulate matter. As indicated in **Table 3-6**, construction of the Project would generate maximum unmitigated annual emissions of approximately 0.1903 tons per three-month phase of PM_{10}, substantially less than SJVAPCD's threshold of significance of 15 tons/year. Project-related impacts to sensitive receptors would be less than significant.

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

Less than Significant Impact. Implementation of the Project could result in short-term emissions of odors related to gasoline- or diesel-powered equipment exhaust fumes. Exhaust fumes, particularly diesel exhaust, may be considered objectionable by some people. However, construction activities would be short-term in nature and not anticipated to generate significant odor effects to nearby residents Implementation of the Project would not result in long-term emissions of odors. Impacts would be less than significant.

3.4.3 Federal Cross-Cutting Topic

Clean Air Act (CAA)

Under the federal CAA, federal actions conducted in air basins that are not in attainment with the federal ozone standard (such as the SJVAB) must demonstrate conformity with the State Implementation Plan (SIP). Conformity to a SIP is defined in the federal CAA as meaning conformity to a SIP's purpose of eliminating or reducing the severity and number of violations of the national standards and achieving an expeditious attainment of such standards. The SJVAPCD has published Rule 9110, General Conformity Rule, that indicates how most federal agencies can make such a determination.[5]

The SJVAPCD specifies that a project is conforming to the applicable attainment or maintenance plan if it:

- complies with all applicable SJVAPCD rules and regulations,
- complies with all applicable control measures from the applicable plans, and
- is consistent with the growth forecast in the applicable plans.

The SJVAPCD does not require a detailed quantification of construction emissions unless the project's indirect source emissions are expected to increase pollutant emissions of ROG or NOx in excess of 10 tons per year. Because Project construction would not exceed this threshold, the Project would comply with the conformity criteria.

[5] The SJVAPCD's Rule 9110 is consistent with USEPA 's General Conformity Rule, Determining Conformity of General Federal Actions to State or Federal Implementation Plans (40 CFR, Part 93), available online at http://www.valleyair.org/rules/currntrules/r9110.pdf.

3.5 Biological Resources

Table 3-7. Biological Resources Impacts

Biological Resources Impacts				
Would the project:	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of 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?	☐	☐	☐	☒

3.5.1 Environmental Setting and Baseline Conditions

Live Oak Associates, Inc. (LOA) conducted a biological resources investigation of the proposed Project located in Hidden Lake Estates. The survey evaluated potential Project-related impacts to biotic habitats, the plants and animals occurring in the Area of Potential Effect (Project area), and significant habitat values that may be protected by state and federal laws. The Project site subject to construction will be primarily limited to road rights-of-way within the Hidden Lake subdivision and Outlots E and L. The Hidden Lakes Estates subdivision contains ruderal/developed lands in the form of roads and landscaped residential lots, as well as areas of blue oak woodland and a small area of wetland channel. Nearly all project impacts will be temporary in nature and consist of trenching, laying pipe, and backfilling.

A reconnaissance-level field survey of the project site was conducted on March 13, 2020, by LOA ecologist Jeff Gurule. The survey consisted of walking the Project area while identifying the principal biotic habitats and/or land uses of the project site, as well as the constituent plants and animals of each biotic habitat and/or land use. The field survey conducted for this study was sufficient to assess the significance of possible biological impacts associated with the development plans for the Project site.

At the time of the field survey, the Project site consisted of road rights-of-way fronting rural residential development associated with the community of Hidden Lake Estates . The topography of the project site is characterized by steep slopes leading down to Millerton Lake. Folds in the steep topography form ephemeral drainages that funnel stormwater during heavy rain events downslope to the lake. Two main drainages occur within the project site, one is an ephemeral drainage and the other is an intermittent to perennial drainage that supports surface water and wetland vegetation where it crossed the project site. Elevations of the site range from approximately 550 to 1,150 feet National Geodetic Vertical Datum (NGVD).

Following the field survey, LOA then conducted a written analysis of potential project impacts based on the known and potential biotic resources of the project site. Sources of information used in the preparation of this analysis included: (1) results of the June 2019 reconnaissance-level survey, (2) the *California Natural Diversity Data Base* (CDFW 2019), (3) the *Online Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2019), and (4) manuals, reports, and references related to plants and animals of the San Joaquin Valley region.

These species, and their potential to occur within the Project area are listed in **Table 3-8** and **Table 3-9** on the following pages.

Table 3-8. List of Special Status Animals with Potential to Occur Onsite and/or in the Vicinity

Species	Status	Habitat	Occurrence on Project Site
American Badger (*Taxidea taxus*)	CSC	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils.	**Unlikely.** Documented occurrences of this species are rare in the foothills of the region. Furthermore, the developed nature of the project site and the steep terrain would deter habitation of the site by this species. No evidence of badger occupation was observed during the site survey.
Bald Eagle (*Haliaeetus leucocephalus*)	CE	Winters near reservoirs of California's Central Valley. Mostly feeds on fish in large bodies of water or rivers.	**Likely.** Bald eagles are known to both forage, roost, and nest at Millerton Lake. However, there are no known nesting occurrences in the Hidden Lakes Estates area and foraging and nesting habitat for this species is absent to marginal. At most this species would be expected to occasionally fly over the site or temporarily perch in trees on the site.
Blunt-nosed Leopard Lizard (*Gambelia sila*)	FE, CE	Alkali sink scrub and alkali grassland habitat of western Fresno and Madera Counties.	**Absent.** Habitat suitable for this species is absent from the site. Furthermore, the project is well outside the current range of the species.
Burrowing Owl (*Athene cunicularia*)	CSC	Frequents open, dry annual or perennial grasslands, deserts, and scrublands characterized by low growing vegetation. Dependent upon burrowing mammals, most notably the California ground squirrel, for burrows used for nesting and cover.	**Unlikely.** While burrowing owls have been observed in the vicinity (LOA pers. obs.), the developed nature of the project site and steep terrain provide marginal habitat conditions for the species. Furthermore, no evidence of this species in the form of whitewash, cough pellets, or feathers at burrow entrances was observed during the field survey.
California Red-legged Frog (*Rana draytonii*)	FT, CSC	Occurs in aquatic habitats such as creeks and ponds with emergent vegetation.	**Absent.** Suitable aquatic habitat is absent from the project site. Furthermore, this species is thought to be extirpated from the southern Sierra foothills.

Species	Status	Habitat	Occurrence on Project Site
California Tiger Salamander (CTS) (*Ambystoma californiense*)	FT, CT	Found primarily in annual grasslands; requires vernal pools for breeding and rodent burrows for refuge.	**Possible.** This species has been documented breeding in seasonal stock ponds in the project vicinity, the closest being 0.2 miles northwest of the northern tip of the project site (CDFW 2019). California ground squirrel and other small mammal burrows observed on the project site provide potential aestivation (i.e. over-summering habitat) for CTS. Breeding habitat is absent from the project site.
Conservancy Fairy Shrimp (*Branchinecta conservatio*)	FE	Primarily found in vernal pools of California's Central Valley.	**Absent**. Vernal pools required by this species are absent from the project site.
Crotch Bumble Bee (*Bombus crotchii*)	CCE	Inhabits open grassland and scrub habitats of the southern 2/3 of California. Historically in, but largely extirpated from the Central Valley. Constructs nests underground in animal burrows. Overwintering sites are likely in soft soils or in debris or leaf litter. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.*	**Possible**. Suitable habitat is present on the project site. This species was collected in 1982 approximately 1 mile from the project site along the south shore of Millerton Lake.
Delta Smelt (*Hypomesus transpacificus*)	FT, CT	Typically found in the delta of the San Joaquin and Sacramento Rivers, as well as some distance upstream; may have historically occurred in upper San Joaquin watershed.	**Absent.** Suitable aquatic habitat for this species is absent. Furthermore, the project site is well outside this species' current range.
Foothill Yellow-legged Frog (*Rana boylii*)	CCT	Historically occurred in Sierra foothill streams with cobbly bottoms. This species appears to have been extirpated from most southern Sierra foothill streams.	**Absent.** Suitable aquatic habitat for this species is absent from the project site.
Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*)	FE, CE	Occurs in alkali scrub and grasslands with scattered shrubs in the southwestern San Joaquin Valley.	**Absent.** Habitat suitable for this species is absent from the site. The site is outside the current and historic range of the species.
Golden Eagle (*Aquila chrysaetos*)	CFP CSC	Typically frequents rolling foothills, mountain areas, sage-juniper flats and desert. Nests primarily on cliffs.	**Likely.** This species is known to occur in the project vicinity. The developed nature of the project site provides marginal foraging habitat and nesting habitat is absent. However, this species likely flies over the site regularly during foraging flights.
Hardhead (*Mylopharodon conocephalus*)	CSC	Prefers well oxygenated streams and surface waters of midelevation reservoirs. Found in clear pools with sand –gravel – boulder substrates and slow river velocities.	**Absent.** Suitable aquatic habitat for this species is absent from the site.
Pallid Bat (*Antrozous pallidus*)	CSC	Grasslands, chaparral, wood-lands, and forests of California; most common in dry rocky open areas providing roosting opportunities. Can roost in buildings and tree hallows.	**Possible.** The site provides suitable foraging habitat. Roosting habitat is available in hollows of onsite blue oaks.
San Joaquin Kit Fox (*Vulpes macrotis mutica*)	FE, CT	Desert, alkali scrub, annual grasslands; may forage in adjacent agricultural habitats.	**Absent.** Suitable habitat for this species is absent from the project site. The project site is outside the current range of the species.
Sierra Nevada Red Fox (*Vulpes vulpes necator*)	CT	Prefers conifer and alpine habitats between 4,000 and 12,000 feet.	**Absent.** The project site is located well below this species' elevational distribution.
Spotted Bat (*Euderma maculatum*)	CSC	Found in a variety of habitats from arid desert and grassland to mixed conifer forest. Roosts in rocky cliffs.	**Possible.** The site could be used for foraging. Roosting habitat is absent.
Swainson's Hawk *(Buteo swainsoni*)	CT	Migrant and uncommon resident in the Central Valley. Forages in grasslands and agricultural fields. Nests in trees close to riparian areas.	**Unlikely.** Habitats of the project site are unsuitable for nesting and foraging. This species is rarely encountered in steep sloping environments. At most this species may

Species	Status	Habitat	Occurrence on Project Site
			occasionally pass over the site during migration.
Tricolored Blackbird (*Agelaius tricolor*)	CT	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in grassland and agricultural fields.	**Unlikely.** While occasionally observed in the lower foothills, this species is rarely encountered in areas of steep topography. Breeding habitat is absent from the site.
Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)	FT	Primarily found in vernal pools of California's Central Valley.	**Absent**. Vernal pools required by this species are absent from the project site.
Vernal Pool Tadpole Shrimp (*Lepidurus packardi*)	FE	Primarily found in vernal pools of California's Central Valley.	**Absent**. Vernal pools required by this species are absent from the project site.
Western Mastiff Bat (*Eumops perotis* ssp. *californicus*)	CSC	Frequents open, semi-arid to arid habitats, including conifer, and deciduous woodlands, coastal scrub, grasslands, palm oasis, chaparral and urban. Roosts in rocky cliffs.	**Possible.** Known to roost on the eastern edge of Table Mountain. This species may forage on the site. Roosting habitat is absent.
Western Pond Turtle (*Actinemys marmorata*)	CSC	Occurs in open slow-moving water or ponds with rocks and logs for basking and aquatic vegetation for food and cover. Nesting occurs in open areas, on a variety of soil types, and up to ¼ mile away from water.	**Absent.** Suitable aquatic habitat is absent from the project site and immediately surrounding lands.
Western Spadefoot (*Spea hammondii*)	CSC	Primarily occurs in grasslands, but also occurs in valley and foothill woodlands. Requires vernal pools or other temporary wetlands for breeding.	**Unlikely.** Suitable breeding habitat is absent from the project site. While potential breeding habitat occurs within stock ponds in the project vicinity, this species typically ventures no more than a few hundred yards from breeding ponds. Furthermore, this species is not known to occur in steep terrain.
Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)	FC, CE	Nests in dense riparian forests. Inhabits broad, lower flood bottoms of larger river systems.	**Absent.** The last known occurrence of the western yellow-billed cuckoo in the region was on Fancher Creek in 1907. Riparian habitat required by this species is absent from the site.

Table 3-9. List of Special Status Plants with Potential to Occur Onsite and/or in the Vicinity

Species	Status	Habitat	Occurrence on Project Site
Bogg's Lake Hedge Hyssop (*Gratiola heterosepala*)	CE	Occurs in vernal pools and freshwater emergent marshes of northern and central California. Often found in basalt volcanic soils or clay soils. Blooms April to August.	**Absent.** Vernal pools and other suitable aquatic habitat are absent from the project site.
Carpenteria (*Carpenteria californica*)	CT	Several occurrences in Fresno Co. and one in Madera Co.; primarily in chaparral, but also in mixed hardwoods with shrub understory.	**Absent.** Suitable habitat was not present for this species, nor was the species observed during field surveys conducted during the summer of 2019.
Dwarf Downingia (*Downingia pusilla*)	CNPS 2B	Vernal pools within valley and foothill grasslands. Blooms April to May.	**Absent.** Vernal pools required by this species are absent from the project site.
Hairy Orcutt Grass (*Orcuttia pilosa*)	FE, CE	Vernal pools California's Central Valley. Requires deep pools with prolonged periods of inundation.	**Absent.** Vernal pools required by this species are absent from the project site.
Hartweg's Golden Sunburst (*Pseudobahia bahiifolia*)	FE, CE	Occurs in grasslands of the western foothills of the Sierra Nevada in volcanic pumice soils. Within Fresno and Madera Counties it is restricted to soils of the Rocklin series.	**Absent.** Soils required by this species are absent from the project site.
Hoover's Calycadenia (*Calycadenia hooveri*)	CNPS 1B	Occurs on exposed, rocky, or barren soil of cismontane woodland, valley and foothill grassland. Blooms July to Sept..	**Possible.** This species could occur on rock outcrops or barren soils within the project site.

Species	Status	Habitat	Occurrence on Project Site
Mariposa pussy-paws (*Calytridium pulchellum*)	FT CNPS 1B	Fewer than 10 populations in Mariposa, Madera and Fresno Counties; primarily in coarse granitic sands of decomposing outcrops.	**Absent**. Suitable habitat in the form of open flats of decomposed granite surrounding exposed granite bedrock was absent.
Madera Leptosiphon (*Leptosiphon serrulatus*)	CNPS 1B	Cismontane woodland, lower montane coniferous forests, and annual grasslands. Dry slopes, often on decomposed granite in woodland. Blooms April to May.	**Possible.** Habitat suitable for this species is present on the project site, as this species is known to grow on trail and road cuts in the region. This species has been documented on a trail cut along the south shore Millerton Lake (LOA pers obs.).
Orange Lupine (*Lupinus citrinus* var. *citrinus*)	CNPS 1B	Several populations are known from Madera and Fresno Counties in coarse granitic sands of decomposing outcrops.	**Absent.** Suitable habitat in the form of open flats of decomposed granite surrounding exposed granite bedrock was absent.
San Joaquin Valley Orcutt Grass (*Orcuttia ineaqualis*)	FT, CE	Occurs in deep vernal pools of California's Central Valley.	**Absent.** Vernal pools required by this species are absent from the project site.
Spiny-sepaled Button Celery (*Eryngium spinosepalum*)	CNPS 1B	Found in vernal pools and swales of Madera, Fresno, and Tulare Counties. Blooms April through May.	**Absent.** Vernal pools and swales required by this species are absent from the project site.
Sanford's Arrowhead (*Sagittaria sanfordii*)	CNPS 1B	Occurs in freshwater emergent marsh habitat in drainage ditches and canals of California's central valley. Blooms May to October.	**Absent.** This species is not known to occur in the Sierra Nevada foothills. Furthermore, this species was not observed during the site survey in the single wetland drainage of the site.
Succulent Owl's Clover (*Castilleja campestris* ssp. *succulenta*)	FT, CE	Vernal pools, valley foothills and grasslands. Moist places, often in acidic soils. Blooms April to May.	**Absent.** Vernal pools required by this species are absent from the project site.

EXPLANATION OF OCCURRENCE DESIGNATIONS AND STATUS CODES USED IN TABLES 3.8 & 3.9 ABOVE

Present: Species observed on the site at time of field surveys or during recent past
Likely: Species not observed on the site, but it may reasonably be expected to occur there on a regular basis
Possible: Species not observed on the site, but it could occur there from time to time
Unlikely: Species not observed on the site, and would not be expected to occur there except, perhaps, as a transient
Absent: Species not observed on the site, and precluded from occurring there due to absence of suitable habitat

STATUS CODES

FE Federally Endangered
FT Federally Threatened
FPE Federally Endangered (Proposed)
FPT Federally Threatened (Proposed)
FC Federal Candidate
CE California Endangered
CT California Threatened
CCT California Threatened (Candidate)
CFP California Fully Protected
CSC California Species of Special Concern

CNPS LISTING

1A Plants Presumed Extinct in California
1B Plants Rare, Threatened, or Endangered in California and elsewhere
2 Plants Rare, Threatened, or Endangered in California, but more common elsewhere
3 Plants about which we need more information – a review list
4 Plants of limited distribution – a watch list

3.5.2 Impact Assessment

a) Would the project 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?
Less than Significant Impact with Mitigation Incorporated.

3.5.2.1 Special Status Plants and Sensitive Natural Communities

There are 13 regionally occurring special status plants that appeared on the CNDDB, CNPS and IPaC database queries of the Project area, and the following 2 species were declared possible to occur onsite, and therefore, could potentially be impacted by Project activities: Hoover's Calycadenia (*Calycadenia hooveri*) and Madera Leptosiphon (*Leptosiphon serrulatus*). Natural vegetation communities on the site consist of blue oak woodland and wetland channel. While some forms of these communities are considered sensitive, these onsite communities do not contain the vegetation alliances that are considered sensitive by CDFW. Therefore, sensitive natural communities are considered absent from the project site. Additionally, designated critical habitat is also absent from the project site and the surrounding lands.

3.5.2.2 Special Status Animal Species

3.5.2.2.1 Nesting Birds

There are six regionally occurring special status bird species identified on the CNDDB and IPaC database queries of the Project area with two species declared likely to occur onsite, the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*), and therefore, could potentially be impacted by Project activities. The Project site contains suitable nesting and foraging habitat.

3.5.2.2.2 Reptiles and Amphibians (Herpets)

There are six regionally occurring special status reptile and amphibian species that appeared on the CNDDB and IPaC database queries of the Project area, and the California tiger salamander (Ambystoma californiense) was declared possible to occur onsite, and therefore, could potentially be impacted by Project activities.

3.5.2.2.3 Mammals

There are six regionally occurring special status mammals identified on the CNDDB and IPaC database queries of the Project area, with three species declared possible to occur onsite. The following mammals could potentially occur within Project area: pallid bat (*Antrozous pallidus*), spotted bat (*Euderma maculatum*), and western mastiff bat (*Eumops perotis ssp. californicus*). Therefore, the Project's construction activities could potentially impact these three special status species through injury, mortality, or loss of habitat.

3.5.2.2.4 Invertebrates

There are six regionally occurring special status invertebrate species could possible or likely occur within Project area: The Crotch bumble bee (*Bombus crotchii*) could potentially forage on flowering plants in Project area. The Crotch bumble bee is a candidate for listing as an endangered species in California. As a candidate for listing, the species is temporarily afforded the same protections at State-listed endangered or threatened species until CDFW's status report is complete and a decision is made on the petitioned action.

3.5.2.3 Special Status Plant Species Absent from or Unlikely to Occur

The remaining 11 plant species not discussed above are unlikely or absent from the Project area and. surrounding lands, including: Bogg's Lake hedge hyssop (*Gratiola heterosepala*), carpenteria (*Carpenteria californica*), dwarf downingia (*Downingia pusilla*), hairy orcutt grass (*Orcuttia pilosa*), Hartweg's golden sunburst (*Pseudobahia bahiifolia*), mariposa pussy-paws (*Calytridium pulchellum*), orange lupine (*Lupinus citrinus* var. *citrinus*), San Joaquin Valley orcutt grass (*Orcuttia ineaqualis*), spiny-sepaled button celery (*Eryngium spinosepalum*), Sanford's arrowhead (*Sagittaria sanfordii*), and succulent owl's clover (*Castilleja campestris* ssp. *succulenta*). These plant species have been determined to be unlikely or absent from the Project due to the Project's location outside of the accepted geographic or altitudinal range and/or the absence of suitable habitat onsite. Since there is little to no likelihood of these 16 special status plant species occurring onsite, implementation of the Project should have no effect on individual plants or populations of these species. Mitigation measures are not necessary to avoid impacts to these 16 species; however, the mitigation measures listed below would help provide protection to these species in the unlikely event they are detected onsite.

The remaining 18 regionally occurring special status animal species were determined to be unlikely or absent from the vicinity due to Project's location outside of the accepted geographic or altitudinal range and/or the absence of suitable habitat onsite, including: American badger (*Taxidea taxus*), blunt-nosed leopard lizard, burrowing owl (*Athene cunicularia*), California red-legged frog (*Rana draytonii*), conservancy fairy shrimp (*Branchinecta conservatio*), Delta Smelt (*Hypomesus transpacificus*), foothill yellow-legged frog (*Rana boylii*), Fresno kangaroo rat (*Dipodomys nitratoides exilis*), Hardhead (*Mylopharodon conocephalus*), San Joaquin kit fox (*Vulpes macrotis mutica*), Sierra Nevada red fox (*Vulpes vulpes necator*), Swainson's hawk *(Buteo swainsoni*), tricolored blackbird (*Agelaius tricolor*), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*) western pond turtle (*Actinemys marmorata*), western spadefoot (*Spea hammondii*) and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). Since it is highly unlikely that these species would occur onsite, implementation of the Project should have no impact on these special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

For impacts related to both plant and animal special status species and species of concern, the following Mitigation Measures identified would reduce potential impacts to less than significant level and would ensure compliance with State and federal laws protecting these resources.

Mitigation Measures

BIO-1 (WEAP Training): Prior to initiating construction activities (including staging and mobilization), all personnel associated with Project construction shall attend mandatory Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in identifying special status resources that may occur in the Project area. The specifics of this program shall include identification of the sensitive species and suitable habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. This training will specifically discuss hoover's calycadenia, madera leptosiphon, bald and golden eagles, crotch bumble bee, California tiger salamander, pallid, spotted and mastiff bats. A fact sheet conveying this information, along with photographs or illustrations of sensitive species with potential to occur onsite, shall also be prepared for distribution to all contractors, their employees, and all other personnel involved with construction of the Project. All employees shall sign a form documenting that they have attended WEAP training and understand the information presented to them.

BIO-2 (Construction Operational Hours): Construction shall be conducted during daylight hours to reduce disturbance to wildlife that could be foraging within work areas.

BIO-3 (BMPs): The Project proponent will ensure that all workers employ the following best management practices (BMPs) in order to avoid and minimize potential impacts to special status species:

a) Vehicles shall observe a 15-mph speed limit while on unpaved access routes.

b) Workers shall inspect areas beneath parked vehicles and staged piping and equipment prior to mobilization. If special status species are detected beneath vehicles, the individual will either be allowed to leave of its own volition or will be captured by the qualified biologist (must possess appropriate collecting/handling permits) and relocated out of harm's way to the nearest suitable habitat beyond the influence of the Project work area. "Take" of listed (rare, threatened, or endangered) is prohibited. If a listed species is observed within the Project area, the biologist will stop work and contact the appropriate regulatory agency (CDFW and/or USFWS) for guidance on how to proceed.

c) The presence of any special status species and/or any wildlife mortalities will be reported to the Project's designated biologist and the appropriate regulatory agencies (CDFW, USFWS, California State Parks Department, Tejon Ranch Conservancy, etc.).

BIO-4 (Avoidance): The Project's construction activities shall occur, if feasible, between September 1 and January 31 (outside of nesting bird season) in an effort to avoid impacts to listed species.

BIO-5 (Minimization): If complete avoidance is not possible, then a qualified biologist shall identify all avoidance areas and establish buffer zones of sufficient size around these areas to eliminate any unnecessary disturbance to the avoided plants during construction. Furthermore, construction fencing will be placed around the buffer zones, as directed by the biologist.

BIO-6 (Plant Salvage): Areas occupied by special status plant species that cannot be avoided will require a salvage effort directed by a qualified botanist. The salvage effort will include the collection of seed and topsoil. Seed will be collected at a time of year when it is most prolific and stored in a ventilated container in a cool dry location. Soil will be collected and stockpiled at a nearby location. The stockpiled soil and then the seed will be returned to the disturbed area in which it was collected once construction in the area is complete.

BIO-7 (Pre-construction Survey): A qualified biologist shall conduct pre-construction surveys specific to the following species:

a) Nesting Birds. If activities must occur within nesting bird season (February 1 to August 31), the survey will be conducted within 10 days prior to the start of construction. The survey shall include the proposed work area and surrounding lands within 500 feet by a qualified biologist. The survey area will encompass the site and accessible surrounding lands within 250 feet for nesting migratory birds and 500 feet for raptors (i.e. birds of prey). If no active nests are observed, no further mitigation is required. Raptor nests are considered "active" upon the nest-building stage. All other nests are considered "active" by the presence of eggs or young.

b) Herpets; Mammals; and Bees. A pre-construction survey within 100 feet of the Project work areas will be performed within 30 days prior to vegetation clearing or ground disturbing activities for the crotch bumble bee, California tiger salamander, pallid, spotted and mastiff bats. Environmentally sensitive areas will be flagged for avoidance. If suitable habitat for regionally occurring special status species is detected during pre-construction surveys, construction monitoring may be required.

BIO-8 (Establish Buffers): On discovery of any active nests or listed species near work areas, the biologist shall determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of the species in question.. Construction buffers shall be identified with flagging, fencing, or other easily visible means, and shall be maintained until the biologist has determined that the nestlings have fledged, or construction has finished in that area.

BIO-9 (Monitor): A qualified biologist will conduct a pre-activity clearance survey each day and remain onsite to oversee all vegetation clearing and ground disturbing activities conducted within suitable habitat for special status species that were identified in the pre-construction surveys (BIO 7 a-b). The biological monitor must possess required collecting/handling permits. If a special status species is observed within Project area, the biologist will stop work order and the individual will either be allowed to leave of its own volition or will be captured by the qualified biologist and relocated out of harm's way to the nearest suitable habitat beyond the influence of the Project work area. "Take" of listed (rare, threatened, or endangered) is prohibited. If a listed species is observed within the Project

area, the biologist will stop work and contact the appropriate regulatory agency (CDFW and/or USFWS) for guidance on how to proceed

BIO-10 (Take Authorization): If any of the above mitigations are infeasible, take authorization from CDFW and USFWS must be obtained and the required mitigations presented in the take permits issued from these agencies must be adhered to. While such mitigations are project-specific, typical mitigation requirements of these permits include some form of compensatory mitigation, as well as avoidance and minimization measures such as construction monitoring by an approved biologist, mandatory capping of pipes, covering trenches, and maintaining escape ramps in trenches.

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

No Impact. As discussed above, the natural vegetation communities on the site consist of blue oak woodland and a wetland channel. While some forms of these communities are considered sensitive, these onsite communities do not contain the vegetation alliances that are considered sensitive by CDFW. Therefore, sensitive natural communities are considered absent from the project site. Additionally, designated critical habitat is also absent from the project site and the surrounding lands. As such, there would be no impacts to sensitive natural communities and no mitigation is warranted.

c) Would the project 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?

Less than Significant Impact. The project site includes a portion of a wetland channel. At the time of the field survey the channel contained a small stream of flowing water that appeared to be runoff from the up-gradient water treatment plant. Herbaceous vegetation within the channel consisted of rice cutgrass (*Leersia oryzoides*), pennyroyal (*Mentha pulegium*), tall flatsedge (*Cyperus eragrostis*), and common knotweed (*Persicaria lapathifolia*). Several small pyracantha (*Pyracantha sp.*) shrubs were also growing there. The proposed water distribution line would cross over portions of two small onsite drainages. One drainage is ephemeral, and the other is intermittent to perennial. These drainages are hydrologically connected to Millerton Lake, a known water of the United State and water of the State. These drainages appear to meet the jurisdictional requirements set forth by the USACE, CDFW, and the RWQCB. Impacts to these drainages will be less than 0.1 acres in size, likely occur in previous road crossings, and would be temporary in nature. Project implementation would require agency permit compliance for activities that would remove soil or place fill within these drainages. Therefore, prior to construction activities all appropriate permit acquisition from the USACE, RWQCB, and CDFW would be required. As such, effects on state and federally protected water would be less than significant and with acquisition of agency permits which include agency directed mitigation, no further mitigation is warranted.

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

No Impact. Wildlife movement corridors are routes that animals regularly and predictably follow during seasonal migration, dispersal from native ranges, daily travel within home ranges, and inter-population movements. Movement corridors in California are typically associated with valleys, ridgelines, and rivers and creeks supporting riparian vegetation. The steep terrain of the project site does not readily facilitate wildlife movement and the onsite wetland channel is far too small and steep to be considered a wildlife movement corridor. As a result, wildlife movement corridors are absent from the project site and there would be no impacts to migratory corridors or impede the use of native wildlife nursery sites. Mitigation is not warranted.

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

No Impact. Based on the design and construction activities, the proposed Project appears to be consistent with the ordinances, goals, and policies of the Madera County General Plan for protecting biological resources. Additionally, tree removal is not part of project activities. As such there would be no impacts and mitigation is not warranted.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The Project does not fall within a habitat conservation plan or a natural community conservation plan. As such there would be no impacts and mitigation is not warranted.

3.5.3 Federal Cross-Cutting Topic

Federal Endangered Species Act

The federal Endangered Species Act of 1973 and subsequent amendments, of which the USFWS and the National Marine Fisheries Service (NMFS) oversee, regulate the conservation of endangered and threatened species and their ecosystems. USFWS has jurisdiction over plants, wildlife, and resident fish, and NMFS has jurisdiction over anadromous fish, marine fish, and mammals. Section 7 requires federal agencies to consult with these agencies if they determine that a Project may affect a listed species or destroy or adversely modify designated critical habitat. Under Section 7, the federal lead agency must obtain incidental take authorization or a letter of concurrence, stating that the Project is not likely to adversely affect federally listed species. Section 7 requirements do not apply to nonfederal actions. Because the USEPA is a potential source of SRF funding that may be distributed to support this Project, its distribution is a federal action covered by Section 7.

Appendix B presents a Biological Resources Study that is utilized as the basis for compliance with ESA Section 7.

Section 9 prohibits take of any fish or wildlife species listed as endangered, including the destruction of habitat that prevents the species' recovery. "Take" is defined as any action or attempt to hunt, harm, harass, pursue, shoot, wound, capture, kill, trap, or collect a species. Section 9 prohibitions also apply to threatened species unless a special rule governing take was defined at the time the species became listed.

The take prohibition in Section 9 applies only to fish and wildlife species. However, Section 9 also prohibits the unlawful removal and possession, or malicious damage or destruction, of any endangered plant from federal land. Section 9 prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant species in non-federal areas in knowing violation of any state law or in the course of criminal trespass. Candidate species and species that are proposed for or under petition for listing receive no protection under Section 9.

For further discussion, please review **a)**.

Fish and Wildlife Conservation Act

The Fish and Wildlife Conservation Act (Act), approved September 29, 1980, declares that fish and wildlife are of ecological, educational, esthetic, cultural, recreational, economic, and scientific value to the Nation. The Act acknowledges that historically, fish and wildlife conservation programs have focused on more recreationally and commercially important species within any particular ecosystem, without provisions for the conservation and management of nongame fish and wildlife. The purposes of this Act are to encourage all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities and to conserve and to promote conservation of non-game fish and wildlife and their habitats. The Act authorizes financial and technical assistance to the States for the development, revision, and implementation of conservation plans and programs

for nongame fish and wildlife. The Act defines "nongame fish and wildlife" as wild vertebrate animals in an unconfined state, that are not ordinarily taken for sport, fur or food, not listed as endangered or threatened species, and not marine mammals within the meaning of the Marine Mammal Protection Act. The original Act authorized $5 million for each of Fiscal Years 1982 through 1985, for grants for development and implementation of comprehensive State nongame fish and wildlife plans and for administration of the Act.

For further discussion, please review **a)**, b), and d) above.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (Title 16, Section 703 and following sections of the United States Code [16 USC 703 et seq.]), first enacted in 1918, provides protection of international migratory birds and authorizes the Secretary of the Interior to regulate the taking of migratory birds. The MBTA states that it is unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird. The current list of species protected by the MBTA is found under Title 50, Section 10.13 of the CFR (50 CFR 10.13). The list includes nearly all birds native to the United States.

In December 2017, the U.S. Department of the Interior's Office of the Solicitor issued a revised legal interpretation (Opinion M-37050) of the MBTA's prohibition on the take of migratory bird species. Opinion M-37050 concludes that "consistent with the text, history, and purpose of the MBTA, the statute's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same apply only to affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs" (DOI 2017). According to Opinion M-37050, take of a migratory bird, its nest, or eggs that is incidental to another lawful activity does not violate the MBTA, and the MBTA's criminal provisions do not apply to those activities. Opinion M-37050 may affect how the MBTA is interpreted but does not legally change the regulation itself.

The U.S. Court of Appeals for the Ninth Circuit, the controlling federal appellate court for California, also has held that habitat modification that harms migratory birds "does not 'take' them within the meaning of the MBTA (Seattle Audubon Soc. v. Evans, 952 F.2d 297, 303, 1981).

For further discussion, please review **a)**.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act affords additional legal protection to bald eagles and golden eagles. This law prohibits the take, sale, purchase, barter, offer of sale, purchase, or barter, transport, export or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof (16 U.S. Code [USC] 668---668d). The Bald and Golden Eagle Protection Act also defines take to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb," and includes criminal and civil penalties for violating the statute. USFWS further defines the term "disturb" as agitating or bothering an eagle to a degree that causes or is likely to cause injury, or either a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior.

For further discussion, please review **a)**.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act, as amended (16 USC 180 I), requires that Essential Fish Habitat (EFH) be identified and described in federal fishery management plans. Federal agencies must consult with NMFS on any activity that they fund, pennit, or carry out that may adversely affect EFH. The EFH regulations require that federal agencies obligated to consult on EFH also provide NMFS with a written assessment of the effects of any action on EFH (50 CFR 600.920). NMFS is required to provide EFH conservation and enhancement recommendations to federal agencies. The statute also requires federal agencies receiving NMFS EFH conservation recommendations to provide a detailed written response to NMFS within

30 days of receipt, detailing how they intend to avoid, mitigate, or offset the impact of activity on EFH (Section 305[b][4][B]).

EFH is defined as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purposes of interpreting the definition of EFH, "waters" includes aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means habitat required to support a sustainable fishery and a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers all habitat types used by a species throughout its life cycle. No EFH is on the project site.

Clean Water Act

Section 404

Section 404 of the CWA requires project proponents to obtain a permit from the United States Army Corps of Engineers before performing any activity involving a discharge of dredged or fill material into waters of the U.S. Waters of the U.S. include:

- Navigable waters of the U.S.;
- Interstate waters;
- All other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce;
- Tributaries to any of these waters; and
- Wetlands that meet any of these criteria, or that are adjacent to any of these waters or their tributaries.

Many surface waters and wetlands in California meet the criteria for waters of the U.S.

Section 402

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the National Pollutant Discharge Elimination System program, which is administered by USEPA. In California, the State Water Resources Control Board is authorized by USEPA to oversee the program through the Regional Water Quality Control Boards (RWQCBs)-in this case, the Central Valley (Region 5) RWQCB.

Section 401

Under CWA Section 401(a)(1), the applicant for a federal license or permit to conduct an activity that may result in a discharge into waters of the U.S. must provide the federal licensing or permitting agency with a certification that any such discharge will not violate state water quality standards. The RWQCBs administer the Section 401 program to prescribe measures for projects that are necessary to avoid, minimize, and mitigate adverse effects on water quality and ecosystems.

No State or federally protected wetlands or waters are on the proposed project site.

3.6 Cultural Resources

Table 3-10. Cultural Resources Impacts

Cultural Resources Impacts					
Would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Cause a substantial adverse change in the significance of a historical resource pursuant to in §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?	☐	☒	☐	☐

3.6.1 Environmental Setting and Baseline Conditions

Hidden Lakes Estates subdivision is a rural community within the Sierra Nevada foothills at approximately 540 to 1,180 feet above sea level. The Project is located in an established subdivision in Madera County, California located in Section 23 T. 10 S., R. 21E M.D.B. & M., on the Millerton Lake West 7.5 Quadrangle USGS topographic map (see **Figure 2-1**).

As noted above, the Area of Potential Effect (Project area) is located on a high ridge system on the northwest side of Millerton Lake. This ridge system, part of the western foothills of the Sierra Nevada, is supported by grano-diorite bedrock. The ground surface of the ridges is covered by a thin layer of colluvial soil, with occasional outcrops of boulders/bedrock. The angle of slope along the distribution system pipeline route averages roughly 20 degrees, or about 35% slope. Much steeper slopes surround many of the roads, including areas with over 80% slope.

This location currently supports an oak tree savanna grading into a pine forest (Preston 1981). Millerton Lake, immediately south of the community, is an artificial reservoir created by damming the San Joaquin River. Fine Gold Creek (now a finger/embayment of the lake) would have run north-south along the east side of Hidden Lakes Estates. The San Joaquin River would have run east – west south of the community, with the original confluence of the river and the creek to the southeast. Historically, and likely prehistorically, riparian environments would have been present along the San Joaquin River and Fine Gold Creek.

The location of the Project area, on a steeply-sided ridge system with thin soils, has little potential for the preservation of subsurface archaeological deposits. The nature of the distribution system route, within road ROWs that have been cut-into the sides of slopes, further diminishes the likelihood for subsurface deposits. The Project area, accordingly, has an extremely low potential for buried cultural deposits.

3.6.2 Methodology

ASM Affiliates Inc., a qualified archaeological consulting firm, conducted a Class III Inventory/Phase I Survey within the Project area in July 2019. This survey and associated written report was completed at a level to satisfy both CEQA and Section 106 of the Federal National Historic Preservation Act. Much of the material contained in this section of Chapter 3 is based upon the full Class III Inventory/Phase I Survey and Report contained in **Appendix C**. The study included a records search of the California Historical Resources Information System

(CHRIS), a Sacred Lands File search from the Native American heritage Commission (NAHC), tribal outreach, and a pedestrian survey.

The field methods employed included intensive pedestrian examination of the ground surface for evidence of archaeological sites in the form of artifacts, surface features (such as bedrock mortars, historical mining equipment), and archaeological indicators (e.g., organically enriched midden soil, burnt animal bone); the identification and location of any discovered sites, should they be present; tabulation and recording of surface diagnostic artifacts; site sketch mapping; preliminary evaluation of site integrity; and site recording.

Because the water distribution system falls within existing paved and dirt roads, 15-m wide survey transects were walked along each side of the roads, wherever possible due to slope considerations, providing buffers and the best coverage for potential cultural resources. Multiple transects on each side of the road were walked where grass covered the road buffers, with special attention paid to rodent back-dirt piles and other clear areas to provide adequate survey coverage. In certain cases, extreme slope (>80%) adjacent to the existing roads precluded survey of road buffers due to health and safety concerns. These areas exceed the angle-of-repose and could not preserve archaeological sites or artifacts, however.

A Sacred Lands File search conducted by the Native American Heritage Commission (NAHC) did not identify tribal locations of significance. A list of tribal contacts affiliated with the Project area was provided by the NAHC. A location map and a description of the project with a request for feedback were mailed to all listed parties on May 30, 2019 including the Kings River Choinumni Farm, North Fork Rancheria of Mono Indians, Santa Rosa Indian Community of the Santa Rosa Rancheria, Table Mountain Rancheria, Tule River Indian Tribe, and the Wuksache Indian Tribe/Eshom Valley Band. Follow up emails were attempted on June 28, 2019 to confirm delivery of project materials and to solicit tribal input. The North Fork Rancheria of Mono Indians are concerned about potential adverse impacts or effects to tribal cultural resources. Per their request, it is recommended that an on-site visit be conducted to any future implementation project area, and that a tribal monitor be present during ground disturbance.

A records search conducted by the Southern San Joaquin Valley Information Center (SSJVIC) of the CHRIS resulted in no previously recorded cultural resources within the project area. Two previous cultural studies, FR-00741 and MA-00365, have been conducted within the Project area. There are two recorded prehistoric cultural resources within the one-half mile radius.

No cultural resources were observed during a pedestrian survey that consisted of 15 meter transects within the Project area.

3.6.3 Impact Assessment

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Less than Significant with Mitigation. An intensive Class III Inventory/Phase I Survey and Evaluation Report indicates that the Project area does not contain significant or unique historical resources or historic properties. A determination of 'No Effect' is therefore recommended for any future implementation of a project that would improve the existing water distribution system. However, the North Fork Rancheria of Mono Indians are concerned about potential adverse impacts or effects to tribal cultural resources. Per their request, it is recommended that an on-site visit be conducted to any future implementation project area, and that a tribal monitor be present during ground disturbance. The following mitigation measure will ensure impacts remain less than significant.

CUL-1: During ground disturbance of each phase, a tribal monitor shall be present. In the unlikely event that cultural resources are discovered during the construction and operation of any future implemented project, however, it is recommended that an archaeologist be contacted to evaluate the find and to assist with the development of a treatment plan, if warranted.

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?
Less than Significant with Mitigation. There is no evidence or record that the Project has the potential to be an unknown burial site or the site of buried human remains. In the unlikely event of such a discovery, mitigation shall be implemented. With incorporation of **CUL-2**, impacts resulting from the discovery of remains interred on the Project site would be less than significant.

CUL-2: In the event that any human remains are discovered on the Project site, the Kings County Coroner must be notified of the discovery (California Health and Safety Code, Section 7050.5) and all activities in the immediate area of the find or in any nearby area reasonably suspected to overlie adjacent human remains must cease until appropriate and lawful measures have been implemented. If the Coroner determines that the remains are not recent, but rather of Native American origin, the Coroner shall notify the Native American Heritage Commission (NAHC) in Sacramento within 24 hours to permit the NAHC to determine the Most Likely Descendent of the deceased Native American

3.6.4 Federal Cross-Cutting Topic

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966 created the National Register of Historic Places (NRHP), which provides protection to historic places of State, local, and national significance. It established the Advisory Council on Historic Preservation, State Historic Preservation Officer (SHPO), Tribal Preservation Officers, and a preservation grants-in-aid program. Section 106 directs federal agencies to take into account effects of their actions on properties in or eligible for the National Register. Section 106 of the act is implemented by regulations of the Advisory Council on Historic Preservation (36 CFR Part 800).

Section 106 regulations call for consultation with the SHPO, Native American tribes, and interested members of the public throughout the Section 106 compliance process. The four principal steps are to:

- Initiate the Section 106 process (36 CFR Part 800.3);
- Identify historic properties, cultural resources that are eligible for inclusion in the National Register of Historic Places (36 CFR Part 800.4);
- Assess the effects of the undertaking to historic properties within the area of potential effect (36 CFR Part 800.5); and
- Resolve adverse effects (36 CFR Part 800.6).

Adverse effects on or to historic properties often are resolved through preparation of a Memorandum of Agreement (MOA), developed in consultation with Reclamation, the SHPO, Native American tribes, the Advisory Council on Historic Preservation, and interested members of the public. The MOA details procedures that treat historic properties to mitigate adverse effects (36 CFR Part 800.14[b]).

No historic properties have been identified within the area of potential effects. Therefore, the proposed project would not have an adverse effect on historic properties.

3.7 Energy

Table 3-11. Energy Impacts

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

3.7.1 Environmental Setting and Baseline Conditions

PG&E has energy supplies sufficient to serve the existing development in Madera County. Much of the energy consumed in the region is for residential, commercial, and transportation purposes.

Construction equipment and construction worker vehicles operated during Project construction would use fossil fuels. This increased fuel consumption would be temporary and would cease at the end of the construction activity, and it would not have a residual requirement for additional energy input. The marginal increases in fossil fuel use resulting from Project construction are not expected to have appreciable impacts on energy resources.

3.7.2 Impact Assessment

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

Less than Significant Impact. As discussed in **Section 3.3**, the proposed Project's construction activities will not exceed any air emission thresholds. The Project will comply with construction best management practices and may be required to complete a Stormwater Pollution Prevention Plan (SWPPP) as part of construction and operational permits. Once completed, Project operations and maintenance trips will be reduced as a result of the Project. The Project will not result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during construction or operation.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. The construction phase will be temporary in nature and will use only the energy necessary to construct the Project efficiently.. Once operational, the Project will be passive in nature and will use only that energy necessary to deliver water to users and therefore will not conflict or obstruct any applicable state or local plan for renewable energy.

3.8 Geology and Soils

Table 3-12. Geology and Soils Impacts

Geology and Soils Impacts				
Would the project:	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault 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 wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☐	☐	☒

3.8.1 Environmental Setting and Baseline Conditions

Using the USDA NRCS soil survey of the Project site, a report of the on-site soils was generated and is provided in **Appendix D**. A Geotechnical Engineering Investigation Report prepared by BSK Associates and found in **Appendix E**, assessed soil conditions at the Project site. Several exploratory test drillings were performed on April 22, 2019 and found the soil near surface consists of weathered in-place residual soils, including silty sand, clayey sand, and sandy clay, underlain by decomposed granite rock to the maximum depth of exploration, 7.5 feet below ground.

3.8.1.1 Geology and Soils

The Project is a residential development located on the northern side of Millerton Lake in Madera County in the foothills of California's Sierra Nevada Mountain range. The Sacramento Valley makes up the northern third and the San Joaquin Valley makes up the southern two-thirds of the geomorphic province. Both valleys are watered by large rivers flowing west from the Sierra Nevada Range, with smaller tributaries flowing east from the Coast Ranges. Most of the surface of the Great Valley is covered by Quaternary (present day to 1.6 million years ago) alluvium. The sedimentary formations are steeply upturned along the western margin due to the uplifted Sierra Nevada Range. From the time the Valley first began to form, sediments derived from erosion of igneous and metamorphic rocks and consolidated marine sediments in the surrounding mountains have been transported into the Valley by streams.

3.8.1.2 Faults and Seismicity

The Project site is not located within an Alquist-Priolo Earthquake Fault Zone and no known faults cut through the site. The nearest major active fault is the San Andreas Fault, Creeping section, located approximately 85.7 miles southwest of the Project site. The San Andreas Fault is the dominant active tectonic feature of the Coast Ranges and represents the boundary of the North American and Pacific plates. A smaller active fault zone, the Round Valley Fault is approximately 47 miles northeast of the site.

3.8.1.3 Liquefaction

The Five County Safety Element depicts only low valley areas as having a risk of liquefaction. The Project is not located in the low valley area.[6]

3.8.1.4 Soil Subsidence

Subsidence occurs when a large land area settles due to over-saturation or extensive withdrawal of ground water, oil, or natural gas. These areas are typically composed of open-textured soils that become saturated. These areas are high in silt or clay content. The Project site is comprised of Coarsegold rocky loam, 30 to 75 percent slopes at elevations ranging between 600 to 1,150 amsl. It is well drained characterized as minimal risk of subsidence (Appendix D).

3.8.1.5 Dam and Levee Failure

The Project site is located above Millerton Dam. No dam or levee failure inundation maps were found that affect the Project area.[7]

3.8.2 Impact Assessment

a) Would the project 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?

Less than Significant Impact. As noted above in Section 3.7.1. the Project site and its vicinity are located in an area traditionally characterized by relatively low seismic activity. The site is not located in an Alquist-Priolo

[6] Tulare County Association of Governments. Five County Seismic Safety Element Fresno, Kings, Madera, Mariposa and Tulare Counties. 1974.
[7] California Department of Water Resources. Dam Breach Inundation Map Web Publisher. https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2. Accessed September 2020.

Earthquake Fault Zone as established by the Alquist-Priolo Fault Zoning Act (Section 2622 of Chapter 7.5, Division 2 of the California Public Resources Code). Due to their distance away from the site the San Andreas Fault, and the Round Valley Fault are not anticipated to cause significant damage to the infrastructure if there was a fault occurrence.

The Project involves the replacement of existing water infrastructure. Operation of the Project would not require on-site occupation/habitation of staff or an increase in the number of employees required for routine maintenance. Instead, routine maintenance and repairs would be performed infrequently, on an as-needed basis by current County of Madera employees.

Implementation of the Project would not result in potential substantial direct or indirect effects, including the risk of loss, injury, or death involving a rupture of a known earthquake fault or involving strong seismic ground shaking beyond baseline conditions. Any impact would be less than significant.

iii) Seismic-related ground failure, including liquefaction?

Less than Significant Impact. Liquefaction is a process which involves the temporary transformation of soil from a solid state to a fluid form during intense and prolonged groundshaking. Water-saturated areas with shallow depth to groundwater and uniform sands, loose-to-medium in density, are prone to liquefaction. The Five County Safety Element does not indicate this area is in a high liquefaction area, therefore liquefaction potential is low. The Project site is not in a wetland area and is located in the southeastern portion of the County where liquefaction is considered a low to moderate risk. Implementation of the Project would not cause potential substantial direct or indirect effects, including the risk of loss, injury, or death.

iv) Landslides?

Less than Significant Impact. The potential landslide impact at this location is minimal as construction of the Project would not require extensive excavation. Implementation of the Project would not cause potential substantial direct or indirect effects from landslides, including the risk of loss, injury, or death.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less than Significant Impact. Earthmoving activities associated with the Project will include excavation, trenching, grading, and infrastructure construction, backfilling trenches. These activities have the potential to expose soils to wind or water erosion processes. The extent of the erosion depends on steepness of the slope, vegetation/groundcover, soil compactness, runoff concentration, and weather. The project site is generally flat and will be graded toward storm drain manhole with open grating cover. Erosion will be minimized through implementation of Best Management Practices detailed in the California Storm Water Best Management Practice Handbook for Construction Activity.[8]The Project will require a National Pollutant Discharge Elimination System (NPDES) permit, Stormwater Pollution Prevention Plan (SWPPP), and a Dust Control Plan, all of which will limit discharges to acceptable limits.

c) Would the project 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?

Less than Significant Impact. The existing geological unit and soils and modification of the site's geologic unit or soils provides minimal risk of unstable soils that would result in landslides on or off-site. As mentioned above, the Project site and its vicinity are also located in an area traditionally characterized by relatively low seismic activity. As a result, lateral spreading, liquefaction, subsidence, and collapse are also not likely to occur as a result of an earthquake. The project is not within the subsidence area mapped by the United States Geological Survey, California Water Science Center. The Project will require excavation to place water infrastructure underground, however this will be at a minimal depth and will not exacerbate the risk.

[8] California Storm Water Best Management Practice Handbook for Construction Activity, https://www.casqa.org/sites/default/files/BMPHandbooks/BMP_NewDevRedev_Complete.pdf , Accessed February 19, 2019

d) Would the project 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?

Less than Significant Impact. Soils onsite consist of Coarsegold rocky loam, which is classified as well drained with a high runoff class (See **Appendix D**). The Geotechnical Engineering Investigation Report (**Appendix E**)states that the expansion index in the area is less than 20 (very low expansion potential).

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The Project does not propose to construct nor modify any wastewater system. There will be no impact.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?

No Impact. According to the Geotechnical Engineering Investigation Report, the proposed alignment is located in an area generally mapped as metamorphosed volcanic and granitic materials. These materials were formed beneath the surface of the Earth under high temperature and pressure conditions, and therefore do not contain fossils.[9] The site does not contain any unique geological features.

[9] United State Bureau of Reclamation. Upper San Joaquin River Basin Storage Project EIS, Chapter 19. https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=19086. Accessed September 2020.

3.9 Greenhouse Gas Emissions

Table 3-13. Greenhouse Gas Emissions Impacts

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

3.9.1 Environmental Setting and Baseline Conditions

The Earth's climate has been warming for the past century. It is believed that this warming trend is related to the release of certain gases into the atmosphere. Greenhouse gases (GHG) absorb infrared energy that would otherwise escape from the Earth. As the infrared energy is absorbed, the air surrounding the Earth is heated. An overall warming trend has been recorded since the late 19th century, with the most rapid warming occurring over the past two decades. The 10 warmest years of the last century all occurred within the last 15 years. It appears that the decade of the 1990s was the warmest in human history (National Oceanic and Atmospheric Administration, 2010). Human activities have been attributed to an increase in the atmospheric abundance of greenhouse gases. The following is a brief description of the most commonly recognized GHGs.

Commonly identified GHG emissions and sources include the following:

Carbon dioxide (CO_2) is an odorless, colorless natural greenhouse gas. CO_2 is emitted from natural and anthropogenic sources. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic out gassing. Anthropogenic sources include the burning of coal, oil, natural gas, and wood.

Methane (CH_4) is a flammable greenhouse gas. A natural source of methane is the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain methane, which is extracted for fuel. Other sources are from landfills, fermentation of manure, and ruminants such as cattle.

Nitrous oxide (N_2O), also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load.

Water vapor is the most abundant, and variable greenhouse gas. It is not considered a pollutant; in the atmosphere, it maintains a climate necessary for life.

Ozone (O_3) is known as a photochemical pollutant and is a greenhouse gas; however, unlike other greenhouse gases, ozone in the troposphere is relatively short-lived and, therefore, is not global in nature. Ozone is not emitted directly into the atmosphere but is formed by a complex series of chemical reactions between volatile organic compounds, nitrogen oxides, and sunlight.

Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

Chlorofluorocarbons (CFCs) are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. CFCs destroy stratospheric ozone; therefore, their production was stopped as required by the Montreal Protocol in 1987.

Hydrofluorocarbons (HFCs) are synthetic chemicals that are used as a substitute for CFCs. Of all the greenhouse gases, HFCs are one of three groups (the other two are perfluorocarbons and sulfur hexafluoride) with the highest global warming potential. HFCs are human-made for applications such as air conditioners and refrigerants.

Perfluorocarbons (PFCs) have stable molecular structures and do not break down through the chemical processes in the lower atmosphere; therefore, PFCs have long atmospheric lifetimes, between 10,000 and 50,000 years. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It has the highest global warming potential of any gas evaluated. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

There are uncertainties as to exactly what the climate changes will be in various local areas of the earth, and what the effects of clouds will be in determining the rate at which the mean temperature will increase. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet: sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, air pollution episodes, and the consequence of these effects on the economy.

Emissions of GHGs contributing to global climate change are largely attributable to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. About three-quarters of human emissions of CO_2 to the global atmosphere during the past 20 years are due to fossil fuel burning. Atmospheric concentrations of CO_2, CH_4, and N_2O have increased 31 percent, 151 percent, and 17 percent respectively since the year 1750 (CEC 2008). GHG emissions are typically expressed in carbon dioxide-equivalents (CO_2e), based on the GHG's Global Warming Potential (GWP). The GWP is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, one ton of CH_4 has the same contribution to the greenhouse effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2.

An Air Quality and Greenhouse Gas Emissions Evaluation Report was prepared in September 2020, and is contained in **Appendix A**. The essential conclusions of this Report are as follows:

3.9.1.1 Short-Term Construction-Generated Emissions

Short-term construction emissions associated with the Project were calculated using CalEEmod Version 2016.3.2. Each phase's emissions were assumed to occur over an approximate three-month period. Remaining assumptions were based on the default parameters contained in the model. Modeling assumptions and output files are included in **Appendix A.**

3.9.1.2 Long-Term Operational Emissions

As the Project is designed to increase reliability and reduce maintenance visits,the Project will not generate any additional operational emissions, long term operational emissions will be less than existing.

3.9.2 Impact Assessment

3.9.2.1 Thresholds of Significance

SJVAPCD CEQA Greenhouse Gas Guidance: On December 17, 2009, the SJVAPCD Governing Board adopted "*Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA*"[10] and the policy, "*District Policy—Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*."[11] The SJVAPCD concluded that the existing science is inadequate to support quantification of the impacts that project specific greenhouse gas emissions have on global climatic change. The SJVAPCD found the effects of project-specific emissions to be cumulative, and without mitigation, that their incremental contribution to global climatic change could be considered cumulatively considerable. The SJVAPCD found that this cumulative impact is best addressed by requiring all projects to reduce their greenhouse gas emissions, whether through project design elements or mitigation.

The SJVAPCD's approach is intended to streamline the process of determining if project-specific greenhouse gas emissions would have a significant effect. Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less than significant cumulative impact. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources and have a certified final CEQA document.

Best performance standards (BPS) to address operational emissions of a project would be established according to performance-based determinations. Projects complying with BPS would not require specific quantification of GHG emissions and would be determined to have a less than significant cumulative impact for GHG emissions. Projects not complying with BPS would require quantification of GHG emissions and demonstration that operational greenhouse gas emissions have been reduced or mitigated by 29 percent, as targeted by CARB's AB 32 Scoping Plan. Furthermore, quantification of GHG emissions would be required for all projects for which the lead agency has determined that an Environmental Impact Report is required, regardless of whether the project incorporates BPS.

In light of the Newhall Ranch decision, this threshold is no longer applicable. Therefore, the following thresholds are considered applicable for CEQA review of projects under the jurisdiction of the SJVAPCD.

Bay Area Air Quality Management District's Thresholds for Significance: Bay Area Air Quality Management District's approach to developing a threshold of significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce Statewide GHG emissions[12]. If a project would generate GHG emissions above the threshold level, it would be considered to contribute substantially to a cumulative impact and would be considered significant. If mitigation can be applied to lessen the emissions such that the project meets its share of emission reductions needed to address the cumulative impact, the project would normally be considered less than significant. Although the proposed Project is not located in the Bay Area, the Bay Area Air Quality Management District's thresholds for significance are based on the Statewide AB 32 objectives and will be used to quantify potential impacts related to GHG emissions. For land use development projects, the threshold is compliance with a qualified GHG Reduction Strategy or annual emissions less than 1,100 metric tons per year

[10] San Joaquin Valley Air District, *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA*, December 2009. Website: https://www.valleyair.org/Programs/CCAP/12-17-09/3%20CCAP%20-%20FINAL%20LU%20Guidance%20-%20Dec%2017%202009.pdf, accessed September 2020.
[11] San Joaquin Valley Air District, *District Policy—Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*, Website: https://www.valleyair.org/Programs/CCAP/12-17-09/2%20CCAP%20-%20FINAL%20District%20Policy%20CEQA%20GHG%20-%20Dec%2017%202009.pdf, accessed September 2020.
[12] Bay Area Air Quality Management District. California Environmental Quality Act Air Quality Guidelines. Website: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en. Accessed September 2020.

(MT/yr) of CO_2e. For stationary source projects, such as those requiring a permit from a local air district to operate, the threshold is 10,000 MT/yr of CO_2e.

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

Less than Significant Impact. Estimated construction-generated emissions are summarized in **Table 3-14**. As indicated, each phase of Project construction would generate maximum emissions of approximately 130 metric tons of carbon dioxide equivalent ($MTCO_2e$). Construction-related production of GHGs would not exceed adopted thresholds. Operations-related production of GHGs will be reduced as the Project will reduce maintenance trips necessary. Impacts will be less than significant.

Table 3-14. Short-Term Construction-Generated GHG Emissions

Year	Emissions (MT CO_2e)[1]
2021	130.2761
AB 32 Consistency Threshold for Land-Use Development Projects[2]	*1,100*
Exceed Threshold?	No

1. Emissions were quantified using the CalEEmod, Version 2016.3.2. Refer to **Appendix A** for modeling results and assumptions. Totals may not sum due to rounding.
2. As published in the Bay Area Air Quality Management District's CEQA Air Quality Guidelines. Available online at http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en Accessed September 2020.

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

Less than Significant Impact. In accordance with SJVAPCD's recommended guidance, project-generated GHG emissions would be considered less than significant if: (1) the proposed Project complies with applicable BPS; (2) operational GHG emissions would be reduced or mitigated by a minimum of 29 percent in comparison to business-as usual (year 2004) conditions; or (3) project-generated emissions would comply with an approved greenhouse gas emissions plan (adopted statewide, regional, or local plan for reduction or mitigation of greenhouse gas emissions) or greenhouse gas mitigation program, which avoids or substantially reduces greenhouse gas emissions within the geographic area in which the project is located.

As discussed in Impact Assessment a and illustrated in **Table 3-14** above, the Project complies with the Bay Area Air Quality Management District's GHG emissions thresholds for significance. Consequently, implementation of the proposed Project is not anticipated to conflict with any applicable plan, policy, or regulation for reducing the emissions of GHGs, nor will the Project have a significant impact on the environment. The impacts would be considered less than significant.

3.10 Hazards and Hazardous Materials

Table 3-15. Hazards and Hazardous Materials Impacts

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

3.10.1 Environmental Setting and Baseline Conditions

3.10.1.1 Hazardous Materials

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies, and developers to comply with CEQA requirements in providing information about the location of existing hazardous materials release sites. Government Code (GC) Section 65962.5 requires the California Environmental Protection Agency (CalEPA) to develop at least annually an updated Cortese List. The Department of Toxic Substances Control (DTSC) is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List. DTSC's EnviroStor database provides DTSC's component of Cortese List data (DTSC, 2010). In addition to the EnviroStor database, the State Water Resources Control Board (SWRCB) Geotracker database provides information on regulated hazardous waste facilities in

California, including underground storage tank (UST) cases and non-UST cleanup programs, including Spills-Leaks-Investigations-Cleanups (SLIC) sites, Department of Defense (DOD) sites, and Land Disposal program.

A search of the DTSC EnviroStor database and the SWRCB Geotracker performed in July 2020 determined that there are no known active hazardous waste generators or hazardous material spill sites within the Project site or immediate surrounding vicinity.

3.10.1.2 Airports

The Fresno Yosemite International Airport is located approximately 19 miles southwest of the Project.

3.10.1.3 Emergency Response Plan

The Madera County Office of Emergency Services (OES) is the County's emergency management agency, responsible for coordinating multi-agency responses to complex, large-scale emergencies and disasters occurring within the unincorporated area of the County.

3.10.1.4 Sensitive Receptors

Nearby sensitive receptors consist of Hidden Lakes Estates residents who are beneficiaries of the Project.

3.10.2 Impact Assessment

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

b) Would the project 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?

Less than Significant Impact. Construction of the Project may involve the use of hazardous materials associated with construction equipment, such as diesel fuel, lubricants, and solvents. Any potential accidental hazardous materials spills during construction are the responsibility of the contractor to remediate in accordance with industry best management practices and State and county regulations. The Project will result in a less than significant impact to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

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

No Impact. The nearest school is approximately 5 miles away from the Project site.

d) Would the project 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?

No Impact. The Project does not involve land that is listed as a hazardous materials site pursuant to Government Code Section 65962.5 and is not included on a list compiled by the Department of Toxic Substances Control. A search of the DTSC EnviroStor database and the SWRCB Geotracker performed in July 2020 determined that there are no known hazardous waste generators or hazardous material spill sites or closed sites within the Project site or immediate surrounding vicinity. There will be no impact.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact. The Project is not located within an airport land use plan or within two miles of an airport. The Fresno Yosemite International Airport is located approximately 19 miles southwest of the Project. Replacement

water infrastructure would not be a safety hazard for people working in the area. Operation of the Project, and any construction noise would be temporary. There would be no impact.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less than Significant Impact. The Project would be executed in six phases, thereby reducing the impact that Project construction would have on emergency responses. Therefore, Project-related impacts to emergency evacuation routes or emergency response routes on local roadways would be considered less than significant.

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

Less than Significant Impact. The Project is located within a Wildland-Urban Interface Project construction will require the use of combustion engine vehicles, however best management practices already encourage vehicles are in good working order.

3.11 Hydrology and Water Quality

Table 3-16. Hydrology and Water Quality Impacts

Hydrology and Water Quality Impacts					
	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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 off-site;	☐	☐	☒	☐
	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?	☐	☐	☒	☐

3.11.1 Environmental Setting and Baseline Conditions

With the exception of the intake pumps, the existing system is 30 to 50 years old, and requires updates to address a recent compliance order issued by the SWRCB. The proposed Project is concerned only with improvements to the distribution system which serves the residential community of Hidden Lake Estates.

The topography of the project site and surrounding areas are characterized by steep slopes leading down to Millerton Lake. Folds in the steep topography form ephemeral drainages that carry stormwater during heavy rain events to the lake. Two main drainages occur within the project site, one is an ephemeral drainage and the other is an intermittent to perennial drainage that supports surface water and wetland vegetation where it crossed the project site.

The proposed water distribution line will cross over portions of the two small onsite drainages. These drainages are hydrologically connected to Millerton Lake, a known water of the United States and waters of the State, collectively referred to as "jurisdictional waters". These drainages appear to meet the jurisdictional requirements set forth by the USACE, CDFW, and the RWQCB.

3.11.2 Impact Assessment

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less than Significant Impact. The California Department of Water Resources (DWR) divides surface watersheds in California into hydrologic regions, which are further divided into Hydrologic Units and even small Hydrologic Areas within each hydrologic unit. The proposed Project is located within the Millerton Lake-San Joaquin River Hydrologic Unit (1804000613030)[13]. The groundwater in Madera County consist of two subbasins: Madera and Chowchilla subbasins[14].

The Project would not adversely affect surface or ground water quality. The construction contractor would be required to prepare and adhere to a Stormwater Pollution Prevention Plan (SWPPP) to prevent construction pollutants from entering receiving waters. Additionally, any activities within jurisdictional waters that would remove soil or place fill within these drainages would require all appropriate permits from the USACE, RWQCB, and CDFW prior to construction activities. As such, impacts to water quality would be less than significant.

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

No Impact. MD-1 utilizes surface water from Millerton Lake and does not rely on groundwater to supply the Hidden Lake Estates community with water. Additionally, proposed Project activities include water infrastructure upgrades to an old distribution system that was constructed in the 1950s. The proposed Project would have the same purpose and capacity as the existing water system for the community. As such there would be no impacts to groundwater supplies or interfere with The County of Madera Sustainable Groundwater Management Plan[15] and mitigation is not warranted.

c) Would the project 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 off-site.
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?

Less than Significant Impact. The Project may result in minor alterations in drainage patterns as a result of grading and backfilling areas of construction. Stream channels are generally connected during ordinary flows and/or flood flows. There are existing ephemeral and intermittent streams located within the Project area. Effects to and from the seasonal stream flows are expected to not be significant. Work would be conducted in the dry season and would not impede water flow or cause diversion of water flows. Once the

[13] Natural Resources Conservation Service (NRSC) USDA. 2018. (California Hydrologic Units). https://koordinates.com/layer/96058-california-hydrologic-units/ Accessed on September 19, 2020.
[14] Madera County Water and Natural Resources. https://www.maderacountywater.com/ Accessed on September 19, 2020.
[15] Madera Subbasin Sustainable Groundwater Management Act. Join Groundwater Sustainability Plan. 2020. https://koordinates.com/layer/96058-california-hydrologic-units/ Accessed on September 19, 2020.

Project is complete, the areas disturbed would be returned to pre-construction conditions and match the existing grade of the area, thereby allowing historic storm water to continue to flow in the same manner as it did prior to Project activities .Drainage in the area would also continue to percolate into the soil surrounding the Project area and other impervious surfaces. Sheet flow along developed areas would continue to be discharged to existing drainage systems. There are no new impervious surfaces proposed by the Project, therefore the Project would not result in an increase in run-off from baseline conditions.

In order to minimize erosion and run-off during construction activities, a SWPPP must be implemented, and the contractor shall be required to comply with all Cal/OSHA regulations regarding regular maintenance and inspection of equipment, spill prevention, and spill remediation in order to reduce the potential for incidental release of pollutants or hazardous substances onsite. Furthermore, any potential sources of polluted runoff, such as accidental hazardous materials spills, that may occur during construction shall be remediated in accordance with industry best management practices and State and County regulations. Additionally, activities within jurisdictional waters would require agency permit compliance for activities that would remove soil or place fill within these drainages. Therefore, all appropriate permits would be acquired from the USACE, RWQCB, and CDFW prior to construction activities. As such, impacts to drainage patterns and alteration of water courses would be less than significant. Mitigation is not warranted.

d) Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundations?

No Impact. The community of Hidden Lakes Estates is located on the bluff overlooking Millerton Lake. Although Friant Dam forms Millerton Lake, the project elevation is higher than the lake and is outside any potential flood areas. As shown in Figure 3-2 the Project is not within any FEMA flood zones[16] and are outside of tsunami and seiche zones areas identified within the State of California.[17] As such, there would be no impacts or release of pollutants due to project inundations of flood hazards, tsunami, or seiche zones and no mitigation is warranted.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less than Significant Impact. There are several plans that address surface water quality and groundwater management plans. Applicable water quality control plans for the County of Madera are included within the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins[18]. The County of Madera is currently in compliance with all facets of the water quality control plan. Additionally, the County of Madera has groundwater sustainability plans (GSA) for the Madera, Chowchilla and Delta-Mendota subbasins[19]. The County of Madera and the proposed Project activities are in compliance with all facets of the local GSAs As such, there would be no conflict with or obstruction of the implementation of the above mentioned plans and there would be no impact. Mitigation is not warranted.

[16] Federal Emergency Management Agency (FEMA). 2020. Flood Map No. 06029C3878E, effective 09/26/2008. https://msc.fema.gov/portal/search?AddressQuery=Lebec%2C%20CA#searchresultsanchor Accessed on September 19, 2020.
[17] California Department of Conservation. 2020. California Official Tsunami Inundation Map. https://maps.conservation.ca.gov/cgs/informationwarehouse/tsunami/ Accessed on September 19, 2020.
[18] California Regional Water Quality Control Board Central Valley Region (CVRWQCB). 2018. The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region Fifth Edition for the Sacramento River Basin and the San Joaquin River Basin. https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf Accessed on September 19, 2020.
[19] Madera County Water and Natural Resources. 2020. County GSAs. https://www.maderacountywater.com/ Accessed on September 19, 2020.

3.11.3 Federal Cross-Cutting Topic

Flood Plain Management- Executive Order Number 11988

The Federal Emergency Management Agency (FEMA) designates flood hazard and frequency for cities and counties on its Flood Insurance Rate Maps. The proposed project area is not within a designated 100-year floodplain, on a floodplain map, or otherwise designated by FEMA.

Rivers and Harbors Act

The Rivers and Harbors Act of 1899 prohibits construction of any bridge, dam, dike, or causeway over or in navigable waterways of the U.S., without Congressional approval. Under Section 10 of the Act, the building of any wharfs, piers, jetties, and other structures is prohibited without Congressional approval, and excavation or fill within navigable waters requires the approval of the Chief of Engineers. The U.S. Army Corps of Engineers (USACE) is authorized to issue permits for the discharge of refuse matter into or affecting navigable waters under Section 13 of the act.

The proposed project would not be constructed in a location that would affect a navigable waterway, requiring permit or approval by USACE.

Safe Drinking Water Act, Sole Source Aquifer Protection

The Safe Drinking Water Act (SOWA) required USEPA to establish criteria through which an aquifer may be declared a critical aquifer protection area. Since 1977, it has been used by communities to help prevent contamination of groundwater from federally funded projects. These aquifers are defined as "sole source aquifers." USEPA's Sole Source Aquifer (SSA) Program was established under Section 1424(e) of the SOWA. These are, essentially, aquifers that are the only drinking water supply for the population of a region.

SSA designation protects an area's groundwater resources by requiring USEPA to review all proposed projects within the designated area that will receive federal financial assistance. The SSA Program states that if USEPA determines an area to have an aquifer which is the sole or principal drinking water source for the area, that if contaminated would create a significant hazard to public health, a notice of that determination needs to be published in the Federal Register. After publication of any such notice, no commitment for federal financial aid may be applied for any project that the Administrator determines may contaminate the aquifer through a recharge zone, so as to create a significant hazard to public health (US EPA 2019).

The Fresno Sole Source Aquifer was designated by USEPA in 1979 (44 Federal Register 52751). USEPA has designated portions of the San Joaquin River and Kings River watersheds upstream from Friant Dam and the Fri ant-Kem Canal as a Stream flow Source Zone[20]. Figure 3 .10-1 shows the area encompassed by the Fresno SSA and Streamflow Source Zone.

Project construction would include excavation and other ground-disturbing activities which could cause erosion or sedimentation. The Project would be required to comply with County of Madera Public Works Standards and Specifications which would minimize the potential for erosion and impacts to the groundwater aquifer. Furthermore, the Project would not conflict with applicable water quality control plans or sustainable groundwater plan. As mentioned above, the Project would not violate applicable water quality standards, cause a waste discharge to occur, and would enable MD-1 to minimize water system losses. The proposed project would not result in any violation of water quality standards or waste discharge requirements. Implementation of the Project would not conflict with the purpose of the SSA or pose a threat to the groundwater aquifer used for drinking water purposes.

[20] USEPA. *Fresno Sole Source Aquifer: Designated Area.* Website: https://archive.epa.gov/region9/water/archive/web/pdf/fresno-ssa-map.pdf. Accessed July 2021.

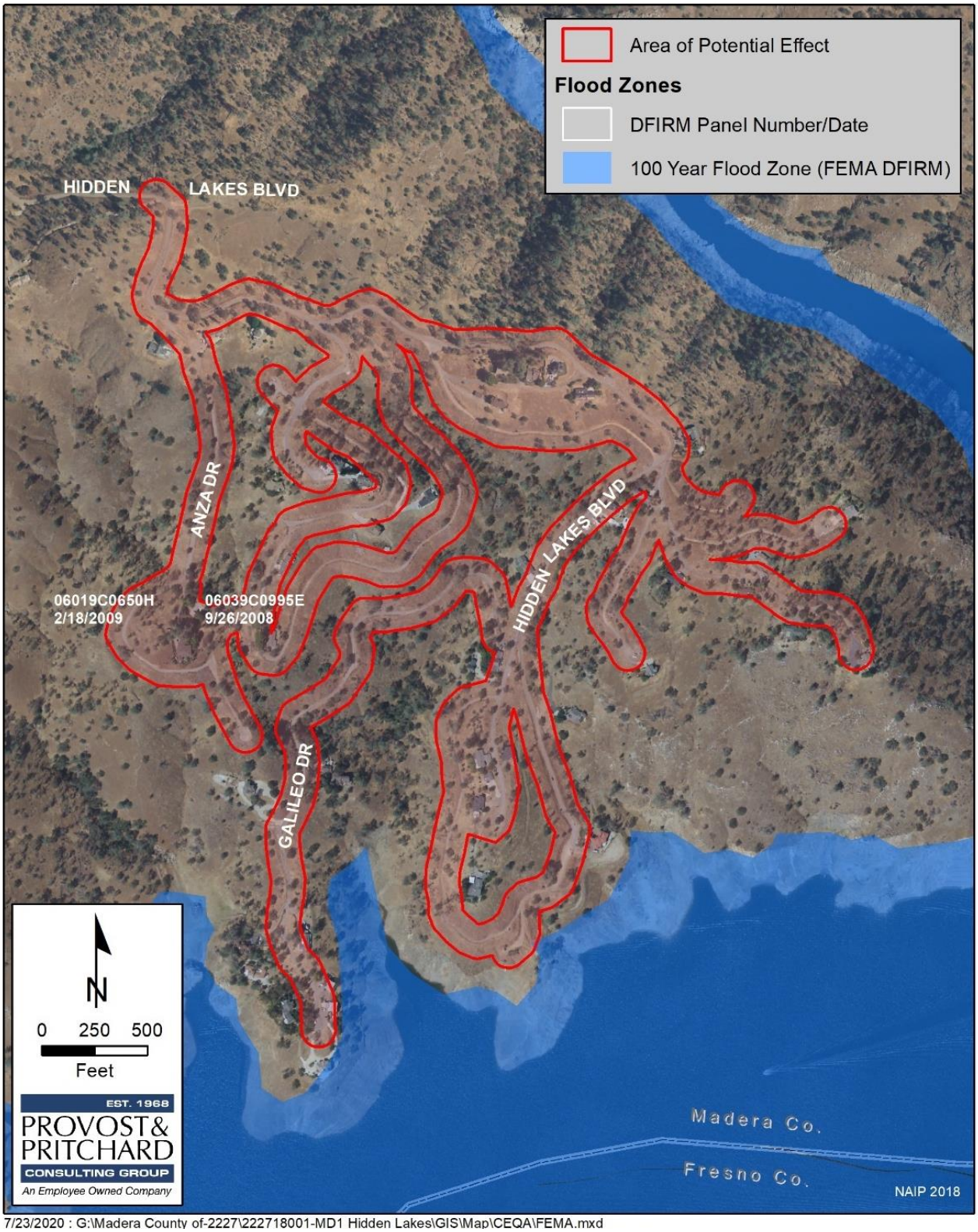

Figure 3-2. FEMA Map

3.12 Land Use and Planning

Table 3-17. Land Use and Planning Impacts

Land Use and Planning Impacts					
	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☐	☒	☐

3.12.1 Environmental Setting and Baseline Conditions

The Project is located within the unincorporated residential subdivision of Hidden Lakes Estate in southeastern Madera County. The Project site, consisting of the subdivision's roadways, is surrounded by scattered residential development, grazing land, and Millerton Lake to the south.

General Plan Land Use Designations and Zone Districts are illustrated in

Chapter 2 Project Description in **Figure 2-5** and **Figure 2-6**, respectively.

3.12.2 Impact Assessment

a) Would the project physically divide an established community?

No Impact. The Project does not include the permanent alteration of roads, trails, or paths. Partial road closures and detours during construction will provide for alternative routes. Implementation of the Project will not divide an established community. There would be no impact.

b) Would the project cause a significant environmental conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Less than Significant Impact. The project would be consistent with all applicable plans, policies, ordinances, and regulations, including those adopted for the purpose of avoiding or mitigating an environmental effect. Any impact would be less than significant.

3.12.3 Federal Cross-Cutting Topic

Coastal Zone Management Act

The Coastal Zone Management Act, enacted in 1972, is administered by the National Oceanic and Atmospheric Administration (NOAA) which provides management of the nation' s coastal resources. The California coastal zone generally extends 1,000 yards inland from the mean high tide line. The Project site is more than 100 miles from the coastline, therefore the Project would not conflict with the Coastal Zone Management Act.

3.13 Mineral Resources

Table 3-16. Mineral Resources Impacts

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

3.13.1 Baseline Conditions

The California Department of Conservation has not prepared a Mineral Land Classification Report in the Project area. The Madera County General Plan or any other appliable land use plan does not delineate locally important mineral resource recovery sites in the Project area.

3.13.2 Impact Assessment

a) Would the project 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) Would the project 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?

No Impact. There are no known mineral resources in the Project area. The removal of existing water distribution lines and replacement with lines would not result in potential significant loss of mineral resources that would be of value to the region and residents of the state. . There will be no impact.

3.14 Noise

Table 3-18. Noise Impacts

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

3.14.1 Environmental Setting and Baseline Conditions

The County of Madera General Plan sets forth goals and policies that are applicable to the proposed Project as they relate to noise impacts:

- Goal 7.A: To protect County residents from the harmful and annoying effects of exposure to excessive noise.
- Policy 7.A.2 Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed 60 dB L_{dn} within the outdoor activity areas of existing or planned noise-sensitive land uses and 45 dB L_{dn} in interior spaces of existing or planned noise-sensitive land uses.

3.14.2 Impact Assessment

a) Would the project result in 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?

Less than Significant Impact with Mitigation. The Project site is located adjacent to single-family residential lots. Construction of the Project is likely to occur during weekdays during daytime hours. The Federal Highway Administration (FHWA) has compiled noise measurement data regarding the noise-generating characteristics of various types of construction equipment. The table below provides a summary of these typical noise levels of commonly-used construction equipment as measured at a distance of 50 feet from the operating equipment.

Table 3-19. Typical Construction Equipment Noise Levels (in decibels)

Type of Equipment	Impact Device?	Specification Maximum Sound Levels for Analysis (50 feet)
Auger Drill Rig	No	85
Backhoe	No	80
Compactor	No	80
Dozer	No	85
Excavator	No	85
Grader	No	85

Sound levels attenuate as distance increases. Therefore, using the sound levels above, the equipment listed would be exceed the outdoor activity standard of 60 decibels when the equipment is located less than 889 feet away from outdoor areas. As the Project is likely to use construction equipment whose sound levels exceed the General Plan standard, the implementation of **Mitigation Measure NOI-1** below will cause the impact to noise levels and vibration will be less than significant.

Mitigation Measures

NOI-1: The County shall require the following as a condition of project approval to mitigate the adverse noise effects of construction-related activities for construction activities within 889 feet of a residence:

- Construction activities shall be restricted to the hours between 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 5:00 p.m. on Saturday, with no construction on Sundays or federal and state holidays; minor construction equipment servicing and maintenance shall be exempted from this restriction.
- During construction, mufflers shall be provided for all heavy construction equipment and all stationary noise sources in accordance with the manufacturers' recommendations.
- Stationary noise sources and staging areas shall be located as far as is feasible from existing residences, or contractors shall be required to provide additional noise reducing engine enclosures (with the goal of achieving approximately 10 dBA of reduction compared to uncontrolled engines).
- Air compressors and pneumatic equipment should be equipped with mufflers, and impact tools should be equipped with shrouds or shields.
- If for construction purposes, locating stationary construction equipment near existing residential uses is required, an eight-foot-tall sound rated fence should be erected between the equipment and the sensitive receptor. The fence should be located as close to the equipment as is feasible.
- Construction vehicle access routes shall be designed to minimize the impact on existing residences and occupied hospital facilities.
- A "construction liaison" shall be designated to ensure coordination between construction staff and neighbors to minimize disruptions due to construction noise. Occupants and property owners of residences within 889 feet of construction activity shall be notified in writing of the construction schedule and the contact information for the construction liaison.
- A qualified acoustical engineer should be retained during the construction phase of the project to determine if the noise levels generated from construction equipment at the project site to adjacent property lines are within the standards.

b) Would the project result in generation of excessive ground borne vibration or ground borne noise levels?

Less than Significant Impact. The Project will require trench excavations and back-filling and roadway re-grading and paving as part of development of the water infrastructure. Construction will use equipment listed in the Table above. The project will not require drilling into concrete. Impact devices are pieces of construction

equipment that create high levels of noise and vibration. The Federal Transportation Administration does not consider the above equipment as impact equipment. Each phase of construction will last approximately three months with all phases completed over a period of up to 18 years depending on funding availability. The project will not generate excessive ground borne vibration or ground borne noise. Impacts would be less than significant.

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?

No Impact. The Project is not located within an airport land use plan or within two miles of an airport. The Fresno Yosemite International Airport is located approximately 19 miles southwest. Furthermore, the Project does not involve the development of habitable structures or require the presence of permanent staff on-site. There would be no impact.

3.15 Population and Housing

Table 3-20. Population and Housing Impacts

Population and Housing Impacts					
Would the project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

3.15.1 Environmental Setting and Baseline Conditions

The Project area is composed of a residential subdivision area consisting of 203 residential lots, of which 49 lots are developed and receive potable water from the existing water distribution system.

3.15.2 Impact Assessment

a) Would the project 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) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The Project involves replacement of existing water distribution infrastructure that will accommodate planned development within the Hidden Lakes Estates subdivision; . the Project will not induce substantial unplanned growth through the new infrastructure. The goal of the Project is not to induce population growth, but rather to provide reliable drinking water to all existing subdivision lots. The Project is not intended to encourage population growth directly or indirectly, however the improved water system may have some bearing on rate of build-out of the subdivision. Implementation of the Project will not result in displacement of people or existing housing. The amount of drinking water produced will not change and new public roadways will not be built. The eight workers needed to complete the project is also minor and will not bring large population growth to the area. The operation of the system will also be performed by current employees. Therefore, there will be a less than significant impact.

3.15.3 Federal Cross-Cutting Topic

Environmental Justice Executive Order 12898

Executive Order (EO) 12898, entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued in 1994 and directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law.

USEPA has developed a mapping and screening tool called EJSCREEN that uses nationally consistent data to identify minority or low-income communities. According to EJSCREEN, the Project site is not in an environmental justice community[21]. In addition, the purpose of the Project would be to provide clean, reliable water to residents of the District. As the Project would directly benefit the local community only, no disproportional health of environmental effect would be imposed on minority or low income populations. The proposed project would not conflict with the purpose and objectives of EO 12898.

[21] USEPA. EJSCREEN. Website: https://ejscreen.epa.gov/mapper/. Accessed June 2021.

3.16 Public Services

Table 3-21. Public Services Impacts

Public Services Impacts					
	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
	Fire protection?	☐	☐	☐	☒
	Police protection?	☐	☐	☐	☒
	Schools?	☐	☐	☐	☒
	Parks?	☐	☐	☐	☒
	Other public facilities?	☐	☐	☐	☒

3.16.1 Environmental Setting and Baseline Conditions

Police Protection: The closest law enforcement agency is Madera County Sherriff's office, Tesoro Viejo Station, which is 9.3 miles southwest of the Project area.

School: The closest schools are Spring Valley Elementary and Minarets High Schools, which are approximately 5.1 and 6.2 miles northwest of the Project, respectively.

Parks: The nearest park is Millerton Lake, directly south of the Project area.

Other Public Facilities: The closest active landfill site in Madera County is Fairmead Landfill at 21739 Road 19, Chowchilla, which is approximately 34 miles west of the Project area.

3.16.2 Impact Assessment

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

No Impact. The Project proposes to replace existing water infrastructure for an existing residential subdivision. The Project would not require the addition or alteration of any public services. The Project area would utilize existing services provided by the County. There would be no impact.

3.17 Recreation

Table 3-22. Recreation Impacts

Recreation Impacts					
	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
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?	☐	☐	☐	☒

3.17.1 Environmental Setting and Baseline Conditions

Millerton Lake is directly south of the Project area.

3.17.2 Impact Assessment

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?

No Impact. The Project proposes to replace existing water infrastructure. It would not increase the demand for recreational facilities or put a strain on the existing recreational facilities. Existing employees will operate and maintain the system. No population growth would be associated with the Project or be necessitated by the Project. There would be no impact.

3.18 Transportation

Table 3-23. Transportation Impacts

Transportation Impacts					
	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b)	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?	☐	☐	☒	☐

3.18.1 Environmental Setting and Baseline Conditions

The Project area consists of a residential subdivision in eastern Madera County. Due to the rural nature of the Project area, there are no pedestrian or bicycle facilities, nor transit, airport, or airstrip facilities. State Route 41 and County Roads 208 and 211 are officially designated as emergency evacuation routes to be used by the residents of Hidden Valley Estates during an emergency evacuation[22].

3.18.2 Impact Assessment

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

No Impact. Construction traffic associated with the Project would be minimal and temporary, each phase lasting approximately three months. With the replacement of the aging infrastructure with new infrastructure maintenance and operations activities and related traffic will be less than baseline conditions. There would not be a significant adverse effect to existing roadways in the area. Road closures and detours will affect a small portion the subdivision. These construction-related impacts would be temporary and alternate routes will be available for use by vehicles, pedestrians, and bicycles. All disturbances to roadways, driveways, sidewalks, curb, and gutter incurred from the Project will be temporary and restored to pre-construction conditions.

There are no bus routes or sidewalks in the Project area. As a result, the Project will not conflict with a 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)?

No Impact. This Project is not a land use project and therefore will have no significant bearing on an increase or decrease in vehicle miles traveled that would warrant specific vehicle miles traveled reduction measures. The

[22] Madera County. Community Wildfire Protection Plan. 2008. https://www.maderacounty.com/home/showdocument?id=3608. Accessed September 2020.

Project is designed to improve water system reliability, which will reduce the amount of maintenance trips necessary. Further, there are no sidewalks or bus routes in the area; foot traffic and bike traffic are very limited. As a result, the project may be determined, consistent with Section 15064.3, to not have a significant impact on transportation impacts.

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less than Significant Impact. No new roadway design features are associated with the Project. Other construction hazards will be minimized with signage and enforcement of proper personal protective equipment worn by contractors and inspectors. This may include signage, cones, and flagging to reduce any hazards during construction. The new driveway to be constructed at the well site is designed according to state and county standards.

d) Would the project result in inadequate emergency access?

Less than Significant Impact. All potential disturbances to roadways during construction will be temporary and restored to pre-construction conditions. Road closures and detours will be phased and thus affect a small portion of the Project area. Partial access will occur during the construction phase of the Project. There will be alternate routes available for emergency vehicles. Therefore, overall potential Project-related impacts to emergency access on local roadways would be considered less than significant.

3.19 Tribal Cultural Resources

Table 3-24. Tribal Cultural Resources Impacts

Tribal Cultural Resources Impacts				
Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) 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 the 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.	☐	☒	☐	☐

3.19.1 Environmental Setting and Baseline Conditions

An intensive Class III archaeological inventory/Phase I survey was conducted for the Project by ASM Affiliates, Inc. in July 2019. The field methods employed included intensive pedestrian examination of the ground surface for evidence of archaeological sites in the form of artifacts, surface features (such as bedrock mortars, historical mining equipment), and archaeological indicators (e.g., organically enriched midden soil, burnt animal bone); the identification and location of any discovered sites, should they be present; tabulation and recording of surface diagnostic artifacts; site sketch mapping; preliminary evaluation of site integrity; and site recording.

Because the water distribution system falls within existing paved and dirt roads, 15-m wide survey transects were walked along each side of the roads, wherever possible due to slope considerations, providing buffers and the best coverage for potential cultural resources. Multiple transects on each side of the road were walked where grass covered the road buffers, with special attention paid to rodent back-dirt piles and other clear areas to provide adequate survey coverage.

A records search was conducted at the Southern San Joaquin Valley Information Center, California State University, Bakersfield. This indicated that the Area of Potential Effect (Project area) had not been previously surveyed and that no cultural resources of any kind were known to exist within it. The NAHC Sacred Lands Files were also consulted, with negative results. Outreach letters and follow-up calls were sent to tribal

organizations on the NAHC contact list. The North Fork Rancheria of Mono Indians responded in writing. They have requested an on-site visit and the presence of tribal monitors during future ground disturbance activities.

3.19.2 Impact Assessment

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:

a-i) Listed or eligible for listing in the California Register of Historical Resources, or in the local register of historical resources as defined in Public Resources Code section 5020.1(k), or

a-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.

Less than Significant with Mitigation. An intensive Class III inventory/Phase I survey demonstrated that the Project area does not contain significant or unique historical resources or historic properties. A determination of no effect is therefore recommended for any future implementation of a project that would improve the existing water distribution system. However, the North Fork Rancheria of Mono Indians are concerned about potential adverse impacts or effects to buried tribal cultural resources. Per their request, it is recommended that an on-site visit be conducted to any future implementation project area, and that a tribal monitor be present during ground disturbance. Mitigation measure **TCR-1** and **CUL-2** will ensure impacts remain less than significant.

TCR-1: A qualified North Fork Rancheria of Mono Indians tribal representative shall be invited to be present to monitor all ground disturbing activities of each phase. In the unlikely event that potential tribal cultural resources are discovered during ground disturbing activities any phase of construction, a qualified archaeologist shall be consulted to evaluate the find and assist with the development of an appropriate treatment plan, if warranted, in close coordination with Madera County/MD-1 officials.

3.20 Utilities and Service Systems

Table 3-25. Utilities and Service Systems Impacts

Utilities and Service Systems Impacts					
	Would the project:	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
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?	☐	☐	☒	☐

3.20.1 Environmental Setting and Baseline Conditions

3.20.1.1 Landfills

The Project area is served by the Fairmead Landfill which is located approximately 30 miles west. The landfill, as of 2004, had a remaining capacity of 5,552,894 cubic yards, with a permitted monthly throughput of 1,200 tons per day. It has an anticipated closure date of December 31, 2028.

3.20.2 Impact Assessment

a) Would the project 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?

No Impact. The Project does not include or require the relocation or construction of new wastewater treatment, stormwater drainage, electrical, natural gas, or telecommunication infrastructure. There will be no impact.

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

No Impact. The Project will replace aging and leaking water distribution infrastructure with new infrastructure to serve existing residential lots. No changes to water supplies will occur as a result of the maintenance project.

c) Would the project 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?

No Impact. No wastewater treatment demand will be generated by the Project construction or operation.

d) Would the project 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) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less than Significant Impact with Mitigation. There will be no solid waste associated with the operational phase of the Project. Any solid waste associated with construction would be minimal and ideally recycled or carried out. Any materials not recyclable will be sent to the Fairmead Landfill, which has sufficient capacity for the Project. However, due to the phasing of the Project, this landfill may be closed. Therefore, implementation of USS-1 would ensure any impacts remain less than significant.

> **USS-1:** Prior to construction of a phase that extends beyond 2028, the County shall evaluate additional landfill locations and shall not approve further phases that could contribute solid waste to a landfill that is at capacity until additional capacity is provided.

3.21 Wildfire

Table 3-26. Wildfire Impacts

Wildfire Impacts					
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:		**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
b)	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrollable spread of 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?	☐	☐	☒	☐

3.21.1 Environmental Setting and Baseline Conditions

The Project area is located within an SRA and is rated as a High Fire Hazard Severity Zone by CAL FIRE[23]. Baseline conditions consist of a residential subdivision with aging water infrastructure and 26 fire hydrants.

3.21.2 Impact Assessment

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?
Less than Significant Impact with Mitigation.
State Route 41 and County Roads 208 and 211 are officially designated as emergency evacuation routes to be used by the residents of Hidden Valley Estates during an emergency evacuation[24]. Slow-moving construction trucks along Hildreth Road and Hidden Lake Boulevard and those entering and exiting the Project area along Hidden Lake Boulevard as well as closures of narrow roadways during construction could delay the movement of emergency vehicles or interfere with evacuation of the proposed project area. However, the implementation of **WILD-1** would reduce impacts to a less than significant level by requiring a plan for notifications and a process for communication with affected residents and landowners, before the start of construction; requiring notification to the public, advising them of alternative routes; providing notification to administrators of police and fire stations, and ambulance service providers of the timing, location, and duration of construction activities

[23] CAL FIRE. Fire Hazard Severity Zones in SRA. Madera County. 2007. https://osfm.fire.ca.gov/media/6700/fhszs_map20.pdf. Accessed September 2020.
[24] Madera County. Community Wildfire Protection Plan. 2008. https://www.maderacounty.com/home/showdocument?id=3608. Accessed September 2020.

and the locations of detours and lane closures, where applicable; and maintaining access for emergency vehicles in and/or adjacent to roadways affected by construction activities at all times.

> **WILD-1 (Traffic Control Plan):** Before construction begins, Madera County or its construction contractor will prepare and implement a traffic control plan to minimize construction-related traffic safety hazards on the affected roadways and ensure adequate access for emergency responders. Madera County or its contractor will coordinate development and implementation of this plan with jurisdictional agencies, as appropriate. The traffic control plan will, at a minimum:
>
> - include a discussion of work hours, haul routes, work area delineation, traffic control, and flagging;
> - determine the need to require workers to park personal vehicles at an approved staging area and take only necessary project vehicles to the work sites;
> - develop and implement a plan for notifications and a process for communication with affected residents and landowners before the start of construction: public notification will include posting of notices and appropriate signage of construction activities; written notification will include the construction schedule, the exact location and duration of activities on each street (e.g., which roads/lanes and access points/driveways will be blocked on which days and for how long), and contact information for questions and complaints;
> - provide notification to the public advising them of alternative routes that may be available to avoid delays;
> - ensure that appropriate warning signs are posted in advance of construction activities, alerting bicyclists and pedestrians to any closures of non-motorized facilities;
> - provide notification to administrators of police and fire stations, ambulance service providers, and recreational facility managers of the timing, location, and duration of construction activities and the locations of detours and lane closures, where applicable;
> - maintain access for emergency vehicles in and/or adjacent to roadways affected by construction activities at all times; and,
> - require the repair and restoration of affected roadway rights-of-way to their original condition after construction is completed.

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?

Less than Significant Impact. Project construction would involve some soil disturbance and grading for installation of the underground water infrastructure. During construction, equipment and on-site diesel fuel could pose a risk for wildfire, by possible ignition sources such as internal combustion engines, gasoline-powered tools, and equipment that could produce a spark, fire, or flame. However, contractors would have to comply with Sections 4427, 4428, 4431, and 4442 of the Public Resources Code (PRC)[25]. During construction, contractors would be responsible for monitoring and safety measures, in compliance with applicable PRC requirements. Additionally, the proposed project site also would increase the number of fire hydrants to 51, approximately doubling the exist number. Impacts would therefore be less than significant.

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

No Impact. The primary purpose of the Project is to replace existing infrastructure, which would reduce the need for maintenance trips. Therefore, the Project would not exacerbate fire risk.

[25] More information on these regulations can be found at https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PRC&division=4.&title=&part=2.&chapter=6.&article=2. Accessed September 2020.

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?

Less than Significant Impact. The proposed project would replace existing underground water infrastructure. While excavation will occur in order to install new pipelines, the existing right-of-way would be returned to its original grade. Impacts would be minimal, temporary, and phased. As such, the risk downslope flooding or landslide as result of post-fire slope instability or drainage changes would not exacerbate existing conditions, and thus be less than significant.

3.22 CEQA Mandatory Findings of Significance

Table 3-27. Mandatory Findings of Significance Impacts

Mandatory Findings of Significance Impacts					
	Does the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	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)	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)	Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

3.22.1 Impact Assessment

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?

Less than Significant Impact with Mitigation Incorporated. The analysis conducted in this Initial Study/Mitigated Negative Declaration results in a determination that the Project, with incorporation of mitigation measures, will have a less than significant effect on the environment. The potential for impacts to biological resources, cultural resources, noise, tribal cultural resources, and wildfire from the implementation of the proposed Project will be less than significant with the incorporation of the mitigation measures discussed in **Chapter 3 Impact Analysis**. Accordingly, the proposed Project will involve no potential for significant impacts through: the degradation of the quality of the environment, the reduction in the habitat or population of fish or wildlife, including endangered plants or animals, 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 a major period 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)?

Less than Significant Impact. CEQA Guidelines Section 15064(i) States that a Lead Agency shall consider whether the cumulative impact of a project is significant and whether the effects of the project are cumulatively considerable. The assessment of the significance of the cumulative effects of a project must, therefore, be conducted in connection with the effects of past projects, other current projects, and probable future projects. The proposed Project would include the replacement of existing water infrastructure. The Project is intended to correct water reliability issues experienced by the residential subdivision. Trenching will take place in County right-of-way and then will be reconstructed per County road standards. There are no other known projects occurring in the vicinity. The Project combined with past, present, and future projects will not contribute to significant cumulative effects to Air Quality, Greenhouse Gases, Noise or Traffic.

Implementation of the Project would not result in significant cumulative impacts and all potential impacts would be reduced to less than significant through the implementation of mitigation measures, regulatory requirements, and standard best management practices.

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

Less than Significant Impact. The Project in and of itself would not create a significant hazard to the public or the environment. On the contrary, implementation of the Project would correct water quality and reliability issues experienced by the residential subdivision. Construction-related air quality/dust exposure impacts could occur temporarily as a result of project construction. Dust suppression measures during excavation, grading, and site preparation activities will be implemented consistent with SJVAPCD Regulation VIII – Fugitive Dust Prohibitions to limit air quality/dust exposure impacts. Noise impacts will be addressed through implementation of best management practices. Wildfire impacts will be addressed through implementation of a Traffic Control Plan. Implementation of basic regulatory requirements identified in this IS/MND would ensure that impacts are less than significant. Therefore, the proposed Project would not have any direct or indirect adverse impacts on humans. This impact would be less than significant.

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3.23 Determination: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

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

☒ 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.

_____ _____

Signature Date

_____

Printed Name/Position

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Chapter 4 Mitigation Monitoring and Reporting Program

This Mitigation Monitoring and Reporting Program (MMRP) has been formulated based upon the findings of the Initial Study/Mitigated Negative Declaration (IS/MND) for the MD-1 Hidden Lakes Water Distribution Project in unincorporated Madera County. The MMRP lists mitigation measures recommended in the IS/MND for the Project and identifies monitoring and reporting requirements.

Table 4-1 presents the mitigation measures identified for the proposed Project. Each mitigation measure is numbered with a symbol indicating the topical section to which it pertains, a hyphen, and the impact number. For example, AIR-2 would be the second mitigation measure identified in the Air Quality analysis of the IS/MND.

The first column of **Table 4-1** identifies the mitigation measure. The second column, entitled "When Monitoring is to Occur," identifies the time the mitigation measure should be initiated. The third column, "Frequency of Monitoring," identifies the frequency of the monitoring of the mitigation measure. The fourth column, "Agency Responsible for Monitoring," names the party ultimately responsible for ensuring that the mitigation measure is implemented. The last columns will be used by Madera County to ensure that individual mitigation measures have been complied with and monitored.

Table 4-1. Mitigation Monitoring and Reporting Program

Mitigation Measure/Condition of Approval	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
Biological Resources					
BIO-1 (WEAP Training): Prior to initiating construction activities (including staging and mobilization), all personnel associated with Project construction shall attend mandatory Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in identifying special status resources that may occur in the Project area. The specifics of this program shall include identification of the sensitive species and suitable habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. This training will specifically discuss hoover's calycadenia, madera leptosiphon, bald and golden eagles, crotch bumble bee, California tiger salamander, pallid, spotted and mastiff bats. A fact sheet conveying this information, along with photographs or illustrations of sensitive species with potential to occur onsite, shall also be prepared for distribution to all contractors, their employees, and all other personnel involved with construction of the Project. All employees shall sign a form documenting that they have attended WEAP training and understand the information presented to them.					
BIO-2 (Construction Operational Hours): Construction shall be conducted during daylight hours to reduce disturbance to wildlife that could be foraging within work areas.					
BIO-3 (BMPs): The Project proponent will ensure that all workers employ the following best management practices (BMPs) in order to avoid and minimize potential impacts to special status species:					

Mitigation Measure/Condition of Approval	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
a) Vehicles shall observe a 15-mph speed limit while on unpaved access routes. b) Workers shall inspect areas beneath parked vehicles and staged piping and equipment prior to mobilization. If special status species are detected beneath vehicles, the individual will either be allowed to leave of its own volition or will be captured by the qualified biologist (must possess appropriate collecting/handling permits) and relocated out of harm's way to the nearest suitable habitat beyond the influence of the Project work area. "Take" of listed (rare, threatened, or endangered) is prohibited. If a listed species is observed within the Project area, the biologist will stop work and contact the appropriate regulatory agency (CDFW and/or USFWS) for guidance on how to proceed. c) The presence of any special status species and/or any wildlife mortalities will be reported to the Project's designated biologist and the appropriate regulatory agencies (CDFW, USFWS, California State Parks Department, Tejon Ranch Conservancy, etc.).					
BIO-4 (Avoidance): The Project's construction activities shall occur, if feasible, between September 1 and January 31 (outside of nesting bird season) in an effort to avoid impacts to listed species.					
BIO-5 (Minimization): If complete avoidance is not possible, then a qualified biologist shall identify all avoidance areas and establish buffer zones of sufficient size around these areas to eliminate any unnecessary disturbance to the avoided plants during construction. Furthermore, construction fencing will be placed around the buffer zones, as directed by the biologist.					

Mitigation Measure/Condition of Approval	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
BIO-6 (Plant Salvage): Areas occupied by special status plant species that cannot be avoided will require a salvage effort directed by a qualified botanist. The salvage effort will include the collection of seed and topsoil. Seed will be collected at a time of year when it is most prolific and stored in a ventilated container in a cool dry location. Soil will be collected and stockpiled at a nearby location. The stockpiled soil and then the seed will be returned to the disturbed area in which it was collected once construction in the area is complete.					
BIO-7 (Pre-construction Survey): A qualified biologist shall conduct pre-construction surveys specific to the following species: **a) Nesting Birds.** If activities must occur within nesting bird season (February 1 to August 31), the survey will be conducted within 10 days prior to the start of construction. The survey shall include the proposed work area and surrounding lands within 500 feet by a qualified biologist. The survey area will encompass the site and accessible surrounding lands within 250 feet for nesting migratory birds and 500 feet for raptors (i.e. birds of prey). If no active nests are observed, no further mitigation is required. Raptor nests are considered "active" upon the nest-building stage. All other nests are considered "active" by the presence of eggs or young. **b) Herpets; Mammals; and Bees.** A pre-construction survey within 100 feet of the Project work areas will be performed within 30 days prior to vegetation clearing or ground disturbing activities for the crotch bumble bee, California tiger salamander, pallid, spotted and mastiff bats. Environmentally sensitive areas will be flagged for avoidance. If suitable habitat for regionally occurring special status					

Mitigation Measure/Condition of Approval	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
species is detected during pre-construction surveys, construction monitoring may be required.					
BIO -8 (Establish Buffers): On discovery of any active nests or listed species near work areas, the biologist shall determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of the species in question.. Construction buffers shall be identified with flagging, fencing, or other easily visible means, and shall be maintained until the biologist has determined that the nestlings have fledged, or construction has finished in that area.					
BIO-9 (Monitor): A qualified biologist will conduct a pre-activity clearance survey each day and remain onsite to oversee all vegetation clearing and ground disturbing activities conducted within suitable habitat for special status species that were identified in the pre-construction surveys (BIO 5 a-b). The biological monitor must possess required collecting/handling permits. If a special status species is observed within Project area, the biologist will stop work order and the individual will either be allowed to leave of its own volition or will be captured by the qualified biologist and relocated out of harm's way to the nearest suitable habitat beyond the influence of the Project work area. "Take" of listed (rare, threatened, or endangered) is prohibited. If a listed species is observed within the Project area, the biologist will stop work and contact the appropriate regulatory agency (CDFW and/or USFWS) for guidance on how to proceed.					
BIO-10 (Take Authorization): If any of the above mitigations are infeasible, take authorization from CDFW and USFWS must be obtained and the required mitigations presented in the take permits					

Mitigation Measure/Condition of Approval	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
issued from these agencies must be adhered to. While such mitigations are project-specific, typical mitigation requirements of these permits include some form of compensatory mitigation, as well as avoidance and minimization measures such as construction monitoring by an approved biologist, mandatory capping of pipes, covering trenches, and maintaining escape ramps in trenches.					
Cultural Resources					
CUL-1: During ground disturbance of each phase, a tribal monitor shall be present. In the unlikely event that cultural resources are discovered during the construction and operation of any future implemented project, however, it is recommended that an archaeologist be contacted to evaluate the find and to assist with the development of a treatment plan, if warranted.					
CUL-2: In the event that any human remains are discovered on the Project site, the Kings County Coroner must be notified of the discovery (California Health and Safety Code, Section 7050.5) and all activities in the immediate area of the find or in any nearby area reasonably suspected to overlie adjacent human remains must cease until appropriate and lawful measures have been implemented. If the Coroner determines that the remains are not recent, but rather of Native American origin, the Coroner shall notify the Native American Heritage Commission (NAHC) in Sacramento within 24 hours to permit the NAHC to determine the Most Likely Descendent of the deceased Native American					
Noise					
NOI-1: The County shall require the following as a condition of project approval to mitigate the adverse noise effects of construction-related activities: • Construction activities shall be restricted to the hours between 7:00 a.m. and 7:00 p.m., Monday through Friday, and between 9:00 a.m. and 7:00 p.m. on Saturday, with no construction on					

Mitigation Measure/Condition of Approval	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
Sundays or federal and state holidays; minor construction equipment servicing and maintenance shall be exempted from this restriction. • During construction, mufflers shall be provided for all heavy construction equipment and all stationary noise sources in accordance with the manufacturers' recommendations. • Stationary noise sources and staging areas shall be located as far as is feasible from existing residences, or contractors shall be required to provide additional noise reducing engine enclosures (with the goal of achieving approximately 10 dBA of reduction compared to uncontrolled engines). • Air compressors and pneumatic equipment should be equipped with mufflers, and impact tools should be equipped with shrouds or shields. • If for construction purposes, locating stationary construction equipment near existing residential uses is required, an eight-foot-tall sound rated fence should be erected between the equipment and the sensitive receptor. The fence should be located as close to the equipment as is feasible. • Construction vehicle access routes shall be designed to minimize the impact on existing residences and occupied hospital facilities. • A "construction liaison" shall be designated to ensure coordination between construction staff and neighbors to minimize disruptions due to construction noise. Occupants and property owners of residences within 400 feet of construction activity shall be notified in writing of the construction schedule and the contact information for the construction liaison. • A qualified acoustical engineer should be retained during the construction phase of the project to determine if the noise levels generated from construction equipment at the project site to adjacent property lines are within the standards.					

Mitigation Measure/Condition of Approval	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
Tribal Cultural Resources					
TCR-1: A qualified North Fork Rancheria of Mono Indians tribal representative shall be invited to be present to monitor all ground disturbing activities of each phase. In the unlikely event that potential tribal cultural resources are discovered during ground disturbing activities any phase of construction, a qualified archaeologist shall be consulted to evaluate the find and assist with the development of an appropriate treatment plan, if warranted, in close coordination with Madera County/MD-1 officials.					
Utilities and Service Systems					
USS-1: Prior to construction of a phase that extends beyond 2028, the County shall evaluate additional landfill locations and shall not approve further phases that could contribute solid waste to a landfill that is at capacity until additional capacity is provided.					
Wildfire					
WILD-1 (Traffic Control Plan): Before construction begins, Madera County or its construction contractor will prepare and implement a traffic control plan to minimize construction-related traffic safety hazards on the affected roadways and ensure adequate access for emergency responders. Madera County or its contractor will coordinate development and implementation of this plan with jurisdictional agencies, as appropriate. The traffic control plan will, at a minimum: • include a discussion of work hours, haul routes, work area delineation, traffic control, and flagging; • determine the need to require workers to park personal vehicles at an approved staging area and take only necessary project vehicles to the work sites; • develop and implement a plan for notifications and a process for communication with affected residents and landowners before the start of construction: public notification will include posting of notices and appropriate signage of construction					

Mitigation Measure/Condition of Approval	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
activities; written notification will include the construction schedule, the exact location and duration of activities on each street (e.g., which roads/lanes and access points/driveways will be blocked on which days and for how long), and contact information for questions and complaints; • provide notification to the public advising them of alternative routes that may be available to avoid delays; • ensure that appropriate warning signs are posted in advance of construction activities, alerting bicyclists and pedestrians to any closures of non-motorized facilities; • provide notification to administrators of police and fire stations, ambulance service providers, and recreational facility managers of the timing, location, and duration of construction activities and the locations of detours and lane closures, where applicable; • maintain access for emergency vehicles in and/or adjacent to roadways affected by construction activities at all times; and, • require the repair and restoration of affected roadway rights-of-way to their original condition after construction is completed.					

Chapter 5 Alternatives

This chapter was designed solely for the purposes of compliance with federal cross-cutting requirements for California Department of Water Resources, Drinking Water State Revolving Fund (DWSRF) regulations, which require that projects requesting funding explain the rationale behind the Project, and not an alterative to the Project, including not implementing the Project at all. This alternatives analysis must include a range of feasible alternatives, including not implementing the Project at all.

5.1 Alternative 1: No Project

This alternative involves doing nothing. No further use of resources for planning or construction would be required. There would be no improvement to the MD-1 water distribution system. This alternative does not address the problems currently experienced by MD-1 (i.e. waste of water through leaking pipes and lack of water metering, potential lead contamination if the joint caulking deteriorates, noncompliance with SBx7-7, and continued operational challenges).

5.2 Alternative 2: Project Constructed in a Single Phase

This alternative proposes to construct the Project in a single phase, rather than the proposed six (6) phases. This alternative was not chosen ultimately for financing purposes.

5.3 Alternative 3: Consolidation with Nearest Water System

Consolidation with another system was preliminarily evaluated to determine viability. The nearest public water system located within Friant, CA, is 10 miles away via public roadways or 6 miles if a direct route across private property could be secured.

5.4 Comparison of Alternatives

The table below depicts the anticipated environmental impacts of the Project with the alternatives mentioned above. For each topic, the most severe impact finding is noted and other impacts identified in Chapter 3. The No Project alternative is not listed below as there would be no impact from not implementing the Project.

Topic	Proposed Project	Single-Phase	Consolidation
Aesthetics	Less than Significant Impact	Same as Proposed Project	Same as Proposed Project
Agriculture and Forestry	No Impact	Same as Proposed Project	Same as Proposed Project
Air Quality	Less than Significant Impact	Same as Proposed Project	Same as Proposed Project
Biological Resources	Less than Significant with Mitigation	Same as Proposed Project	Unknown and Potentially Significant Impact
Cultural Resources	Less than Significant with Mitigation	Same as Proposed Project	Unknown and Potentially Significant Impact

Energy	Less than Significant Impact	Same as Proposed Project	Same as Proposed Project
Geology and Soils	Less than Significant Impact	Same as Proposed Project	Same as Proposed Project
Greenhouse Gas Emissions	Less than Significant Impact	Same as Proposed Project	Same as Proposed Project
Hazard and Hazardous Materials	Less than Significant Impact	Same as Proposed Project	Same as Proposed Project
Hydrology and Water Quality	Less than Significant Impact	Same as Proposed Project	Same as Proposed Project
Land Use & Planning	Less than Significant Impact	Same as Proposed Project	Same as Proposed Project
Minerals	No Impact	Same as Proposed Project	Same as Proposed Project
Noise	Less than Significant with Mitigation	Same as Proposed Project	Same as Proposed Project
Population & Housing	No Impact	Same as Proposed Project	Same as Proposed Project
Public Services	No Impact	Same as Proposed Project	Same as Proposed Project
Recreation	No Impact	Same as Proposed Project	Same as Proposed Project
Transportation	Less than Significant Impact	Same as Proposed Project	Same as Proposed Project
Tribal Cultural Resources	Less than Significant with Mitigation	Same as Proposed Project	Unknown and Potentially Significant Impact
Utilities and Service Systems	Less than Significant with Mitigation	Same as Proposed Project	Same as Proposed Project
Wildfire	Less than Significant with Mitigation	Same as Proposed Project	Same as Proposed Project

Consolidation with the nearest public water system, located six to ten miles away in Friant, CA, would pose unknown and thus potentially significant impacts. These are further described below:

5.4.1 Biological Resources

Potential impacts to special-status species, wetlands riparian and sensitive habitats, or other biological resources could vary based on the alignment of the consolidation and subsequently the area of project effect associated with its construction. The analysis conducted for the Project found that multiple federal and/or State special-status species may inhabit the Project area. The specific locations where they may reside would depend on site-specific conditions and habitat features present in the area.

Tables 3-8 and 3-9 shows the species that may be found in the Project area. Because several special-status species may occur, implementation of a water system consolidation may adversely affect local populations, habitats, or migratory paths. Other features, including wetlands or other waters the United States, riparian vegetation, and other habitat features also occur in the vicinity of the MD-l service area. Consolidating the water system through a location different from what was originally analyzed may adversely affect these features, unless mitigated.

5.4.2 Cultural Resources

Consolidation with the nearest public water system could potentially adversely affect unknown cultural resource that may occur along its alignment. While the cultural survey found no cultural materials in the Project Area, this same finding cannot be inferred to other locations, especially ones located six to ten miles away, without the preparation of a site-specific survey.

Appendix A

CalEEMod Air Quality and Greenhouse Gas Emissions Output

MD-1 Hidden Lakes Water Distribution Project

Madera County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	15.65	Acre	15.65	681,714.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.9	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2040
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - APE (93.9 acres) divided by 6 phases = 15.65 acres.

Construction Phase - Each construction phase is expected to take 3 months.

Area Coating - No parking striping is proposed.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	40903	0
tblConstructionPhase	NumDays	30.00	33.00
tblConstructionPhase	NumDays	20.00	33.00

tblConstructionPhase	PhaseEndDate	2/11/2021	2/16/2021
tblConstructionPhase	PhaseEndDate	3/11/2021	4/2/2021
tblConstructionPhase	PhaseStartDate	2/12/2021	2/17/2021
tblGrading	AcresOfGrading	82.50	75.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1137	0.9810	0.7762	1.4700e-003	0.1463	0.0440	0.1903	0.0608	0.0405	0.1013	0.0000	129.2776	129.2776	0.0400	0.0000	130.2763
Maximum	**0.1137**	**0.9810**	**0.7762**	**1.4700e-003**	**0.1463**	**0.0440**	**0.1903**	**0.0608**	**0.0405**	**0.1013**	**0.0000**	**129.2776**	**129.2776**	**0.0400**	**0.0000**	**130.2763**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1137	0.9810	0.7762	1.4700e-003	0.1463	0.0440	0.1903	0.0608	0.0405	0.1013	0.0000	129.2775	129.2775	0.0400	0.0000	130.2761
Maximum	**0.1137**	**0.9810**	**0.7762**	**1.4700e-003**	**0.1463**	**0.0440**	**0.1903**	**0.0608**	**0.0405**	**0.1013**	**0.0000**	**129.2775**	**129.2775**	**0.0400**	**0.0000**	**130.2761**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	1.0920	1.0920
2	**4-1-2021**	**6-30-2021**	0.0111	0.0111
		Highest	1.0920	1.0920

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2021	2/16/2021	5	33	
2	Paving	Paving	2/17/2021	4/2/2021	5	33	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 15.65

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	2	8.00	158	0.38
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Grading	Scrapers	2	8.00	367	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1391	0.0000	0.1391	0.0589	0.0000	0.0589	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0692	0.7656	0.5095	1.0200e-003		0.0328	0.0328		0.0301	0.0301	0.0000	89.9167	89.9167	0.0291	0.0000	90.6437
Total	**0.0692**	**0.7656**	**0.5095**	**1.0200e-003**	**0.1391**	**0.0328**	**0.1719**	**0.0589**	**0.0301**	**0.0891**	**0.0000**	**89.9167**	**89.9167**	**0.0291**	**0.0000**	**90.6437**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9200e-003	1.3000e-003	0.0142	4.0000e-005	4.0900e-003	3.0000e-005	4.1200e-003	1.0900e-003	3.0000e-005	1.1100e-003	0.0000	3.6127	3.6127	1.0000e-004	0.0000	3.6152
Total	**1.9200e-003**	**1.3000e-003**	**0.0142**	**4.0000e-005**	**4.0900e-003**	**3.0000e-005**	**4.1200e-003**	**1.0900e-003**	**3.0000e-005**	**1.1100e-003**	**0.0000**	**3.6127**	**3.6127**	**1.0000e-004**	**0.0000**	**3.6152**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1391	0.0000	0.1391	0.0589	0.0000	0.0589	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0692	0.7656	0.5095	1.0200e-003		0.0328	0.0328		0.0301	0.0301	0.0000	89.9166	89.9166	0.0291	0.0000	90.6436
Total	**0.0692**	**0.7656**	**0.5095**	**1.0200e-003**	**0.1391**	**0.0328**	**0.1719**	**0.0589**	**0.0301**	**0.0891**	**0.0000**	**89.9166**	**89.9166**	**0.0291**	**0.0000**	**90.6436**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9200e-003	1.3000e-003	0.0142	4.0000e-005	4.0900e-003	3.0000e-005	4.1200e-003	1.0900e-003	3.0000e-005	1.1100e-003	0.0000	3.6127	3.6127	1.0000e-004	0.0000	3.6152
Total	**1.9200e-003**	**1.3000e-003**	**0.0142**	**4.0000e-005**	**4.0900e-003**	**3.0000e-005**	**4.1200e-003**	**1.0900e-003**	**3.0000e-005**	**1.1100e-003**	**0.0000**	**3.6127**	**3.6127**	**1.0000e-004**	**0.0000**	**3.6152**

3.3 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0207	0.2132	0.2418	3.8000e-004		0.0112	0.0112		0.0103	0.0103	0.0000	33.0387	33.0387	0.0107	0.0000	33.3059
Paving	0.0205					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0412**	**0.2132**	**0.2418**	**3.8000e-004**		**0.0112**	**0.0112**		**0.0103**	**0.0103**	**0.0000**	**33.0387**	**33.0387**	**0.0107**	**0.0000**	**33.3059**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	9.7000e-004	0.0107	3.0000e-005	3.0700e-003	2.0000e-005	3.0900e-003	8.1000e-004	2.0000e-005	8.4000e-004	0.0000	2.7095	2.7095	8.0000e-005	0.0000	2.7114
Total	**1.4400e-003**	**9.7000e-004**	**0.0107**	**3.0000e-005**	**3.0700e-003**	**2.0000e-005**	**3.0900e-003**	**8.1000e-004**	**2.0000e-005**	**8.4000e-004**	**0.0000**	**2.7095**	**2.7095**	**8.0000e-005**	**0.0000**	**2.7114**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0207	0.2132	0.2418	3.8000e-004		0.0112	0.0112		0.0103	0.0103	0.0000	33.0387	33.0387	0.0107	0.0000	33.3058
Paving	0.0205					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0412**	**0.2132**	**0.2418**	**3.8000e-004**		**0.0112**	**0.0112**		**0.0103**	**0.0103**	**0.0000**	**33.0387**	**33.0387**	**0.0107**	**0.0000**	**33.3058**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	9.7000e-004	0.0107	3.0000e-005	3.0700e-003	2.0000e-005	3.0900e-003	8.1000e-004	2.0000e-005	8.4000e-004	0.0000	2.7095	2.7095	8.0000e-005	0.0000	2.7114
Total	**1.4400e-003**	**9.7000e-004**	**0.0107**	**3.0000e-005**	**3.0700e-003**	**2.0000e-005**	**3.0900e-003**	**8.1000e-004**	**2.0000e-005**	**8.4000e-004**	**0.0000**	**2.7095**	**2.7095**	**8.0000e-005**	**0.0000**	**2.7114**

Appendix B

Biological Resources Study

LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

HIDDEN LAKE ESTATES
WATER SYSTEM IMPROVEMENTS PROJECT
BIOLOGICAL EVALUATION
MADERA COUNTY, CALIFORNIA

Prepared by

LIVE OAK ASSOCIATES, INC.

Austin Pearson, Director of Ecological Services
Jeff Gurule, Senior Project Manager

Prepared for

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130 N. Garden Street
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March 13, 2020 PN 2377-01

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EXECUTIVE SUMMARY

Live Oak Associates, Inc. (LOA) conducted an investigation of the biological resources of lands proposed for development ("project site") of a water system improvement project by Madera County, and assessed potential project impacts to those resources pursuant to the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), and Section 7 of the federal Endangered Species Act. The project site is located in Hidden Lake Estates, a residential subdivision at the north shore of Millerton Lake in southcentral Madera County, California. On June 24, 2019, LOA biologist Jeff Gurule surveyed the project site for biotic habitats, the plants and animals occurring in those habitats, and significant habitat values that may be protected by state and federal law.

The project site mostly encompasses roads and road right-of-ways within the Hidden Lake subdivision. The project site contains ruderal/developed lands in the form of roads and landscaped residential lots, as well as areas of blue oak woodland and a small area of wetland channel. Nearly all project impacts will be temporary in nature and consist of trenching, laying pipe, and backfilling.

The project has the potential to significantly impact two special status plant species, Madera leptosiphon and Hoover's calycadenia. Preconstruction surveys during these species' blooming period, avoidance of any populations that may be discovered, and salvage of seed and soils where avoidance is infeasible would reduce impacts to these species to a less then significant level per the provisions of NEPA and CEQA.

The project has the potential to significantly impact California tiger salamanders (CTS) through construction mortality. Limiting work to paved surfaces, avoiding surveyed burrows by 50 feet if ground disturbance occurs outside of paved surfaces, constructing during the non-rainy season when CTS are unlikely to be above ground, and conducting an environmental awareness training, would reduce impacts to CTS to a less than significant level under CEQA and NEPA. If any of these measures are infeasible impacts to CTS remain potentially significant. In this case, the applicant must obtain and comply with take permits from the CDFW and USFWS. Compliance with provisions of these permits would then reduce impacts to CTS to a less than significant level under CEQA and NEPA.

Other potentially significant impacts include mortality to nesting birds and roosting pallid bats. Project construction outside of the nesting or maternal roosting season, avoidance of trees, preconstruction surveys, and avoidance of any active nests/roosts that may be discovered would reduce impacts to these resources to a less then significant level per the provisions of NEPA and CEQA.

No other biological resources would be significantly impacted by the projects as defined by NEPA and CEQA. Impacts would be less than significant for all other locally occurring special status plant species; 18 locally occurring special status animal species that would not be expected to occur within the project site, four species (bald eagle, golden eagle, spotted bat, and western mastiff bat) that may simply fly over the site, utilize the site for foraging, and/or, on rare occasions, temporarily perch in trees on the site but would nest and roost elsewhere; wildlife movement corridors; critical or sensitive habitat; jurisdictional waters; and local policies and habitat conservation plans. The project will not result in significant loss of habitat for any special status animal species.

TABLE OF CONTENTS

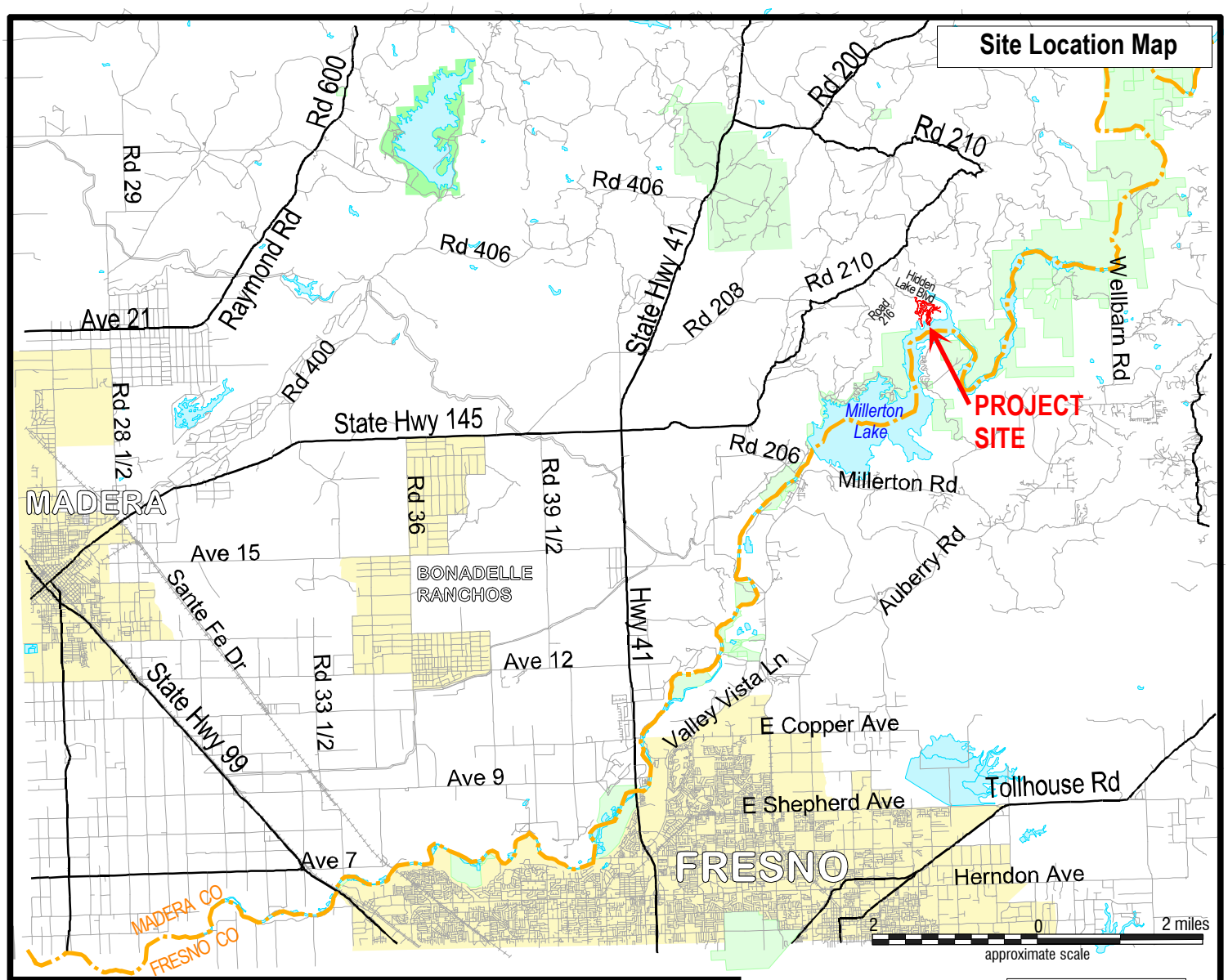
1.0 INTRODUCTION

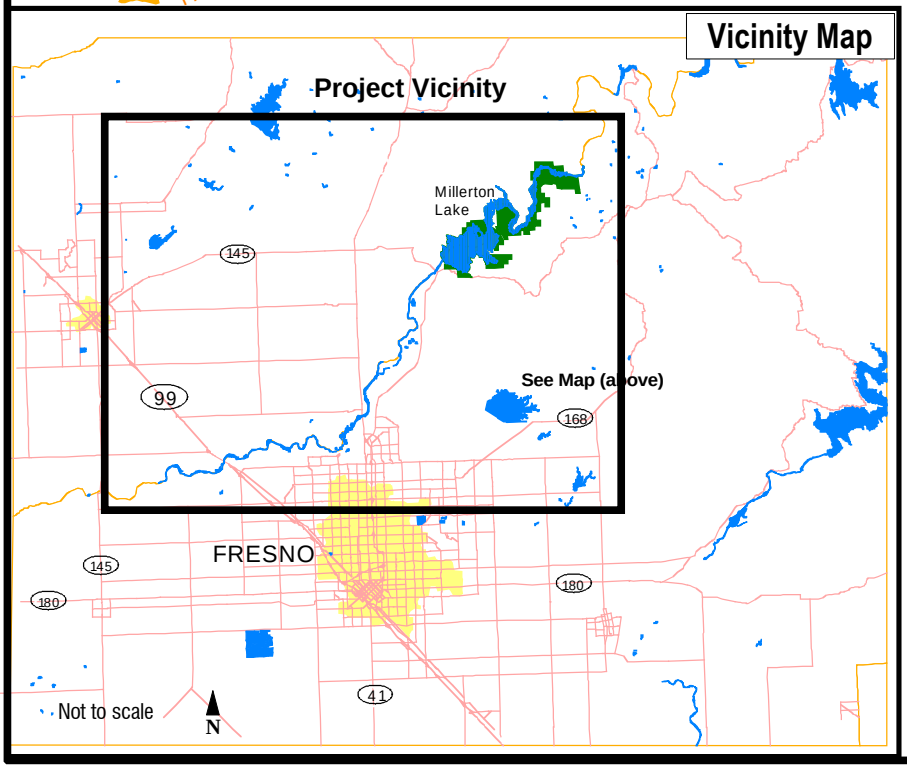
The County of Madera ("County") has proposed improvements to a water distribution system within the County's Maintenance District 1 (MD-1), which serves the residential community of Hidden Lake Estates. The following technical report, prepared by Live Oak Associates, Inc. (LOA) in compliance with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA), describes the biotic resources of lands potentially affected by proposed improvements ("project site or "site"), and evaluates potential impacts to those resources that could result from the project. MD-1 and Hidden Lake Estates are located on the northwestern shore of Millerton Lake in rural southcentral Madera County, California (Figure 1). The site may be found on the *Millerton Lake West* U.S. Geological Survey (USGS) 7.5-minute quadrangle, in Sections 14 and 23 of Township 10 South, Range 21 East, Mt. Diablo Base and Meridian (Figure 2).

1.1 PROJECT DESCRIPTION

The existing MD-1 system utilizes surface water from Millerton Lake, drawn using two submersible pumps that were recently replaced. Water is then routed through a surface water treatment plant (SWTP) before it enters the distribution system. With the exception of the intake pumps, the existing system is 30 to 50 years old, and requires updates to address a recent compliance order issued by the State Water Resources Control Board. The current project is concerned only with improvements to the distribution system, including the raw water intake line; a separate project yet to be funded or designed is anticipated to address improvements to the SWTP and storage tank. Because the proposed project will receive federal funding, environmental review under both the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) is required.

The area of potential effect is mostly confined to right-of-way corridors associated with existing and future roads. Nearly all project elements will require only temporary disturbance to existing land uses and habitats in the form of trenching, pipe installation, and backfilling. Vegetation removal will be minimal.



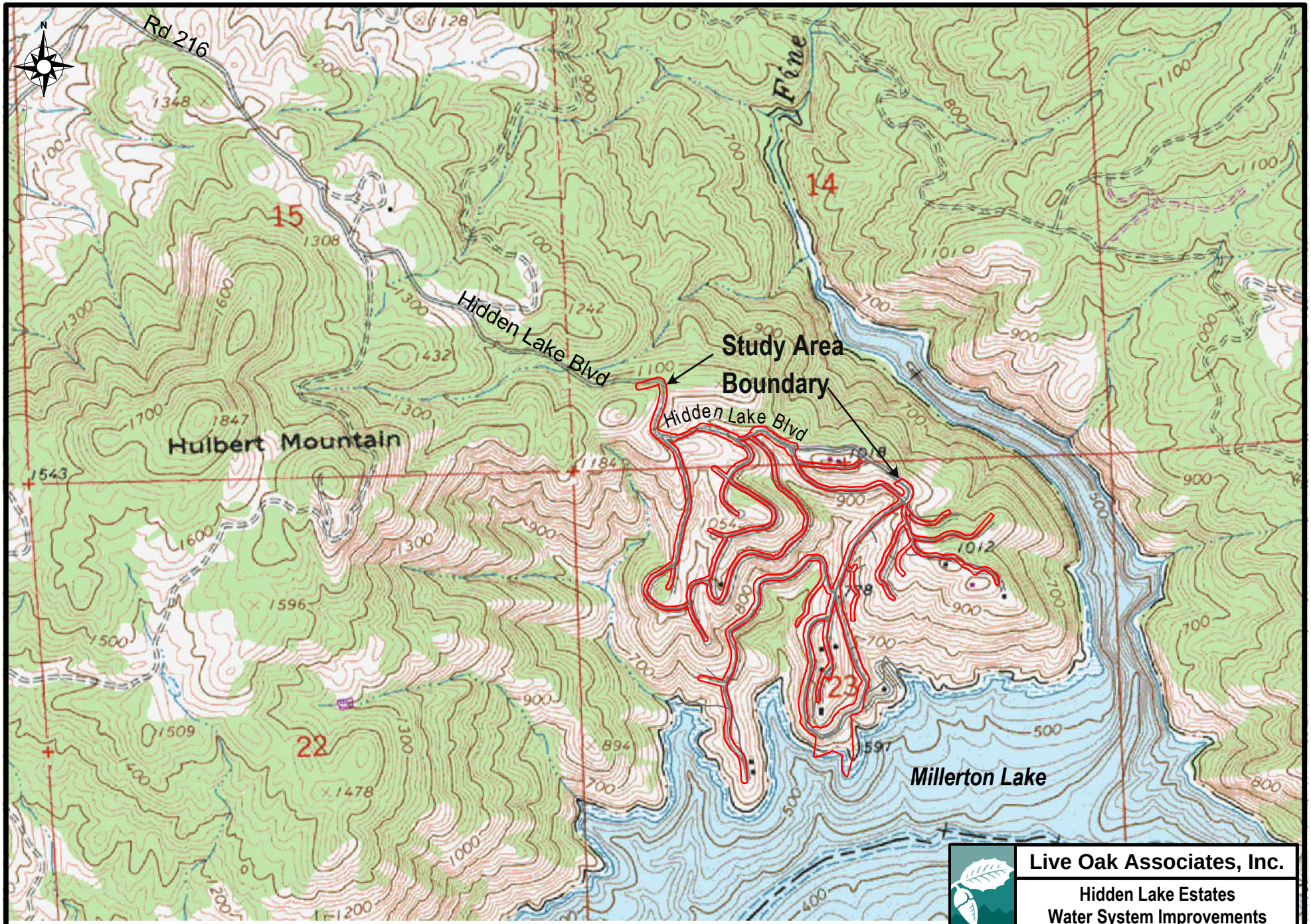


Live Oak Associates, Inc.

Hidden Lake Estates Water System Improvements

Vicinity Map

Date	Project #	Figure #
2/12/2020	2377-01	1



1/2 mile 0 1/2 mile

approximate scale

From USGS
Millerton Lake West 7.5' Quadrangle 1981

Live Oak Associates, Inc.

Hidden Lake Estates
Water System Improvements
U.S.G.S. Quadrangle

Date	Project #	Figure #
2/12/2020	2377-01	2

1.2 REPORT OBJECTIVES

Water distribution projects such as that proposed by Madera County may damage or modify biotic habitats used by sensitive plant and wildlife species. In such cases, site development may be regulated by state or federal agencies, subject to review under the CEQA and/or NEPA, and/or subject to local policies and ordinances. This report addresses issues related to: 1) sensitive biotic resources occurring within the project site; 2) the federal, state, and local laws regulating such resources; and 3) mitigation measures that may be required to reduce the magnitude of anticipated impacts and/or comply with permit requirements of state and federal resource agencies. As such, the objectives of this report are to:

- Summarize all site-specific information related to existing biological resources.
- Make reasonable inferences about the biological resources that could occur onsite based on habitat suitability and the proximity of the site to a species' known range.
- Summarize all state and federal natural resource protection laws that may be relevant to possible future site development.
- Identify and discuss project impacts to biological resources that may occur within the project site within the context of CEQA and NEPA guidelines and relevant state and federal laws.
- Identify avoidance and mitigation measures that would reduce the magnitude of project impacts in a manner consistent with the requirements of CEQA and NEPA and that are generally consistent with recommendations of the resource agencies regulating affected biological resources.
- Make effects determinations pursuant to Section 7 of the federal Endangered Species Act for federally listed species with the potential to occur in the project vicinity.

1.3 STUDY METHODOLOGY

A reconnaissance-level field survey of the project site was conducted on June 24, 2019 by LOA biologist Jeff Gurule. The survey consisted of walking the proposed impact areas while identifying the principal biotic habitats and/or land uses of the project site, as well as the constituent plants and animals of each biotic habitat and/or land use. The field survey conducted

for this study was sufficient to assess the significance of possible biological impacts associated with the development plans for the project site.

LOA conducted an analysis of potential project impacts based on the known and potential biotic resources of the project site discussed in Section 2.0. Sources of information used in the preparation of this analysis included: (1) results of the June 2019 reconnaissance-level survey, (2) the *California Natural Diversity Data Base* (CDFW 2019a), (3) the *Online Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2019), and (4) manuals, reports, and references related to plants and animals of the San Joaquin Valley region.

LOA's field investigation did not include an aquatic resources delineation or focused surveys for special status species. The field survey was sufficient to generally describe those features of the project site that could be subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and/or the Regional Water Quality Control Board (RWQCB), and to assess the significance of possible biological impacts associated with development of the project site.

2.0 EXISTING CONDITIONS

2.1 REGIONAL SETTING

The project site is located in the lower foothills of the central Sierra Nevada Mountains along the north shore of Millerton Lake, a major impoundment of the San Joaquin River.

Like most of California, the lower foothills of the central Sierra Nevada Mountains (and the project site) experience a Mediterranean climate. Warm dry summers are followed by cool moist winters. Summer temperatures commonly exceed 90 degrees Fahrenheit, and the relative humidity is generally very low. Winter temperatures rarely exceed 70 degrees Fahrenheit, with daytime highs often below 60 degrees Fahrenheit. Annual precipitation in the vicinity of the project is about 13 inches, almost 85% of which falls between the months of October and March. Nearly all precipitation falls in the form of rain.

The project site is situated within a foothill woodland landscape, with the aquatic area of Millerton Lake to the south.

2.2 PROJECT SITE

The project site consists of road right-of-ways fronting rural residential development associated with the community of Hidden Lake Estates (Figure 3). The topography of the project site is characterized by steep slopes leading down to Millerton Lake. Folds in the steep topography form ephemeral drainages that funnel storm-water during heavy rain events downslope to the lake. Two main drainages occur within the project site, one is an ephemeral drainage and the other is an intermittent to perennial drainage that supports surface water and wetland vegetation where it crossed the project site. Elevations of the site range from approximately 550 to 1,150 feet National Geodetic Vertical Datum (NGVD).

Soils of the site consist of a single soil mapping unit: Coarsegold rocky loam, 30 to 75 percent slopes. Soils of the site are not considered hydric nor exhibit inherent characteristics that would provide unique habitat value to rare or endangered plant or animal species within the region.

Live Oak Associates, Inc.

Hidden Lake Estates Water System Improvements

Aerial Photo & Study Site

Date	Project #	Figure #
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2.3 BIOTIC HABITATS/LAND USES

Three habitat/land use types, ruderal/developed, blue oak woodland, and wetland channel, were observed within the project site during the June 2019 biological field survey. These habitat/land use types and their constituent plant and animal species are described in more detail below. A list of the vascular plant species observed within the project site and the terrestrial vertebrates using, or potentially using, the site are provided in Appendices A and B, respectively. Representative photos of the project site are presented in Appendix C.

2.3.1 Ruderal/Developed

The project site consisted largely of ruderal/developed land including paved and dirt roads, road shoulders, and landscaped road-frontage residential land. Vegetation was generally absent from the roads and road shoulders. Where present, vegetation consisted of common weed species such as turkey-mullein (*Croton setiger*), spotted spurge (*Euphorbia maculata*), red stemmed filaree (*Erodium cicutarium*), and puncturevine (*Tribulus terrestris*) and scattered shrubs including Spanish broom (*Spartium junceum*) and silver bush lupine (*Lupinus albifrons*). Landscaped areas included non-native, ornamental trees and shrubs such as various species of eucalyptus (*Eucalyptus sp.*), oleander (*Nerium oleander*), and deodar cedar (*Cedrus deodara*), among others.

The wildlife habitat value of ruderal/developed lands within the project site is relatively low; nonetheless, these lands can support some native wildlife species. Amphibians such as the Pacific tree frog (*Pseudacris regilla*) and western toad (*Bufo boreas*) may disperse through ruderal/developed lands of the project site during the winter and spring where suitable breeding habitat occurs nearby. Common reptiles such as the western fence lizard (*Sceloporus occidentalis*), Pacific gopher snake (*Pituophis catenifer catenifer*), and northern Pacific rattlesnake (*Crotalus oreganus oreganus*) could potentially utilize ruderal/developed lands associated with the project site for basking.

Avian species expected to forage on or pass over ruderal/developed areas of the site include the northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), California

scrub jay (*Aphelocoma californica*), Brewer's blackbird (*Euphagus cyanocephalus*), American crow (*Corvus brachyrhynchos*), and European starling (*Sturnus vulgaris*).

Evidence of burrowing mammal activity on the ruderal/developed lands of the project site was periodically observed. Small mammals that would be expected to occur on ruderal/developed lands of the project site include the California ground squirrel (*Otospermophilus beecheyi*), brown rat (*Rattus norvegicus*), Botta's pocket gopher (*Thomomys bottae*), and house mouse (*Mus musculus*). Mammalian predators with the potential to occasionally occur on ruderal/developed lands of the site include disturbance-tolerant species such as the raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), and coyote (*Canis latrans*). A variety of native bat species have the potential to forage over ruderal/developed areas of the site.

2.3.2 Blue Oak Woodland

Blue oak woodland habitat accounted for a large portion of the remainder of the project site. At the time of the field survey, the woodland was characterized by trees and shrubs adapted to dry hot summers. The dominant tree in this habitat was the blue oak (*Quercus douglasii*). However, many foothill pines (*Pinus sabiniana*) and occasional interior live oaks (*Quercus wislizenii*) were found here as well. The understory was dominated by several species of shrubs including, but not limited to, chaparral whitethorn (*Ceanothus leucodermis*), poison oak (*Toxicodendron diversilobum*), and California coffeeberry (*Frangula californica*). The herbaceous understory supported annual grasses and forbs primarily of European origin. Such species included ripgut (*Bromus diandrus*), soft chess (*Bromus hordeacous*), silver European grass (*Aira caryophylla*), little quaking grass (*Briza minor*), and wild oats (*Avena barbata*). Several native forbs were found in the understory as well. These include pretty face (*Triteleia ixioides* ssp. *scabra*), purple clarkia (*Clarkia purpurea*), common fiddleneck (*Amsinckia intermedia*) and spider lupine (*Lupinus benthamii*).

Many terrestrial vertebrates native to the Sierra foothills use blue oak woodland habitat. Rocks, decaying logs and rodent burrows provide habitat for salamanders such as California tiger salamander (*Ambystoma californiense*) and gregarious slender salamander (*Batrochoseps gregarius*). Western fence lizards are attracted to rocks, logs, and tree trunks. Brush and piles of

downed branches and leaves provide habitat for more reclusive lizards such as Gilbert's skinks (*Eumeces gilberti*) and southern alligator lizards (*Gerrhonotus multicarinatus*). Common kingsnakes (*Lampropeltis getulus*), gopher snakes, and north pacific rattlesnakes are common predators of frogs, lizards and small mammals, and are expected to occur in the site's blue oak woodland habitat, as well.

Blue oak woodland provides habitat for numerous resident and migratory birds. Resident birds observed on site during the field survey included acorn woodpeckers (*Melanerpes formicivorus*), Nuttall's woodpeckers (*Picoides nuttallii*), oak titmice (*Parus inornatus*), California scrub jays (*Aphelocoma californica*), common ravens (*Corvus corax*), red-tailed hawks (*Buteo jamaicensis*), and California quails (*Callipepla californica*). Summer migrants observed included the ash-throated flycatcher (*Myiarchus cinerascens*), house wren (*Troglodytes aedon*), and Bullock's oriole (*Icterus bullocki*). Winter migrants expected to use the site's blue oak woodland habitat include white-crowned sparrows (*Zonotrichia leucophrys*), golden-crowned sparrows (*Zonotrichia atricapilla*), dark-eyed juncos (*Junco hyemalis*), Lewis's woodpeckers (*Melanerpes lewis*), and ruby-crowned kinglets (*Regulus calendula*).

A variety of mammals are associated with this habitat type, such as mule deer (*Odocoileus hemionus*), gray foxes (*Urocyon cinereoargenteus*), coyotes, bobcats (*Lynx rufus*), mountain lions (*Felis concolor*), striped skunks (*Mephitis mephitis*), and raccoons. Small mammals expected to use the site's blue oak woodland include California ground squirrels, Botta's pocket gophers, deer mice (*Peromyscus maniculatus*), brush mice (*Peromyscus boylii*), and desert cottontails (*Sylvilagus audubonii*).

2.3.3 Wetland Channel

The project site includes a portion of a wetland channel. At the time of the field survey the channel contained a small stream of flowing water that appeared to be runoff from the up-gradient water treatment plant. Herbaceous vegetation within the channel consisted of rice cutgrass (*Leersia oryzoides*), pennyroyal (*Mentha pulegium*), tall flatsedge (*Cyperus eragrostis*), and common knotweed (*Persicaria lapathifolia*). Several small pyracantha (*Pyracantha sp.*) shrubs were also growing here.

This wetland channel is likely utilized by the Sierran tree frog and western toad that would prey on invertebrates attracted to the moist environment. The mountain gartersnake (*Thamnophis elegans elegans*) may be found here, as well. This habitat could be utilized by the many wildlife species expected in the surrounding blue oak woodland habitat.

2.4 SPECIAL STATUS PLANTS AND ANIMALS

Several species of plants and animals within the state of California have low populations and/or limited distributions. Such species may be considered "rare" and are vulnerable to extirpation as the state's human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described more fully in Section 3.2, state and federal laws have provided the CDFW and USFWS with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as "species of special concern" by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists of native plants considered rare, threatened, or endangered (CNPS 2019). Collectively, these plants and animals are referred to as "special status species."

The *California Natural Diversity Data Base* (CDFW 2019a) was queried for special status species occurrences in the USGS 7.5-minute quadrangle in which the project site is situated, *Millerton Lake West*, and the eight surrounding quadrangles (*Millerton Lake East, Academy, Friant, Lanes Bridge, Little Table Mtn., Knowles, O'Neals,* and *North Fork*). An unofficial species list was obtained using the USFWS Information for Planning and Consultation (IPaC) system for federally listed species with the potential to be affected by the project (USFWS 2019) and is presented in Appendix D. These species, and their potential to occur on the project site, are listed in Table 1 on the following pages. Special status species occurrences within 3.1 miles (5 kilometers) of the project site are depicted in Figure 4. Sources of information for this table included *California's Wildlife, Volumes I, II, and III* (Zeiner et. al 1988-1990), *Special Vascular Plants, Bryophytes, and Lichens* (CDFW 2019b), and *The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2019).

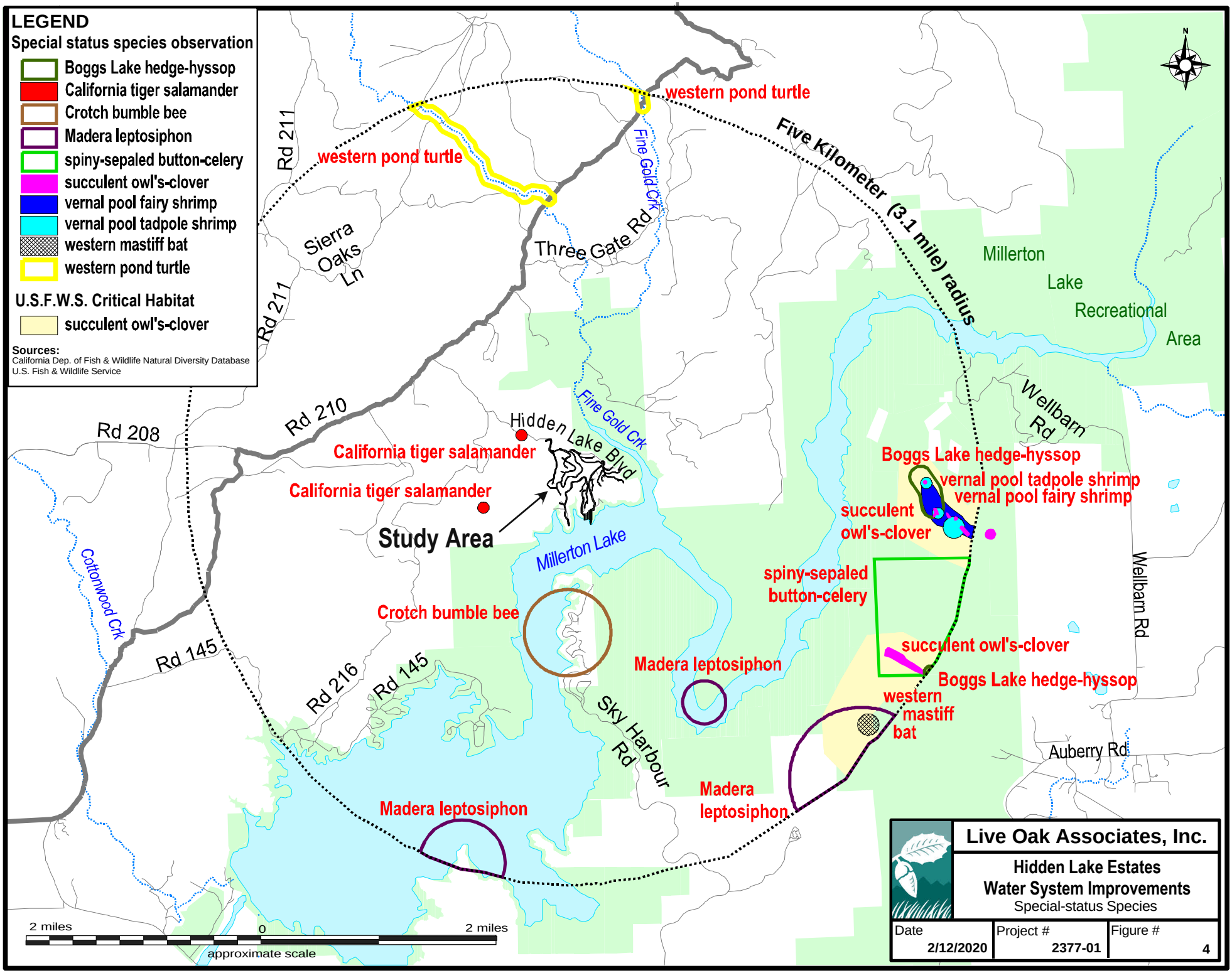
LEGEND
Special status species observation
Boggs Lake hedge-hyssop
California tiger salamander
Crotch bumble bee
Madera leptosiphon
spiny-sepaled button-celery
succulent owl's-clover
vernal pool fairy shrimp
vernal pool tadpole shrimp
western mastiff bat
western pond turtle
U.S.F.W.S. Critical Habitat
succulent owl's-clover
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
U.S. Fish & Wildlife Service
N
Five Kilometer (3.1 mile) radius
western pond turtle
western pond turtle
Rd 211
Rd 211
Sierra Oaks Ln
Three Gate Rd
Fine Gold Crk
Fine Gold Crk
Millerton Lake Recreational Area
Wellbarn Rd
Wellbarn Rd
Rd 208
Rd 210
Hidden Lake Blvd
California tiger salamander
California tiger salamander
Study Area
Millerton Lake
Boggs Lake hedge-hyssop
vernal pool tadpole shrimp
vernal pool fairy shrimp
succulent owl's-clover
spiny-sepaled button-celery
succulent owl's-clover
Boggs Lake hedge-hyssop
western mastiff bat
Cottonwood Crk
Rd 145
Rd 216
Rd 145
Crotch bumble bee
Madera leptosiphon
Sky Harbour Rd
Auberry Rd
Madera leptosiphon
Madera leptosiphon
2 miles
0
2 miles
approximate scale
Live Oak Associates, Inc.
Hidden Lake Estates
Water System Improvements
Special-status Species
Date
2/12/2020
Project #
2377-01
Figure #
4

TABLE 1. LIST OF SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN HABITATS OF THE PROJECT SITE.

PLANTS: Adapted from the California Natural Diversity Base (CDFW 2019) and the Inventory of Rare and Endangered Vascular Plant Species of California (CNPS 2019)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence on the Project Site
Mariposa pussy-paws (*Calytridium pulchellum*)	FT CNPS 1B	Fewer than 10 populations in Mariposa, Madera and Fresno Counties; primarily in coarse granitic sands of decomposing outcrops.	**Absent.** Suitable habitat in the form of open flats of decomposed granite surrounding exposed granite bedrock was absent.
Carpenteria (*Carpenteria californica*)	CT	Several occurrences in Fresno Co. and one in Madera Co.; primarily in chaparral, but also in mixed hardwoods with shrub understory.	**Absent.** Suitable habitat was not present for this species, nor was the species observed during field surveys conducted during the summer of 2019.
Succulent Owl's Clover (*Castilleja campestris* ssp. *succulenta*)	FT, CE	Vernal pools, valley foothills and grasslands. Moist places, often in acidic soils. Blooms April to May.	**Absent**. Vernal pools required by this species are absent from the project site.
Bogg's Lake Hedge Hyssop (*Gratiola heterosepala*)	CE	Occurs in vernal pools and freshwater emergent marshes of northern and central California. Often found in basalt volcanic soils or clay soils. Blooms April to August.	**Absent**. Vernal pools and other suitable aquatic habitat are absent from the project site.
San Joaquin Valley Orcutt Grass (*Orcuttia ineaqualis*)	FT, CE	Occurs in deep vernal pools of California's Central Valley.	**Absent**. Vernal pools required by this species are absent from the project site.
Hairy Orcutt Grass (*Orcuttia pilosa*)	FE, CE	Vernal pools California's Central Valley. Requires deep pools with prolonged periods of inundation.	**Absent**. Vernal pools required by this species are absent from the project site.
Hartweg's Golden Sunburst (*Pseudobahia bahiifolia*)	FE, CE	Occurs in grasslands of the western foothills of the Sierra Nevada in volcanic pumice soils. Within Fresno and Madera Counties it is restricted to soils of the Rocklin series.	**Absent**. Soils required by this species are absent from the project site.

CNPS-listed Species

Hoover's Calycadenia (*Calycadenia hooveri*)	CNPS 1B	Occurs on exposed, rocky, or barren soil of cismontane woodland, valley and foothill grassland. Blooms July to Sept..	**Possible.** This species could occur on rock outcrops or barren soils within the project site.
Dwarf Downingia (*Downingia pusilla*)	CNPS 2B	Vernal pools within valley and foothill grasslands. Blooms April to May.	**Absent.** Vernal pools required by this species are absent from the project site.
Spiny-sepaled Button Celery (*Eryngium spinosepalum*)	CNPS 1B	Found in vernal pools and swales of Madera, Fresno, and Tulare Counties. Blooms April through May.	**Absent.** Vernal pools and swales required by this species are absent from the project site.

TABLE 1. LIST OF SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN HABITATS OF THE PROJECT SITE.

PLANTS (cont.)

CNPS-listed Species

Species	Status	Habitat	*Occurrence in the Study Area
Madera Leptosiphon (*Leptosiphon serrulatus*)	CNPS 1B	Cismontane woodland, lower montane coniferous forests, and annual grasslands. Dry slopes, often on decomposed granite in woodland. Blooms April to May.	**Possible.** Habitat suitable for this species is present on the project site, as this species is known to grow on trail and road cuts in the region. This species has been documented on a trail cut along the south shore Millerton Lake (LOA pers obs.).
Orange Lupine (*Lupinus citrinus* var. *citrinus*)	CNPS 1B	Several populations are known from Madera and Fresno Counties in coarse granitic sands of decomposing outcrops.	**Absent.** Suitable habitat in the form of open flats of decomposed granite surrounding exposed granite bedrock was absent.
Sanford's Arrowhead (*Sagittaria sanfordii*)	CNPS 1B	Occurs in freshwater emergent marsh habitat in drainage ditches and canals of California's central valley. Blooms May to October.	**Absent.** This species is not known to occur in the Sierra Nevada foothills. Furthermore, this species was not observed during the site survey in the single wetland drainage of the site.

ANIMALS (adapted from CNDDB)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Conservancy Fairy Shrimp (*Branchinecta conservatio*)	FE	Primarily found in vernal pools of California's Central Valley.	**Absent**. Vernal pools required by this species are absent from the project site.
Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)	FT	Primarily found in vernal pools of California's Central Valley.	**Absent**. Vernal pools required by this species are absent from the project site.
Vernal Pool Tadpole Shrimp (*Lepidurus packardi*)	FE	Primarily found in vernal pools of California's Central Valley.	**Absent**. Vernal pools required by this species are absent from the project site.
Crotch Bumble Bee (*Bombus crotchii*)	CCE	Inhabits open grassland and scrub habitats of the southern 2/3 of California. Historically in, but largely extirpated from the Central Valley. Constructs nests underground in animal burrows. Overwintering sites are likely in soft soils or in debris or leaf litter. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.*	**Possible**. Suitable habitat is present on the project site. This species was collected in 1982 approximately 1 mile from the project site along the south shore of Millerton Lake.
Delta Smelt (*Hypomesus transpacificus*)	FT, CT	Typically found in the delta of the San Joaquin and Sacramento Rivers, as well as some distance upstream; may have historically occurred in upper San Joaquin watershed.	**Absent.** Suitable aquatic habitat for this species is absent. Furthermore, the project site is well outside this species' current range.

TABLE 1. LIST OF SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN HABITATS OF THE PROJECT SITE.

ANIMALS (cont.)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence in the Study Area
California Red-legged Frog (*Rana draytonii*)	FT, CSC	Occurs in aquatic habitats such as creeks and ponds with emergent vegetation.	**Absent.** Suitable aquatic habitat is absent from the project site. Furthermore, this species is thought to be extirpated from the southern Sierra foothills.
Foothill Yellow-legged Frog (*Rana boylii*)	CCT	Historically occurred in Sierra foothill streams with cobbly bottoms. This species appears to have been extirpated from most southern Sierra foothill streams.	**Absent.** Suitable aquatic habitat for this species is absent from the project site.
California Tiger Salamander (CTS) (*Ambystoma californiense*)	FT, CT	Found primarily in annual grasslands; requires vernal pools for breeding and rodent burrows for refuge.	**Possible.** This species has been documented breeding in seasonal stock ponds in the project vicinity, the closest being 0.2 miles northwest of the northern tip of the project site (CDFW 2019). California ground squirrel and other small mammal burrows observed on the project site provide potential aestivation (i.e. over-summering habitat) for CTS. Breeding habitat is absent from the project site.
Blunt-nosed Leopard Lizard (*Gambelia sila*)	FE, CE	Alkali sink scrub and alkali grassland habitat of western Fresno and Madera Counties.	**Absent.** Habitat suitable for this species is absent from the site. Furthermore, the project is well outside the current range of the species.
Bald Eagle (*Haliaeetus leucocephalus*)	CE	Winters near reservoirs of California's Central Valley. Mostly feeds on fish in large bodies of water or rivers.	**Likely.** Bald eagles are known to both forage, roost, and nest at Millerton Lake. However, there are no known nesting occurrences in the Hidden Lakes Estates area and foraging and nesting habitat for this species is absent to marginal. At most this species would be expected to occasionally fly over the site or temporarily perch in trees on the site.
Swainson's Hawk *(Buteo swainsoni*)	CT	Migrant and uncommon resident in the Central Valley. Forages in grasslands and agricultural fields. Nests in trees close to riparian areas.	**Unlikely.** Habitats of the project site are unsuitable for nesting and foraging. This species is rarely encountered in steep sloping environments. At most this species may occasionally pass over the site during migration.
Tricolored Blackbird (*Agelaius tricolor*)	CT	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in grassland and agricultural fields.	**Unlikely.** While occasionally observed in the lower foothills, this species is rarely encountered in areas of steep topography. Breeding habitat is absent from the site.
Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)	FC, CE	Nests in dense riparian forests. Inhabits broad, lower flood bottoms of larger river systems.	**Absent.** The last known occurrence of the western yellow-billed cuckoo in the region was on Fancher Creek in 1907. Riparian habitat required by this species is absent from the site.

TABLE 1. LIST OF SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN HABITATS OF THE PROJECT SITE.

ANIMALS (Cont.)

Species	Status	Habitat	*Occurrence in the Study Area
Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*)	FE, CE	Occurs in alkali scrub and grasslands with scattered shrubs in the southwestern San Joaquin Valley.	**Absent.** Habitat suitable for this species is absent from the site. The site is outside the current and historic range of the species.
San Joaquin Kit Fox (*Vulpes macrotis mutica*)	FE, CT	Desert, alkali scrub, annual grasslands; may forage in adjacent agricultural habitats.	**Absent.** Suitable habitat for this species is absent from the project site. The project site is outside the current range of the species.
Sierra Nevada Red Fox (*Vulpes vulpes necator*)	CT	Prefers conifer and alpine habitats between 4,000 and 12,000 feet.	**Absent.** The project site is located well below this species' elevational distribution.

State Species of Special Concern

Hardhead (*Mylopharodon conocephalus*)	CSC	Prefers well oxygenated streams and surface waters of midelevation reservoirs. Found in clear pools with sand –gravel – boulder substrates and slow river velocities.	**Absent.** Suitable aquatic habitat for this species is absent from the site.
Western Spadefoot (*Spea hammondii*)	CSC	Primarily occurs in grasslands, but also occurs in valley and foothill woodlands. Requires vernal pools or other temporary wetlands for breeding.	**Unlikely.** Suitable breeding habitat is absent from the project site. While potential breeding habitat occurs within stock ponds in the project vicinity, this species typically ventures no more than a few hundred yards from breeding ponds. Furthermore, this species is not known to occur in steep terrain.
Western Pond Turtle (*Actinemys marmorata*)	CSC	Occurs in open slow-moving water or ponds with rocks and logs for basking and aquatic vegetation for food and cover. Nesting occurs in open areas, on a variety of soil types, and up to ¼ mile away from water.	**Absent.** Suitable aquatic habitat is absent from the project site and immediately surrounding lands.
Golden Eagle (*Aquila chrysaetos*)	CFP CSC	Typically frequents rolling foothills, mountain areas, sage-juniper flats and desert. Nests primarily on cliffs.	**Likely.** This species is known to occur in the project vicinity. The developed nature of the project site provides marginal foraging habitat and nesting habitat is absent. However, this species likely flies over the site regularly during foraging flights.
Burrowing Owl (*Athene cunicularia*)	CSC	Frequents open, dry annual or perennial grasslands, deserts, and scrublands characterized by low growing vegetation. Dependent upon burrowing mammals, most notably the California ground squirrel, for burrows used for nesting and cover.	**Unlikely.** While burrowing owls have been observed in the vicinity (LOA pers. obs.), the developed nature of the project site and steep terrain provide marginal habitat conditions for the species. Furthermore, no evidence of this species in the form of whitewash, cough pellets, or feathers at burrow entrances was observed during the field survey.

TABLE 1. LIST OF SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN HABITATS OF THE PROJECT SITE.

ANIMALS – cont'd.

State Species of Special Concern

Species	Status	Habitat	*Occurrence on the Project Site
Pallid Bat (*Antrozous pallidus*)	CSC	Grasslands, chaparral, wood-lands, and forests of California; most common in dry rocky open areas providing roosting opportunities. Can roost in buildings and tree hallows.	**Possible.** The site provides suitable foraging habitat. Roosting habitat is available in hollows of onsite blue oaks.
Spotted Bat (*Euderma maculatum*)	CSC	Found in a variety of habitats from arid desert and grassland to mixed conifer forest. Roosts in rocky cliffs.	**Possible.** The site could be used for foraging. Roosting habitat is absent.
Western Mastiff Bat (*Eumops perotis* ssp. *californicus*)	CSC	Frequents open, semi-arid to arid habitats, including conifer, and deciduous woodlands, coastal scrub, grasslands, palm oasis, chaparral and urban. Roosts in rocky cliffs.	**Possible.** Known to roost on the eastern edge of Table Mountain. This species may forage on the site. Roosting habitat is absent.
American Badger (*Taxidea taxus*)	CSC	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils.	**Unlikely.** Documented occurrences of this species are rare in the foothills of the region. Furthermore, the developed nature of the project site and the steep terrain would deter habitation of the site by this species. No evidence of badger occupation was observed during the site survey.

***EXPLANATION OF OCCURRENCE DESIGNATIONS AND STATUS CODES**

Present: Species observed on the site at time of field surveys or during recent past.
Likely: Species not observed on the site, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed on the site, but it could occur there from time to time.
Unlikely: Species not observed on the site, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed on the site, and precluded from occurring there because habitat requirements not met.

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CFP	California Protected
FC	Federal Candidate	CSC	California Species of Special Concern

CNPS	California Native Plant Society Listing
1A	Plants Presumed Extinct in California
1B	Plants Rare, Threatened, or Endangered in California and elsewhere
2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere
3	Plants about which we need more information – a review list
4	Plants of limited distribution – a watch list

2.5 ENDANGERED, THREATENED, OR SPECIAL STATUS PLANT AND ANIMAL SPECIES MERITING FURTHER DISCUSSION

2.5.1 California Tiger Salamander (*Ambystoma californiense*). Federal Listing Status: Threatened; State Listing Status: Threatened.

Ecology of the species. The California tiger salamander (CTS) is found in grasslands of California's Central Valley and Coast Ranges that contain vernal pools, stock ponds, or other seasonal aquatic breeding habitat. In the Central Valley, the CTS occurs from San Joaquin County on the north to Tulare County on the south. The CTS spends most of the year aestivating underground in rodent burrows or other suitable refugia. Following the first significant winter rains, CTS leave their aestivation sites and travel to the pools or ponds in which they breed. Eggs are laid on the pool bottoms and the larvae hatch within approximately 3 weeks. The larvae develop into adults within 10 to 12 weeks. For the larvae to survive, development must be complete before the ponds dry. As the pools dry, all CTS return to upland burrows. Although CTS have been documented traveling up to 1.3 miles from breeding pools to aestivate (Orloff 2011), Trenham and Shaffer (2005) found that 95% of adult CTS aestivate within 0.4 mile of breeding pools.

Potential to occur onsite. The closest known CTS occurrences are approximately 0.2 and 0.6 miles from the project site in seasonal stock ponds that serve as breeding pools (CDFW 2019). These two occurrences are within the upper distance that CTS are known to travel from breeding habitat; however, it should be noted that the 1.3-mile migration events observed by Orloff (2011) were made in open grassland habitat that would presumably be more permeable to CTS than the rugged terrain of the project vicinity. Breeding habitat is absent from the project site. While the project site is within a residential setting not typically utilized by this species due to infrastructure development (i.e. roads and landscaping), a number of California ground squirrel and other small mammal burrows occur on portions of the project site that could be utilized by CTS for aestivation.

CTS are considered potentially present on the site due to the proximity of known breeding habitat and the presence of small mammal burrows on the site that could conceivably be utilized for aestivation.

2.6 JURISDICTIONAL WATERS

Jurisdictional waters are those rivers, creeks, drainages, lakes, ponds, reservoirs, and wetlands that are subject to the authority of the USACE, CDFW, and/or the RWQCB. In general, the USACE regulates navigable waters, tributaries to navigable waters, and wetlands adjacent to these waters, where wetlands are defined by the presence of hydric soils, hydrophytic vegetation, and wetland hydrology. The CDFW has jurisdiction over waters in California that have a defined bed and bank, and the RWQCB has jurisdiction over California surface water and groundwater. The regulation of jurisdictional waters is discussed in more detail in Section 3.8.

The proposed water distribution line will cross over portions of two small onsite drainages. One drainage is ephemeral and the other is intermittent to perennial. These drainages are hydrologically connected to Millerton Lake, a known water of the U.S. These drainages appear to meet the jurisdictional requirements set forth by the USACE, CDFW, and the RWQCB.

2.7 DESIGNATED CRITICAL HABITAT

As will be discussed further in Section 3.4, the USFWS often designates areas of "critical habitat" when it lists species as threatened or endangered. Critical habitat is 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.

Designated critical habitat is absent from the project site and immediately surrounding lands.

2.8 SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities are those that are of limited distribution, distinguished by significant biological diversity, home to special status species, etc. CDFW is responsible for the classification and mapping of all natural communities in California. Natural communities are assigned state and global ranks according to their degree of imperilment. Natural communities with ranks of S1-S3 are considered sensitive natural communities to be addressed in the environmental review processes of CEQA and its equivalents.

Natural vegetation communities on the site consist of blue oak woodland and wetland channel. While some forms of these communities are considered sensitive, these onsite communities do not contain the vegetation alliances that are considered sensitive by CDFW. Therefore, sensitive natural communities are considered absent from the project site.

2.9 WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors are routes that animals regularly and predictably follow during seasonal migration, dispersal from native ranges, daily travel within home ranges, and inter-population movements. Movement corridors in California are typically associated with valleys, ridgelines, and rivers and creeks supporting riparian vegetation.

The steep terrain of the project site does not readily facilitate wildlife movement and the onsite wetland channel is far too small and steep to be considered a wildlife movement corridor. As a result, wildlife movement corridors are absent from the project site.

3.0 RELEVANT GOALS, POLICIES, AND LAWS

3.1 GENERAL PLAN POLICIES OF MADERA COUNTY

In compliance with CEQA, the lead agency must consider conformance with applicable goals and policies of the General Plan of Madera County. The Madera County General Plan includes goals and policies designed to protect significant biotic resources of the Planning Area. Resource elements addressed by this plan include: (1) wetland and riparian areas, (2) fish and wildlife habitat, (3) vegetation, and (4) open space for the preservation of natural resources. Madera County General Plan policies related to natural resources can be found in Appendix E.

3.2 THREATENED AND ENDANGERED SPECIES

In California, imperiled plants and animals may be afforded special legal protections under the California Endangered Species Act (CESA) and/or Federal Endangered Species Act (FESA). Species may be listed as "threatened" or "endangered" under one or both Acts, and/or as "rare" under CESA. Under both Acts, "endangered" means a species is in danger of extinction throughout all or a significant portion of its range, and "threatened" means a species is likely to become endangered within the foreseeable future. Under CESA, "rare" means a species may become endangered if their present environment worsens. Both Acts prohibit "take" of listed species, defined under CESA as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86), and more broadly defined under FESA to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3).

When state and federally listed species have the potential to be impacted by a project, the USFWS and CDFW must be included in the CEQA process. These agencies review the environmental document to determine the adequacy of its treatment of endangered species issues and to make project-specific recommendations for the protection of listed species. Similarly, NEPA projects that may impact federally listed species must include the USFWS in the environmental review process. Projects that may result in the "take" of listed species must generally enter into consultation with the USFWS and/or CDFW pursuant to FESA and CESA,

respectively. In some cases, incidental take authorization(s) from these agencies may be required before the project can be implemented.

3.3 CALIFORNIA FULLY PROTECTED SPECIES

The classification of certain animal species as "fully protected" was the State of California's initial effort in the 1960s, prior to the passage of the California Endangered Species Act, to identify and provide additional protection to those species that were rare or faced possible extinction. Following CESA enactment in 1970, many fully protected species were also listed as California threatened or endangered. The list of fully protected species are identified, and their protections stipulated, in California Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and fish (5515). Fully protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except in conjunction with necessary scientific research and protection of livestock.

3.4 DESIGNATED CRITICAL HABITAT

The USFWS often designates areas of "critical habitat" when it lists species as threatened or endangered. Critical habitat is defined by section 3(5)(A) of the federal Endangered Species Act as "(i) The specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species." The Act goes on to define "conservation" as "the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which listing under the Act is no longer necessary."

The designation of a specific area as critical habitat does not directly affect its ownership. Federal actions that result in destruction or adverse modification of critical habitat are, however, prohibited in the absence of prior consultation with the USFWS according to provisions of the

act. Furthermore, recent appellate court cases require that federal actions affecting critical habitat promote the recovery of the listed species protected by the critical habitat designation.

The USFWS designates critical habitat for a species by identifying general areas likely to contain the species' "primary constituent elements," or physical or biological features of the landscape that the species needs to survive and reproduce. Although a unit of critical habitat for a particular species may be quite large, only those lands within the unit that contain the species' primary constituent elements are actually considered critical habitat by the USFWS.

3.5 MIGRATORY BIRDS

The Federal Migratory Bird Treaty Act (FMBTA: 16 USC 703-712) prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it actually covers almost all birds native to the United States, even those that are non-migratory. The FMBTA encompasses whole birds, parts of birds, and bird nests and eggs.

Although the USFWS and its parent administration, the U.S. Department of the Interior, have traditionally interpreted the FMBTA as prohibiting incidental as well as intentional "take" of birds, a January 2018 legal opinion issued by the Department of the Interior now states that incidental take of migratory birds while engaging in otherwise lawful activities is permissible under the FMBTA. However, California Fish and Game Code makes it unlawful to take or possess any non-game bird covered by the FMBTA (Section 3513), as well as any other native non-game bird (Section 3800), even if incidental to lawful activities.

3.6 BIRDS OF PREY

Birds of prey are protected in California under provisions of the Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the federal Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs.

3.7 NESTING BIRDS

In California, protection is afforded to the nests and eggs of all birds. California Fish and Game Code (Section 3503) states that it is "unlawful to take, possess, or needlessly destroy the nest or eggs of any bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Breeding-season disturbance that causes nest abandonment and/or loss of reproductive effort is considered a form of "take" by the CDFW.

3.8 WATERS OF THE UNITED STATES AND WATERS OF THE STATE

Natural drainage channels and adjacent wetlands may be considered "waters of the United States" or "jurisdictional waters" subject to the jurisdiction of the USACE. The extent of jurisdiction has been defined in the Code of Federal Regulations but has also been subject to interpretation of the federal courts. Jurisdictional waters generally include:

- 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;
- All interstate waters including interstate wetlands:
- 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;
- All impoundments of waters otherwise defined as waters of the United States under the definition;
- Tributaries of waters identified in paragraphs (a)(1)-(4) (i.e. the bulleted items above).

As determined by the United States Supreme Court in its 2001 *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC) decision, channels and wetlands isolated from other jurisdictional waters cannot be considered jurisdictional on the basis of their use, hypothetical or observed, by migratory birds. Similarly, in its 2006 consolidated *Carabell/Rapanos* decision, the U.S. Supreme Court ruled that a significant nexus between a

wetland and other navigable waters must exist for the wetland itself to be considered a navigable and therefore jurisdictional water.

The USACE regulates the filling or grading of Waters of the U.S. under the authority of Section 404 of the Clean Water Act. The extent of jurisdiction within drainage channels is defined by "ordinary high water marks" on opposing channel banks. All activities that involve the discharge of dredge or fill material into Waters of the U.S. are subject to the permit requirements of the USACE. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued until the RWQCB issues a Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards.

Under the Porter-Cologne Water Quality Control Act of 1969, the State Water Resources Control Board has regulatory authority to protect the water quality of all surface water and groundwater in the State of California ("Waters of the State"). Nine RWQCBs oversee water quality at the local and regional level. The RWQCB for a given region regulates discharges of fill or pollutants into Waters of the State through the issuance of various permits and orders. Discharges into Waters of the State that are also Waters of the U.S. require a Section 401 Water Quality Certification from the RWQCB as a prerequisite to obtaining certain federal permits, such as a Section 404 Clean Water Act permit. Discharges into all Waters of the State, even those that are not also Waters of the U.S., require Waste Discharge Requirements (WDRs), or waivers of WDRs, from the RWQCB. The RWQCB also administers the Construction Storm Water Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one or more acres of soil must obtain a Construction General Permit under the Construction Storm Water Program. A prerequisite for this permit is the development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, storm water, or other pollutants into a Water of the U.S. may require a NPDES permit.

CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1601 and 1602 of the California Fish and Game Code. Activities that may

substantially modify such waters through the diversion or obstruction of their natural flow, change or use of any material from their bed or bank, or the deposition of debris require a Notification of Lake or Streambed Alteration. If CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

4.0 IMPACTS AND MITIGATIONS

The project considered in this evaluation of impacts to biological resources is the installation of new water distribution lines within the Hidden Lake Estates road right-of-ways. Project design is not yet complete; however, this assessment assumes an approximate 2-foot wide trench and up to 40-foot-wide corridor that would support side castings from trenching and movement of construction materials, equipment, and vehicles. It is also assumed that nearly all impacts will be temporary impacts to ruderal/developed land and/or blue oak woodland, as well as potential temporary impact to a wetland drainage and an ephemeral drainage.

4.1 SIGNIFICANCE CRITERIA

NEPA

Federal projects are subject to the provisions of NEPA. The purpose of NEPA is to assess the effects of a proposed action on the human environment, assess the significance of those effects, and recommend measures that if implemented would mitigate those effects. As used in NEPA, a determination that certain effects on the human environment are "significant" requires considerations of both context and intensity (see 40 CFR 1508.27).

Context means that significance must be analyzed in terms of the affected environment in which a proposed action would occur ("action area"). For the purposes of assessing effects of an action on biological resources, the relevant context is often local. The analysis requires a comparison of the action area's biological resources to the biological resources of the local area within which the action area is located. The analysis may, however, require a comparison of the action area's biological resources with the biological resources of an entire region.

Intensity refers to the severity of impact. In considering the intensity of impact to biological resources, it is necessary to address the unique qualities of wetlands and ecologically critical areas that may be affected by the action, the degree to which the action will be controversial, the degree to which the effects of the action will be uncertain, the degree to which the action will establish a precedent for future actions that may result in significant effects, and the potential for the action to result in cumulatively significant effects.

The effects of an action on some biological resources are generally considered to be "significant." Actions that adversely affect federally listed threatened and endangered species and Waters of the U.S. are two examples. Other examples include actions that impede the migratory movements of fish and wildlife, and actions that substantially reduce the areal extent of fish and wildlife habitat, especially if habitat loss occurs in areas identified by state and federal governments as ecologically sensitive or of great scenic value.

NEPA requires mitigation for the effects of an action on the environment. Suitable measures include the following:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action.

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the project.

(e) Compensating for the impact by replacing or providing substitute resources or environments.

This report identifies likely project impacts, identifies those that may be considered "significant" per the provisions of NEPA, and recommends mitigation measures, if any, that would avoid significant impact to biological resources.

CEQA

In California, any project carried out or approved by a public agency that will result in a direct or reasonably foreseeable indirect physical change in the environment must comply with CEQA. The purpose of CEQA is to ensure that a project's potential impacts on the environment are evaluated, and methods for avoiding or reducing these impacts are considered, before the project is allowed to move forward. A secondary aim of CEQA is to provide justification to the public for the approval of any projects involving significant impacts on the environment.

According to Section 15382 of the CEQA Guidelines, a significant effect on the environment means a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest." Although the lead agency may set its own CEQA significance thresholds, project impacts to biological resources are generally considered to be significant if they would meet any of the following criteria established in Appendix G of the CEQA Guidelines:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFW or USFWS.

- 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.

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Furthermore, CEQA Guidelines Section 15065(a) requires the lead agency to make "mandatory findings of significance" if there is substantial evidence that a project may:

- 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, or substantially reduce the number or restrict the range of an endangered, rare or threatened species.

- Achieve short-term environmental goals to the detriment of long-term environmental goals.

- Produce environmental effects that are individually limited but cumulatively considerable, meaning that the incremental effects of the project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects.

4.2 POTENTIALLY SIGNIFICANT PROJECT IMPACTS

4.2.1 Potential Project Impacts to Madera Leptosiphon and Hoover's Calycadenia

Potential Impacts. The project site has the potential to support the Madera leptosiphon (*Leptosiphon serrulatus*) within naturalized north-facing road cuts and Hoover's calycadenia (*Calycadenia hooveri*) within rocky outcrops. These two species are designated rare, threatened, or endangered in California (CNPS 1B) by the California Native Plant Society. If these species are present, populations could be damaged or possibly extirpated by construction activities. Project impacts to populations of these species would be considered a potentially significant impact.

Mitigation. The following measures will be implemented for the protection of the Madera leptosiphon and Hoover's calycadenia.

> ***Mitigation Measure 4.2.1a (Botanical Survey)***. Prior to project initiation, a survey for the Madera leptosiphon and Hoover's calycadenia will be conducted by a qualified botanist(s) during these species' blooming period, when they can most readily be detected. The survey will encompass the entire project site.
>
> ***Mitigation Measure 4.2.1b (Avoidance).*** If any special status plants are detected during the botanical surveys, the project should be designed to avoid impacts to these populations. Avoidance would entail establishing a suitable disturbance-free buffer around special status plant populations found on the site. This buffer will be determined by a qualified botanist and delineated on the ground with temporary construction fencing.
>
> ***Mitigation Measure 4.2.1c (Minimization).*** If complete avoidance is not possible, but some of the special status species plants can be avoided, then a qualified botanist shall identify all avoidance areas and establish buffer zones of sufficient size around these areas to eliminate any unnecessary disturbance to the avoided plants during construction. Furthermore, construction fencing will be placed around the buffer zones, as directed by the botanist.
>
> ***Mitigation Measure 4.2.1d (Salvage)***. Areas occupied by special status plant species that cannot be avoided will require a salvage effort directed by a qualified botanist. The salvage effort will include the collection of seed and topsoil. Seed will be collected at a

time of year when it is most prolific, and stored in a ventilated container in a cool dry location. Soil will be collected and stockpiled at a nearby location. The stockpiled soil and then the seed will be returned to the disturbed area in which it was collected once construction in the area is complete.

Implementation of these measures will reduce any project-related impacts to the Madera leptosiphon and Hoover's calycadenia to a less than significant level under CEQA and NEPA.

4.2.2 Project Impacts to the Crotch Bumble Bee

Potential Impacts. The Crotch bumble bee is a recent CESA candidate species and has been documented within a mile of the project site in similar habitat. Also, the species preferred food plants were observed on the project site. As a result, this species could potentially over-winter, forage, and/or nest on undeveloped areas of the project site. Project activities have the potential to result in the mortality of over-wintering, foraging, and/or nesting Crotch bumble bees. Construction-related mortality of Crotch bumble bees is considered a potentially significant impact of the project under CEQA and NEPA and a potential violation of CESA.

Project impacts will consist almost entirely of temporary impacts mostly within roads or road right-of-ways. It is expected that a large portion of the actual project disturbance area would provide habitats that would be marginal for use by Crotch bumble bees. Following construction, surface habitats are expected to return to pre-project conditions and their former level of suitability for this species. Therefore, loss of habitat for the Crotch bumble bee is not considered to be a significant impact of the project under CEQA and NEPA.

Implementation of the following measures would reduce impacts to Crotch bumble bees to a less then significant level and assure compliance with CESA.

Mitigation. The following measures will be implemented for the protection of the Crotch Bumble Bee:

> ***Mitigation Measure 4.2.2a* (*Preconstruction Surveys*).** A qualified biologist shall survey the project work area prior to the start of project activities each year to identify whether over-wintering, nesting, or foraging habitats of the Crotch bumble bee are present on or within 100 feet of the Project work area. If suitable habitat is identified

within the project area, a qualified biologist shall conduct visual surveys of the project area for Crotch Bumble Bee within 30 days prior to starting project activities.

***Mitigation Measure 4.2.2b* (*Avoidance*).** If an individual Crotch bumble bee is observed, project activities shall not occur until the animal has left the work area of its own volition. If a nest is observed, no project activities shall occur until a plan to protect Crotch bumblebee, including over-wintering queens, has been approved in writing by CDFW.

Implementation of the above measures will reduce any potential project-related impacts to the Crotch bumble bee to a less than significant level under CEQA and NEPA.

4.2.3 Potential Project Impacts to California Tiger Salamander

Potential Impacts. As discussed in Section 2.5.1, the California tiger salamander has been documented breeding in stock ponds located 0.2 mile and 0.6 mile from the project site. CTS individuals breeding in these ponds could conceivably aestivate on the project site, which at the time of the field survey supported a number of small mammal burrows. Any CTS aestivating on site at the time of construction have the potential to be injured or killed by project-related ground disturbance. Furthermore, if project activities occur during the rainy season or late spring, when CTS would be engaged in overland movement, project vehicles and equipment on the project site have the potential to injure or kill CTS. Construction-related injury or mortality of CTS is considered a potentially significant impact of the project under CEQA and NEPA.

Project impacts will consist almost entirely of temporary impacts to roads or road right-of-ways, habitats that would be marginal, at best, for aestivating CTS. Following construction, surface habitats are expected to return to pre-project conditions and their former level of suitability for this species. Therefore, loss of habitat for the CTS is not considered to be a significant impact of the project under CEQA and NEPA.

The CDFW and USFWS typically consider take of CTS to occur when ground disturbance occurs within 50 feet of small mammal burrows that are located within 1.3 miles from a known or suitable breeding pond. Implementation of the following measures would reduce impacts to CTS to a less then significant level.

Mitigation. The following measures will be implemented for the protection of the California tiger salamander:

> ***Mitigation Measure 4.2.3a* (*Burrow Survey*).** Within 14 days prior to the start of construction, a qualified biologist will conduct a survey for rodent burrows that could potentially be used by aestivating CTS and be impacted by the project. The survey area will encompass all portions of the project site, and surrounding lands within 50 feet, where accessible. All suitable burrows will be marked in the field and/or mapped.
>
> ***Mitigation Measure 4.2.3b* (*Avoidance of Potential Aestivation Burrows*).** Project activities will be confined to paved road surfaces to the extent feasible. Where ground-disturbing activities in these areas must occur outside of paved roads, potential CTS aestivation burrows will be avoided by a minimum distance of 50 feet.
>
> ***Mitigation Measure 4.2.3c* (*Construction Timing*).** The project will be constructed entirely during the non-rainy season, when CTS are unlikely to be traveling overland. Construction activities will be initiated after the nearby stock ponds have dried or after June 1st, whichever comes first, and ended before the first significant fall rains.
>
> ***Mitigation Measure 4.2.3d* (*Take Authorization*).** If any of the above mitigations are infeasible take authorization from CDFW and USFWS must be obtained and the required mitigations presented in the take permits issued from these agencies must be adhered to. While such mitigations are project-specific, typical mitigation requirements of these permits include some form of compensatory mitigation, as well as avoidance and minimization measures such as construction monitoring by an approved biologist, mandatory capping of pipes, covering trenches, and maintaining escape ramps in trenches.
>
> ***Mitigation Measure 4.2.3e (Environmental Awareness Training).*** Prior to the start of construction, a qualified biologist will provide training on the CTS to all construction personnel. This training will include a description of the CTS and its habitat needs; a report of the occurrence of the species in the project vicinity; an explanation of the status of the species and its protection under the state and federal Endangered Species Acts; and a list of the measures being taken to reduce impacts to CTS during project implementation. Attendance will be documented on a sign-in sheet. Attendees will be provided a handout that summarizes all of the training information. The applicant will use this handout to train any construction personnel that were not in attendance at the first meeting, prior to those personnel starting work on the site.

Implementation of the above measures will reduce any potential project-related impacts to CTS to a less than significant level under CEQA and NEPA.

4.2.4 Potential Project Impacts to Pallid Bats

Potential Impact. Mature blue oaks within the project site provide potential habitat for roosting pallid bats (*Antrozous pallidus*), a California Species of Special Concern. If trees are removed by the project that contain pallid bat colonies, many individuals of this species could be killed. Such a mortality event would be considered a potentially significant impact of the project under CEQA and NEPA. The project is not expected to remove many, if any, trees; therefore, the loss of pallid bat habitat is not considered significant.

Mitigation. In order to minimize construction disturbance to roosting pallid bats, the applicant will implement the following measures:

> ***Mitigation Measure 4.2.4a (Roost Avoidance).*** To avoid potential impacts to bat roosts, tree removal or limbing will be avoided to the extent feasible.
>
> ***Mitigation Measure 4.2.4b (Temporal Avoidance).*** If removal of blue oaks must occur, it will be completed outside of the period between April 1 and September 30, the time frame within which colony-nesting bats generally assemble, give birth, nurse their young, and ultimately disperse.
>
> ***Mitigation Measure 4.2.4c (Pre-construction Surveys).*** If any blue oak trees are to be removed or limbed, then within 15 days prior to tree removal or limbing, a qualified biologist will survey these trees for the presence of bats. The biologist will look for individuals, guano, and staining, and will listen for bat vocalizations. If necessary, the biologist will wait for nighttime emergence of bats from roost sites. If no bats are observed to be roosting or breeding, then no further action would be required, and construction could proceed.
>
> ***Mitigation Measure 4.2.4d (Minimization).*** If a non-breeding bat colony is found in trees proposed for removal, the individuals will be humanely evicted, under the direction of a qualified biologist, to ensure that no harm or "take" of any bats occurs as a result of construction activities.
>
> ***Mitigation Measure 4.2.4e (Avoidance of Maternity Roosts)***. If a maternity colony is detected during pre-construction surveys, a disturbance-free buffer will be established around the colony and remain in place until a qualified biologist determines that the nursery is no longer active. The disturbance-free buffer will range from 50 to 100 feet as determined by the biologist.

Implementation of the above measures will reduce potential project impacts to roosting pallid bats to a less than significant level under CEQA and NEPA.

4.2.5 Potential Project Impacts to Nesting Birds

Potential Impacts. The project site has the potential to be used for nesting by a variety of birds protected by state law. Avian nesting could occur in trees, shrubs, or ground vegetation. While avian nesting activity in such close proximity to established roadways is typically low, some onsite roadways are seldom used, increasing the likelihood of potential nests. If project construction takes place during the nesting season, birds nesting on the site could be injured or killed by construction activities, or disturbed such that they would abandon their nests. Significant construction-related disturbance is also a possibility for birds nesting adjacent to the project site. Construction-related mortality of nesting birds and disturbance leading to nest abandonment would violate state laws and constitute significant impacts of the project under CEQA and NEPA.

Mitigation. To avoid and minimize the potential for construction-related mortality/disturbance of nesting birds, the following measures will be implemented:

> ***Measure 4.2.5a (Construction Timing).*** If feasible, the project will be implemented outside of the avian nesting season, typically defined as February 1 to August 31.
>
> ***Measure 4.2.5b (Preconstruction Surveys*).** If construction is to occur between February 1 and August 31, a qualified biologist will conduct pre-construction surveys for active bird nests within 10 days prior to the start of construction. The survey area will encompass the site and accessible surrounding lands within 250 feet for nesting migratory birds and 500 feet for raptors (i.e. birds of prey).
>
> ***Measure 4.2.5c (Avoidance of Active Nests*).** Should any active nests be discovered in or near proposed construction zones, the biologist will identify a suitable construction-free buffer around the nest. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged and are capable of foraging independently.

Implementation of the above measures will ensure that the project does not significantly impact nesting birds and that the project is in compliance with state laws.

4.3 LESS THAN SIGNIFICANT PROJECT IMPACTS

4.3.1 Project Impacts to Special Status Plant Species Absent to Unlikely to Occur on the Site.

Potential Impacts. Thirteen (13) special status plant species have been documented in the project vicinity (see Table 1). Eleven (11) of these plant species are considered absent from the project site due to past and ongoing disturbance, the absence of suitable habitat and/or the site being situated outside the range of the species (see Table 1). These species include Mariposa pussy-paws, carpenteria, succulent owl's clover, Bogg's Lake hedge hyssop, San Joaquin Valley orcutt grass, hairy orcutt grass, Hartweg's golden sunburst, dwarf downingia, spiny-sepaled button celery, orange lupine, and Sanford's arrowhead.

Because these species would not occur on the site, the proposed project would have no effect on individuals or regional populations of these special status plant species.

Mitigation. Mitigation measures are not warranted.

4.3.2 Project Impacts to Special Status Animal Species Absent from, or Unlikely to Occur within, the Project site

Potential Impacts. Of the 25 special status animal species that potentially occur in the general vicinity of the site, 18 are considered absent or unlikely to occur within the project site due to the absence of suitable habitat and/or the project site's being situated outside of the species' known distribution (see Table 1). These include the conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, Delta smelt, California red-legged frog, foothill yellow-legged frog, blunt-nosed leopard lizard, Swainson's hawk, tricolored blackbird, western yellow-billed cuckoo, Fresno kangaroo rat, San Joaquin kit fox, Sierra Nevada red fox, hardhead, western spadefoot, western pond turtle, burrowing owl, and American badger. The project is expected to have no effect on these species through construction mortality/disturbance or loss of habitat because there is little or no likelihood that they are present.

Mitigation. Mitigation is not warranted.

4.3.3 Project Impacts to Special Status Species Potentially Occurring on the Site as Foragers or Flyovers Only

Potential Impacts. Four (4) species may simply fly over the site, utilize the site for foraging, and/or, on rare occasions, temporarily perch in trees on the site but would nest and roost elsewhere. These species are the bald eagle, golden eagle, spotted bat, and western mastiff bat. Since these species are highly mobile outside of their nesting and roosting sites, the project is not expected to result in construction-related mortality of individuals that may occur on, or over, the site prior to or during construction. The project site does not represent unique or important habitat for these species, with many square miles of similar habitat present in the region. Furthermore, upon project completion, habitats utilized by these species (i.e. air space over the site, large trees) will remain essentially unchanged from pre-project conditions. Therefore, project impacts to the bald eagle, golden eagle, spotted bat, and western mastiff bat are considered less than significant under CEQA and NEPA.

Mitigation. Mitigation is not warranted.

4.3.4 Project Impacts to Wildlife Movement Corridors

Potential Impacts. As discussed in Section 2.9, the steep terrain and residential development associated with the project site are not conducive to wildlife movement, and the site's seasonal wetland channel is a minor drainage that would not represent an important wildlife movement corridor. The project will have no effect on wildlife movement corridors because such corridors are absent from the site.

Mitigation. Mitigation is not warranted.

4.3.5 Project Impacts to Critical Habitat and Other Sensitive Habitat

Potential Impacts. The project will have no effect on designated critical habitat or other sensitive habitat because critical habitat and other sensitive habitat is absent from the project site.

Mitigation. Mitigation is not warranted.

4.3.6 Potential Project Impacts to Waters of the U.S. or Waters of the State

Potential Impacts. As discussed, the proposed water distribution lines will intersect two small drainages that appear to meet criteria for USACE, RWQCB, and possibly CDFW jurisdiction. Impacts to these drainages will be less than 0.1 acres in size, likely occur in previous road crossings, and temporary. As a result, impacts to waters of the U.S. or State are not considered a significant impact under CEQA or NEPA. However, if project implementation requires the excavation or placement of fill within these drainages, appropriate permit acquisition from the USACE, RWQCB, and CDFW would be required.

Mitigation. Mitigation is not warranted.

4.3.7 Local Policies or Habitat Conservation Plans

Potential Impacts. The proposed project design appears to be consistent with the goals and policies of the Madera County General Plan. No habitat conservation plans are known to pertain to the area containing the project site.

Mitigation. No mitigation is required.

4.4 SECTION 7 DETERMINATIONS FOR FEDERALLY LISTED SPECIES

The following table summarizes project effect determinations for Federally Listed Species found on the USFWS IPaC list and/or CNDDB list generated for the project.

Table 2: Section 7 Determinations for Federally Listed Species

Species	Determination	Rationale for the Determination
Mariposa pussy-paws (*Calytridium pulchellum*)	***No effect***	• Habitat absent
Succulent Owl's Clover (*Castilleja campestris* ssp. *succulenta*)	***No effect***	• Habitat absent
San Joaquin Valley Orcutt Grass (*Orcuttia ineaqualis*)	***No effect***	• Habitat absent
Hairy Orcutt Grass (*Orcuttia pilosa*)	***No effect***	• Habitat absent
Hartweg's Golden Sunburst (*Pseudobahia bahiifolia*)	***No effect***	• Habitat absent
Conservancy Fairy Shrimp (*Branchinecta conservatio*)	***No effect***	• Habitat absent
Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)	***No effect***	• Habitat absent
Vernal Pool Tadpole Shrimp (*Lepidurus packardi*)	***No effect***	• Habitat absent
Delta Smelt (*Hypomesus transpacificus*)	***No effect***	• Habitat absent • Project site out of species' range
California Red-legged Frog (*Rana aurora draytonii*)	***No effect***	• Habitat absent • Project site out of species' range
California Tiger Salamander (*Ambystoma californiense*)	***May affect, likely to adversely affect***	• Breeding ponds in close proximity • Aestivation habitat available on portions of the project site • Impacts temporary
	May affect, not likely to adversely affect	• If *Mitigation Measures 4.2.3a,b, and c* are implemented
Blunt-Nosed Leopard Lizard (*Gambelia sila*)	***No effect***	• Habitat absent • Project site out of species' range

Table 2 (continued): Section 7 Determinations for Federally Listed Species

Species	Determination	Rationale for the Determination
Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*)	***No effect***	• Habitat absent • Project site out of species' range
Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*)	***No effect***	• Habitat absent • Project site out of species' range
San Joaquin Kit Fox (*Vulpes macrotis mutica*)	***No effect***	• Habitat absent • Project site out of species' range
Sierra Nevada Red Fox (*Vulpes vulpes necator*)	***No effect***	• Habitat absent • Project site out of species' range

5.0 LITERATURE REFERENCED

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APPENDIX A: VASCULAR PLANTS OF THE PROJECT SITE

APPENDIX A: VASCULAR PLANTS OF THE PROJECT SITE

The plant species listed below were observed on the project site during surveys conducted by Live Oak Associates, Inc. on June 25, 2019. The U.S. Fish and Wildlife Service wetland indicator status of each plant has been shown following its common name.

OBL - Obligate
FACW - Facultative Wetland
FAC - Facultative
FACU - Facultative Upland
UPL - Upland
NR - No review
NA - No agreement
NI - No investigation

AGAVACEAE—Century-Plant Family		
Agave sp.	Agave	UPL
AMARANTHACEAE – Amaranth Family		
Amaranthus albus	Tumbleweed	FACU
ANACARDIACEAE — Sumac Family		
Toxicodendron diversilobum	Poison Oak	FACU
APIACEAE - Carrot Family		
Daucus pusillus	Queen Anne's Lace	UPL
APOCYNACEAE – Dogbane Family		
Nerium oleander	Oleander	UPL
ASTERACEAE - Sunflower Family		
Ambrosia acanthicarpa	Annual Burweed	UPL
Carduus pychnocephalus	Italian Thistle	UPL
Cirsium vulgare	Bullthistle	FACU
Erigeron bonariensis	Asthmaweed	FACU
Erigeron canadensis	Canada Horseweed	FACU
Centaurea solstitialis	Yellow Star Thistle	UPL
Holocarpha heermanii	Heerman's Tarweed	UPL
Hypochaeris radicata	Hairy Cats Ear	FACU
Lactuca serriola	Prickly Lettuce	FACU
Logfia gallica	Narrowleaf Cottonrose	UPL
Madia elegans	Common Madia	UPL
Sonchus oleraceus	Sow Thistle	UPL
Stephanomeria virgata	Wand Wirelettuce	UPL
BRASSICACEAE - Mustard Family		
Capsella bursa-pastoris	Shepherd's Purse	UPL
Raphanus sativus	Wild Radish	UPL
BORAGINACEAE - Borage Family		
Amsinckia intermedia	Common Fiddleneck	UPL
CARYOPHYLLACEAE – Pink Family		
Spergularia rubra	Purple Sand Spurry	UPL
CHENOPODIACEAE - Goosefoot Family		
Chenopodium album	Lambs Quarters	FACU

CUCURBITACEAE – Gourd Family		
Marah horridus	Wild Cucumber	UPL
CYPERACEAE - Sedge Family		
Cyperus eragrostis	Umbrella Sedge	FACW
ERICACEAE — Heath Family		
Arctostaphylos viscida	Mariposa Manzanita	UPL
EUPHORBIACEAE - Spurge Family		
Croton setigerus	Turkey Mullein	UPL
Euphorbia maculata	Spotted Spurge	UPL
FABACEAE - Pea Family		
Acmispon americanus	Spanish Lotus	UPL
Cytisus scoparius	Scotch Broom	UPL
Lupinus albifrons	Bush Lupine	UPL
Lupinus benthamii	Spider Lupine	UPL
Vicia sp.	Vetch	-----
FAGACEAE - Oak Family		
Quercus douglasii	Blue Oak	UPL
Quercus wislizenii	Interior Live Oak	UPL
GERANIACEAE - Geranium Family		
Erodium cicutarium	Red Stemmed Filaree	UPL
HYDROPHYLLACEAE – Water Leaf Family		
Phacelia cicutaria	Caterpillar Phacelia	UPL
LAMIACEAE - Mint Family		
Trichostemma lanceolata	Bluecurls	UPL
Mentha pulegium	Pennyroyal	OBL
Rosmarinus officinalis	Rosemary	UPL
LILIACEAE - Lily Family		
Triteleia ixioides ssp. *scabra*	Pretty Face	FAC
MALVACEAE – Mallow Family		
Malva parviflora	Cheeseweed	UPL
MYRTACEAE – Bottlebrush Family		
Eucalyptus camaldulensis	Red Gum	FAC
OLEACEAE – Olive Family		
Olea europaea	Olive	UPL
ONAGRACEAE - Evening Primrose Family		
Clarkia purpurea	Wine Cup Clarkia	UPL
PAPAVERACEAE – Poppy Family		
Eschscholzia californica	California Poppy	UPL
PINACAEA — Pine Family		
Cedrus deodara	Deodar Cedar	UPL
Pinus sabiniana	Foothill Pine	UPL
Pinus spp.	Ornamental Pines	UPL
POACEAE - Grass Family		
Aira caryophyllea	Silver European Hairgrass	UPL
Avena sp.	Wild Oat	UPL
Briza minor	Little Quaking Grass	FAC
Bromus diandrus	Ripgut	UPL
Bromus hordeaceous	Soft Chess	FACU
Bromus madritensis ssp. *rubens*	Red Brome	UPL

Cynodon dactylon	Bermuda Grass	FACU
Festuca myuros	Rattail Fescue	FACU
Hordeum murinum ssp. *leporinum*	Barley	FACU
Leersia oryzoides	Rice Cutgrass	OBL
Sorghum halepense	Johnsongrass	FACU
POLEMONIACEAE – Phlox Family		
Leptosiphon ciliatus	Whiskerbrush	UPL
Navarretia viscidula	Sticky Navarretia	UPL
POLYGONACEAE - Buckwheat Family		
Eriogonum nudum	Nude Buckwheat	UPL
Persicaria lapathifolia	Common Knotweed	FACW
Polygonum aviculare	Prostrate Smartweed	FAC
PTERIDACEAE — Brake Family		
Pentagrama triangularis ssp. *triangularis*	Goldenback Fern	UPL
RHAMNACEAE — Buckthorn Family		
Ceanothus leucodermis	Chaparral White-thorn	UPL
Rhamnus californica ssp. *occidentalis*	California Coffeeberry	UPL
ROSACEAE – Rose Family		
Heteromeles arbutifolia	Toyon	UPL
Pyracantha sp.	Firethorn	UPL
Rubus armeniacus	Himalayan Blackberry	FAC
RUBIACEAE - Madder Family		
Galium parisiense	Wall Bedstraw	UPL
SOLANACEAE – Nightshade Family		
Datura wrightii	Jimson Weed	UPL
Nicotiana sp.	Tobacco	UPL
Nicotiana glauca	Tree Tobacco	FAC
Solanum americanum	Common Nightshade	FACU
VISCACEAE - Mistletoe Family		
Phoradendron villosum	Oak Mistletoe	UPL
VITACEAE - Grape Family		
Vitis califonica	California Wild Grape	UPL
ZYGOPHYLLACEAE—Caltrop Family		
Tribulus terrestris	Puncturevine	UPL

APPENDIX B: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY OCCUR ON THE PROJECT SITE

APPENDIX B: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY OCCUR ON THE PROJECT SITE

The species listed below are those that may reasonably be expected to use the project site routinely or from time to time. The list was not intended to include birds that are vagrants or occasional transients. Terrestrial vertebrate species observed on or adjacent to the project site during surveys conducted by Live Oak Associates, Inc. on June 25, 2019 have been noted with an asterisk.

CLASS: AMPHIBIA
ORDER: CAUDATA (Salamanders)
FAMILY: AMBYSTOMATIDAE (Mole Salamanders)
California Tiger Salamander *Ambystoma californiense*)
ORDER: SALIENTIA (Frogs and Toads)
FAMILY: BUFONIDAE (True Toads)
Western Toad (*Bufo boreas*)
FAMILY: HYLIDAE (Treefrogs and Relatives)
Sierran Treefrog (*Pseudacris sierra*)

CLASS: REPTILIA
ORDER: SQUAMATA (Lizards and Snakes)
SUBORDER: SAURIA (Lizards)
FAMILY: IGUANIDAE (Iguanids)
*Western Fence Lizard (*Sceloporus occidentalis*)
FAMILY: SCINCIDAE (Skinks)
Gilbert Skink (*Eumeces gilberti*)
FAMILY: ANGUIDAE (Alligator Lizards and Relatives)
Southern Alligator Lizard (*Gerrhonotus multicarinatus*)
SUBORDER: SERPENTES (Snakes)
FAMILY: BOIDAE (Boas)
Rubber Boa (*Charina bottae*)
FAMILY: COLUBRIDAE (Colubrids)
Racer (*Coluber constrictor*)
Striped Racer (*Masticophis flagellum*)
Gopher Snake (*Pituophis melanoleucus*)
Common Kingsnake (*Lampropeltis getulus*)
Common Garter Snake (*Thamnophis sirtalis*)
FAMILY: VIPERIDAE
Western Rattlesnake (*Crotalus viridis*)

CLASS: AVES
ORDER: CICONIIFORMES (Herons, Storks, Ibises, and relatives)
FAMILY: ARDEIDAE (Herons and Bitterns)
Great Blue Heron (*Ardea herodias*)
ORDER: FALCONIFORMES (Vultures, Hawks, and Falcons)
FAMILY: CATHARTIDAE (American Vultures)

*Turkey Vulture (*Cathartes aura*)

FAMILY: ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)

Sharp-shinned Hawk (*Accipiter striatus*)

Cooper's Hawk (*Accipiter cooperi*)

*Red-shouldered Hawk (*Buteo lineatus*)

*Red-tailed Hawk (*Buteo jamaicensis*)

Ferruginous Hawk (*Buteo regalis*)

Golden Eagle (*Aquila chrysaetos*)

Bald Eagle (*Haliaeetus leucocephalus*)

FAMILY: FALCONIDAE (Caracaras and Falcons)

*American Kestrel (*Falco sparverius*)

ORDER: GALLIFORMES (Megapodes, Currassows, Pheasants, and Relatives)

FAMILY: PHASIANIDAE (Quails, Pheasants, and Relatives)

*California Quail (*Callipepla californica*)

ORDER: CHARADRIIFORMES (Shorebirds, Gulls, and relatives)

FAMILY: CHARADRIIDAE (Plovers and relatives)

Killdeer (*Charadrius vociferus*)

Ring-billed Gull (*Larus delawarensis*)

California Gull (*Larus californicus*)

ORDER: COLUMBIFORMES (Pigeons and Doves)

FAMILY: COLUMBIDAE (Pigeons and Doves)

Band-tailed Pigeon (*Columba fasciata*)

*Eurasian Collared-Dove (*Streptopelia decaocto*)

*Mourning Dove (*Zenaida macroura*)

ORDER: STRIGIFORMES (Owls)

FAMILY: TYTONIDAE (Barn Owls)

Common Barn Owl (*Tyto alba*)

FAMILY: STRIGIDAE (Typical Owls)

Western Screech Owl (*Otus kennicottii*)

Great Horned Owl (*Bubo virginianus*)

Northern Pygmy-Owl (*Glaucidium gnoma*)

ORDER: CAPRIMULGIFORMES (Goatsuckers and Relatives)

FAMILY: CAPRIMULGIDAE (Goatsuckers)

Common Nighthawk (*Chordeiles minor*)

Common Poorwill (*Phalaenoptilus nuttalli*)

ORDER: APODIFORMES (Swifts and Hummingbirds)

FAMILY: APODIFORMES (Swifts and Hummingbirds)

White-throated Swift (*Aeronautes saxatalis*)

FAMILY: TROCHILIDAE (Hummingbirds)

Black-chinned Hummingbird (*Archilochus alexandri*)

Anna's Hummingbird (*Calypte anna*)

Calliope Hummingbird (*Stellula calliope*)

Rufous Hummingbird (*Selasphorus rufus*)

ORDER: PICIFORMES (Woodpeckers and Relatives)

FAMILY: PICIDAE (Woodpeckers and Wrynecks)
Lewis' Woodpecker (*Melanerpes lewis*)
*Acorn Woodpecker (*Melanerpes formicivorous*)
Red-breasted Sapsucker (*Sphyrapicus ruber*)
*Nuttall's Woodpecker (*Picoides nuttallii*)
Downy Woodpecker (*Picoides pubescens*)
Northern Flicker (*Colaptes auratus*)

ORDER: PASSERIFORMES (Perching Birds)
FAMILY: TYRANNIDAE (Tyrant Flycatchers)
Western Wood-Pewee (*Contopus sordidulus*)
Pacific Slope Flycatcher (*Empidonax difficilis*)
Black Phoebe (*Sayornis nigricans*)
Say's Phoebe (*Sayornis saya*)
*Ash-throated Flycatcher (*Myiarchus cinerascens*)
Western Kingbird (*Tyrannus verticalis*)
FAMILY: HIRUNDINIDAE (Swallows)
Tree Swallow (*Tachycineta bicolor*)
*Violet-green Swallow (*Tachycineta thalassina*)
Northern Rough-winged Swallow (*Stelgidopteryx serripennis*)
Cliff Swallow (*Hirundo pyrrhonota*)
Barn Swallow (*Hirundo rustica*)
FAMILY: CORVIDAE (Jays, Magpies, and Crows)
*California Scrub Jay (*Aphelocoma calfornica*)
American Crow (*Corvus brachyrhynchos*)
*Common Raven (*Corvus corax*)
FAMILY: PARIDAE (Titmice)
*Oak Titmouse (*Baeolophus inornatus*)
FAMILY: AEGITHALIDAE (Bushtit)
*Bushtit (*Psaltriparus minimus*)
FAMILY: SITTIDAE (Nuthatches)
*White-breasted Nuthatch (*Sitta carolinensis*)
FAMILY: CERTHIIDAE (Creepers)
Brown Creeper (*Certhia americana*)
FAMILY: TROGLODYTIDAE (Wrens)
Rock Wren (*Salpinctes obsoletus*)
Bewick's Wren (*Thryomanes bewickii*)
*House Wren (*Troglodytes aedon*)
FAMILY: REGULIDAE (Kinglets)
Ruby-crowned Kinglet (*Regulus calendula*)
FAMILY: TURDIDAE (Thrushes)
Western Bluebird (*Sialia mexicana*)
Hermit Thrush (*Catharus guttatus*)
American Robin (*Turdus migratorius*)
FAMILY: POLIOPTILIDAE (Gnatcatchers)
Blue-gray Gnatcatcher (*Polioptila caerulea*)

FAMILY: SYLVIIDAE (Wrentit)
Wrentit (*Chamaea fasciata*)
FAMILY: MIMIDAE (Mockingbirds and Thrashers)
Northern Mockingbird (*Mimus polyglottos*)
FAMILY: BOMBYCILLIDAE (Waxwings)
Cedar Waxwing (*Bombycilla cedrorum*)
FAMILY: PTILOGONATIDAE (Silky Flycatchers)
Phainopepla (*Phainopepla nitens*)
FAMILY: STURNIDAE (Starlings)
European Starling (*Sturnus vulgaris*)
FAMILY: VIREONIDAE (Typical Vireos)
Hutton's Vireo (*Vireo huttoni*)
FAMILY: PARULIDAE (Wood Warblers and Relatives)
Orange-crowned Warbler (*Vermivora celata*)
Nashville Warbler (*Vermivora ruficapilla*)
Yellow-rumped Warbler (*Dendroica coronata*)
Black-throated Gray Warbler (*Dendroica nigrescens*)
FAMILY: EMBERIZIDAE (Emberizines)
Spotted Towhee (*Pipilo maculatus*)
California Towhee (*Pipilo crissalis*)
*Rufous-crowned Sparrow (*Aimophila ruficeps*)
Chipping Sparrow (*Spizella passerina*)
Vesper Sparrow (*Pooecetes gramineus*)
Lark Sparrow (*Chondestes grammacus*)
*Savannah Sparrow (*Passerculus sandwichensis*)
Fox Sparrow (*Passerella iliaca*)
Song Sparrow (*Melospiza melodia*)
*Lincoln's Sparrow (*Melospiza lincolnii*)
Golden-crowned Sparrow (*Zonotrichia atricapilla*)
White-crowned Sparrow (*Zonotrichia leucophrys*)
Dark-eyed Junco (*Junco hyemalis*)
FAMILY: ICTERIDAE (Blackbirds, Orioles and Allies)
Brewer's Blackbird (*Euphagus cyanocephalus*)
*Brown-headed Cowbird (*Molothrus ater*)
*Bullock's Oriole (*Icterus bullockii*)
FAMILY: CARDINALIDAE (Cardinals and Relatives)
Black-headed Grosbeak (*Pheucticus melanocephalus*)
Lazuli Bunting (*Passerina amoena*)
FAMILY: FRINGILLIDAE (Finches)
Purple Finch (*Carpodacus purpureus*)
*House Finch (*Carpodacus mexicanus*)
*Lesser Goldfinch (*Carduelis psaltria*)
Lawrence's Goldfinch (*Spinus lawrencei*)
FAMILY: PASSERIDAE (Old World Sparrows)
House Sparrow (*Passer domesticus*)

CLASS: MAMMALIA

ORDER: MARSUPIALIA (Opossums, Kangaroos, and Relatives)

FAMILY: DIDELPHIDAE (Opossums)

Virginia Opossum (*Didelphis virginiana*)

ORDER: INSECTIVORA (Shrews and Moles)

FAMILY: TALPIDAE (Moles)

Broad-footed Mole (*Scapanus latimanus*)

ORDER: CHIROPTERA (Bats)

FAMILY: VESPERTILIONIDAE (Vespertilionid Bats)

Little Brown Myotis (*Myotis lucifugus*)
Yuma Myotis (*Myotis yumanensis*)
Long-eared Myotis, (*Myotis evotis*)
Fringed Myotis (*Myotis thysanodes*)
Long-legged Myotis (*Myotis volans*)
California Myotis (*Myotis californicus*)
Small-footed Myotis (*Myotis leibii*)
Western Pipistrelle (*Pipistrellus hesperus*)
Big Brown Bat (*Eptesicus fuscus*)
Hoary Bat (*Lasiurus cinereus*)
Spotted Bat (*Euderma maculatum*)
Pallid Bat (*Antrozous pallidus*)

FAMILY: MOLOSSIDAE (Free-tailed Bat)

Brazilian Free-tailed Bat (*Tadarida brasiliensis*)
Western Mastiff Bat (*Eumops perotis*)

ORDER: LAGOMORPHA (Rabbits, Hares, and Pikas)

FAMILY: LEPORIDAE (Rabbits and Hares)

Desert Cottontail (*Sylvilagus audubonii*)

ORDER: RODENTIA (Squirrels, Rats, Mice, and Relatives)

FAMILY: SCIURIDAE (Squirrels, Chipmunks, and Marmots)

*California Ground Squirrel (*Spermophilus beecheyi*)
Western Gray Squirrel (*Sciurus griseus*)

FAMILY: GEOMYIDAE (Pocket Gophers)

Botta's Pocket Gopher (*Thomomys bottae*)

FAMILY: CRICETIDAE (Deer Mice, Voles, and Relatives)

California Pocket Mouse (*Perognathus californicus*)
Western Harvest Mouse (*Reithrodontomys megalotis*)
California Mouse (*Peromyscus californicus*)
Deer Mouse (*Peromyscus maniculatus*)
Brush Mouse (*Peromyscus boylii*)
Norway Rat (*Rattus norvegicus*)
House Mouse (*Mus musculus*)
California Vole (*Microtus californicus*)

ORDER: CARNIVORA (Carnivores)

FAMILY: CANIDAE (Foxes, Wolves, and Relatives)

Coyote (*Canis latrans*)
Gray Fox (*Urocyon cinereoargenteus*)

FAMILY: PROCYONIDAE (Raccoons and Relatives)

Raccoon (*Procyon lotor*)

FAMILY: MUSTELIDAE (Weasels, Badgers, and Relatives)

Striped Skunk (*Mephitis mephitis*)

FAMILY: FELIDAE (Cats)

Mountain Lion (*Felis concolor*)
Bobcat (*Lynx rufus*)

ORDER: ARTIODACTYLA

FAMILY: CERVIDAE (Deer, Elk, and Relatives)

*Mule Deer (*Odocoileus hemionus*)

APPENDIX C: SELECTED SITE PHOTOGRAPHS

Photo 1: Example of ruderal/developed lands flanked by blue oak woodland within the project site.

Photo 2: Another example of ruderal/developed lands (center and left) and blue oak woodland (right) within the project site.

Photo 3: A less developed road within the project site. Steep topography illustrated in this photo.

Photo 4: Example of seldom used road within project site.

Photo 5: California ground squirrel burrows within project site.

Photo 6: California ground squirrel burrows at edge of roadway within project site.

APPENDIX D: USFWS INFORMATION FOR PLANNING AND CONSULTATION UNOFFICIAL SPECIES LIST

IPaC Information for Planning and Consultation **U.S. Fish & Wildlife Service**

IPaC resource list

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

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

Location

Madera County, California

Local office

Sacramento Fish And Wildlife Office

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

Federal Building

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

Endangered species

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

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

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

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

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

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

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

---

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

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

Mammals

NAME	STATUS
Fresno Kangaroo Rat Dipodomys nitratoides exilis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5150	Endangered
San Joaquin Kit Fox Vulpes macrotis mutica No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard Gambelia silus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/625	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/321	Threatened

Crustaceans

NAME	STATUS

Conservancy Fairy Shrimp Branchinecta conservatio — Endangered
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/8246

Vernal Pool Fairy Shrimp Branchinecta lynchi — Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/498

Flowering Plants

NAME	STATUS
Fleshy Owl's-clover Castilleja campestris ssp. succulenta There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8095	Threatened
Hartweg's Golden Sunburst Pseudobahia bahiifolia No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1704	Endangered

Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

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

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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

Appendix C

Class III Inventory/Phase I Survey

CLASS III INVENTORY/PHASE I SURVEY, MADERA MAINTENANCE DISTRICT – 1 WATER SYSTEMS IMPROVEMENTS FEASIBILITY PROJECT, HIDDEN LAKES ESTATES, MADERA COUNTY, CALIFORNIA

Prepared for:

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Provost & Pritchard Consulting Group
130 N. Garden Street
Visalia, CA 93291-6362

Prepared by:

David S. Whitley, Ph.D., RPA

and

Robert Azpitarte, B.A.

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July 2019

PN 32530

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MANAGEMENT SUMMARY

An intensive Class III cultural resources inventory/Phase I survey was conducted for the Madera County Maintenance District 1 (MD-1) Water System Improvement Feasibility Project (Project), Hidden Lakes Estates, California. The Project is located in Section 23 (T10S/R21E; MDBM), above the northwest shore of Millerton Lake. ASM Affiliates, Inc., conducted this study, with David S. Whitley, Ph.D., RPA, serving as principal investigator. The study was undertaken to assist with compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the California Environmental Quality Act (CEQA). The Project is a feasibility study intended to identify potentially significant environmental impacts or effects, if any, should the existing Hidden Lakes Estates water distribution system be improved. The survey covered the current extent of the MD-1 water distribution system, consisting of approximately 5-miles (mi) of pipeline route.

A records search of site files and maps was conducted at the Southern San Joaquin Valley Archaeological Information Center (IC), California State University, Bakersfield. A Sacred Lands File Request was also submitted to the Native American Heritage Commission (NAHC). These investigations determined that the Project study area had not been previously surveyed and that no archaeological sites/tribal cultural resources were known to exist within it. Outreach letters were sent to tribal organizations on the NAHC contact list. The North Fork Mono responded in writing and requested an on-site visit with the Madera County Planning Division and the use of tribal monitors during future ground disturbance.

The Class III inventory/Phase I survey fieldwork was conducted in July 2019 with parallel transects spaced at 15-meter (m) intervals walked across the water distribution system. This system includes pipelines in graded paved and dirt roads, located on a steeply slope ridge system. No cultural resources were identified within the existing water distribution system boundaries.

Based on the absence of cultural resources, there are no known significant historical resources or historic properties within the limits of the existing MD-1 water distribution system. Improvements to this system, within its existing limits, therefore do not have the potential to result in adverse impacts or effects to significant historical resources or historic properties.

1. INTRODUCTION AND REGULATORY CONTEXT

ASM Affiliates, Inc., was retained by Provost and Pritchard Consulting Group to conduct an intensive Class III inventory/Phase I cultural resources survey for the Madera County Maintenance District 1 (MD-1) Water System Improvement Feasibility Project, Hidden Lakes Estates, California. This Project specifically is intended to identify potentially significant environmental impacts or effects, if any, should the existing Hidden Lakes Estates water distribution system be improved. The study was undertaken to assist with compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the California Environmental Protection Act (CEQA).

This current study included:

- A background records search and literature review to determine if any known cultural resources were present in the project zone and/or whether the area had been previously and systematically studied by archaeologists;
- An on-foot, intensive inventory of the study area to identify and record previously undiscovered cultural resources and to examine known sites; and
- A preliminary assessment of any such resources found within the subject property.

David S. Whitley, Ph.D., RPA, served as principal investigator while Robert Azpitarte, B.A., ASM Associate Archaeologist and Daniela Medin, B.A., ASM Assistant Archaeologist, conducted the fieldwork for this study.

This document constitutes a report on the Class III inventory/Phase I survey. Subsequent chapters provide background to the investigation, including historic context studies; the findings of the archival records search; Native American outreach; a summary of the field surveying techniques employed; and the results of the fieldwork. We conclude with management recommendations for the study area.

1.1 PROJECT LOCATION, DESCRIPTION AND AREA OF POTENTIAL EFFECT

The MD-1 Feasibility Project area is within the community of Hidden Lakes Estates, located on a high ridge system above the northwestern shore of Millerton Lake, Madera County, California (Figure 1). Hidden Lakes Estates is a low-density residential development of approximately 166-acres (ac) containing 48 improved and 159 unimproved parcels, located within Section 23 (T10S/R21E; MDBM). Elevation within the MD-1 service area ranges from approximately 540 feet (ft) above mean sea level (amsl), on the southern-central portion of the community closest to the lake, to about 1,180-ft asml, in the tank storage area at the northwestern extreme of the MD-1 service area.

The existing MD-1 water system consists of an intake system pumping water from Millerton Lake, tank storage areas, a surface water treatment plant (SWTP), and approximately 5-mi of distribution system pipelines. The purpose of the current feasibility study is to identify needs and

deficiencies in the existing water distribution system specifically. Separate studies have been conducted to address needs and deficiencies for the SWTP and tank storage.

Because there is currently no proposed construction or improvement project, there is no defined Area of Potential Effect (APE) for this feasibility study. It is assumed that the future implementation of any proposed improvements to the distribution system, however, would occur within or immediately adjacent to the existing road right-of-ways (ROW) containing the pipe distribution system, including staging, lay-down and work areas. Survey coverage, accordingly, consisted of existing road ROWs with a 15-m wide transect included on both sides, where possible. This resulted in a survey transect that is approximately 120-ft wide and a study area totaling about 72-ac. In certain cases, extreme slope (>80%) adjacent to the existing roads precluded survey of road buffers due to health and safety concerns. These areas exceed the angle-of-repose and could not preserve archaeological sites or artifacts, however.

1.2 REGULATORY CONTEXT

1.2.1 CEQA

CEQA is applicable to discretionary actions by state or local lead agencies. Under CEQA, lead agencies must analyze impacts to cultural resources. Significant impacts under CEQA occur when "historically significant" or "unique" cultural resources are adversely affected, which occurs when such resources could be altered or destroyed through project implementation. Historically significant cultural resources are defined by eligibility for or by listing in the California Register of Historical Resources (CRHR). In practice, the federal NRHP criteria (below) for significance applied under Section 106 are generally (although not entirely) consistent with CRHR criteria (see PRC § 5024.1, Title 14 CCR, Section 4852 and § 15064.5(a)(3)).

Significant cultural resources are those archaeological resources and historical properties that:

> (A) Are associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
>
> (B) Are associated with the lives of persons important in our past;
>
> (C) Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values; or
>
> (D) Have yielded, or may be likely to yield, information important in prehistory or history.

Unique resources under CEQA, in slight contrast, are those that represent:

> An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
>
> (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC § 21083.2(g)).

Preservation in place is the preferred approach under CEQA to mitigating adverse impacts to significant or unique cultural resources.

1.2.2 NHPA Section 106

NHPA Section 106 is applicable to federal undertakings, including projects financed or permitted by federal agencies regardless of whether the activities occur on federally managed or privately-owned land. Its purpose is to determine whether adverse effects will occur to significant cultural resources, defined as "historical properties" that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP). The criteria for NRHP eligibility are defined at 36 CFR § 60.4 as follows:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that:
>
> (A) are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (B) are associated with the lives of persons significant in our past; or
>
> (C) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (D) have yielded or may be likely to yield, information important in prehistory or history.

There are, however, restrictions on the kinds of historical properties that can be NRHP listed. These have been identified by the Advisory Council on Historic Preservation (ACHP), as follows:

> Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:
>
> (a) A religious property deriving primary significance from architectural or artistic distinction or historical importance; or

(b) A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

(c) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life.

(d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

(e) A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

(f) A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or

(g) A property achieving significance within the past 50 years if it is of exceptional importance. (http://www.achp.gov/nrcriteria.html)

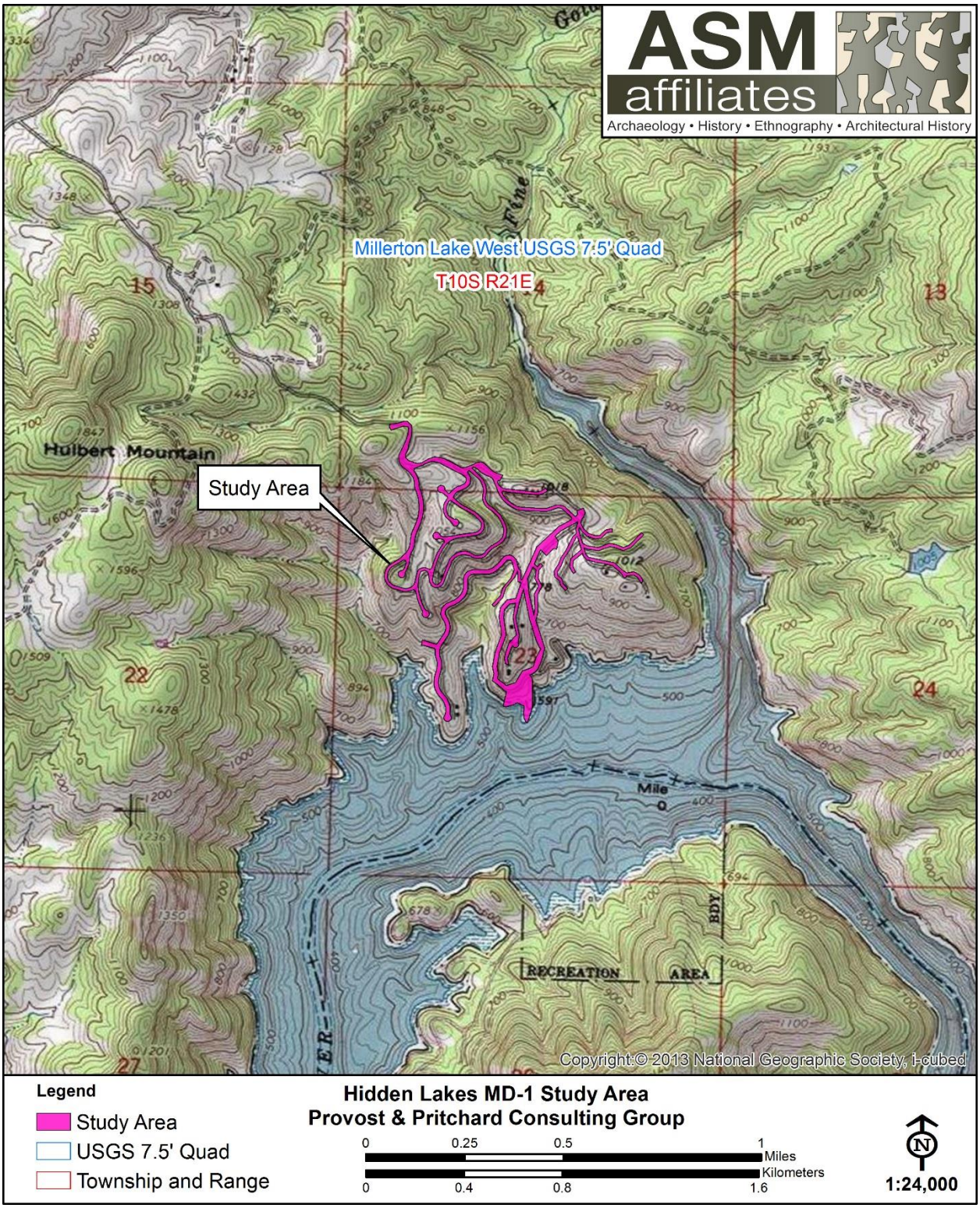

Figure 1. Location of the MD-1 Water Distribution System Improvements Feasibility Project Study Area, Madera County, California.

2. ENVIRONMENTAL AND CULTURAL BACKGROUND

2.1 ENVIRONMENTAL BACKGROUND AND GEOARCHAEOLOGICAL SENSITIVITY

As noted above, the study area is located on a high ridge system on the northwest side of Millerton Lake. This ridge system, part of the western foothills of the Sierra Nevada, is supported by grano-diorite bedrock. The ground surface of the ridges is covered by a thin layer of colluvial soil, with occasional outcrops of boulders/bedrock. The angle of slope along the distribution system pipeline route averages roughly 20 degrees, or about 35% slope. Much steeper slope surrounded many of the roads containing the pipeline, including areas with over 80% slope.

This location currently supports an oak tree savanna grading into a pine forest (Preston 1981). Millerton Lake, immediately south of the community, is an artificial reservoir created by damming the San Joaquin River. Fine Gold Creek (now a finger/embayment of the lake) would have run north-south along the east side of Hidden Lakes Estates. The San Joaquin River would have run east – west south of the community, with the original confluence of the river and the creek to the southeast. Historically, and likely prehistorically, riparian environments would have been present along the San Joaquin River and Fine Gold Creek.

The location of the study area, on a steeply-sided ridge system with thin soils, has little potential for the preservation of subsurface archaeological deposits. The nature of the distribution system route, within road ROWs that have been cut-into the sides of slopes, further diminishes the likelihood for subsurface deposits. The study area, accordingly, has an extremely low potential for buried cultural deposits.

2.2 ETHNOGRAPHIC BACKGROUND

Penutian-speaking Yokuts tribal groups occupied the southern San Joaquin Valley region and much of the nearby Sierra Nevada, with Numic-speaking Mono (or Monachi) higher up in the foothills. Ethnographic information about the Yokuts and Mono was collected primarily by Powers (1971, 1976 [originally 1877]), Kroeber (1925), Gayton (1930, 1948), Driver (1937), Latta (1977) and Harrington (n.d.). For a variety of historical reasons, existing research information emphasizes the central Yokuts tribes who occupied both the valley and particularly the foothills of the Sierra, along with the Mono at higher elevation in the central foothills. The northernmost tribes suffered from the influx of Euro-Americans during the Gold Rush and their populations were in substantial decline by the time ethnographic studies began in the early twentieth century. In contrast, the southernmost tribes were partially removed by the Spanish to missions and eventually absorbed into multi-tribal communities on the Sebastian Indian Reservation (on Tejon Ranch), and later the Tule River Reservation and Santa Rosa Rancheria to the north. The result is an unfortunate scarcity of ethnographic detail on southern and northern Valley tribes, especially in relation to the rich information collected from the central foothills

tribes where native speakers of the Yokuts and Mono dialects are still found. Regardless, the general details of indigenous life-ways were similar across the broad expanse of this territory, particularly in terms of environmentally influenced subsistence and adaptation and with regard to religion and belief, which were similar everywhere.

Following Kroeber (1925: Plate 47), the study area most likely lies in Dumna Yokuts territory. The historic village of *I-ah'pin* is described as located about 5-mi south of Friant in the vicinity of Ledger Island (Latta 1977:191). This is a few miles southwest of the current study area.

The Yokuts settlement pattern was largely consistent, regardless of specific tribe involved. Winter villages were typically located along lakeshores and major stream courses (as these existed circa AD 1800), with dispersal phase family camps located at elevated spots on the valley floor and near gathering areas in the foothills.

Most Yokuts groups, again regardless of specific tribal affiliation, were organized as a recognized and distinct tribelet; a circumstance that almost certainly pertained to the tribal groups noted above. Tribelets were land-owning groups organized around a central village and linked by shared territory and descent from a common ancestor. The population of most tribelets ranged from about 150 to 500 peoples (Kroeber 1925).

Each tribelet was headed by a chief who was assisted by a variety of assistants, the most important of whom was the *winatum*, a herald or messenger and assistant chief. A shaman also served as religious officer. While shamans did not have any direct political authority, as Gayton (1930) has illustrated, they maintained substantial influence within their tribelet.

Shamanism is a religious system common to most Native American tribes. It involves a direct and personal relationship between the individual and the supernatural world enacted by entering a trance or hallucinatory state (usually based on the ingestion of psychotropic plants, such as jimsonweed or more typically native tobacco). Shamans were considered individuals with an unusual degree of supernatural power, serving as healers or curers, diviners, and controllers of natural phenomena (such as rain or thunder). Shamans also produced the rock art of this region, depicting the visions they experienced in vision quests believed to represent their spirit helpers and events in the supernatural realm (Whitley 1992, 2000).

The centrality of shamanism to the religious and spiritual life of the Yokuts was demonstrated by the role of shamans in the yearly ceremonial round. The ritual round, performed the same each year, started in the spring with the jimsonweed ceremony, followed by rattlesnake dance and (where appropriate) first salmon ceremony. After returning from seed camps, fall rituals began in the late summer with the mourning ceremony, followed by first seed and acorn rites and then bear dance (Gayton 1930:379). In each case, shamans served as ceremonial officials responsible for specific dances involving a display of their supernatural powers (Kroeber 1925).

Subsistence practices varied from tribelet to tribelet based on the environment of residence. Throughout Native California, and Yokuts territory in general, the acorn was a primary dietary component, along with a variety of gathered seeds. Valley tribes augmented this resource with lacustrine and riverine foods, especially fish and wildfowl. As with many Native California

tribes, the settlement and subsistence rounds included the winter aggregation into a few large villages, where stored resources (like acorns) served as staples, followed by dispersal into smaller camps, often occupied by extended families, where seasonally available resources would be gathered and consumed.

Although population estimates vary and population size was greatly affected by the introduction of Euro-American diseases and social disruption, the Yokuts were one of the largest, most successful groups in Native California. Cook (1978) estimates that the Yokuts region contained 27 percent of the aboriginal population in the state at the time of contact; other estimates are even higher. Many Yokuts people continue to reside in the southern San Joaquin Valley today, with the nearby Table Mountain Reservation constituting a federally-recognized tribal group, created in 1916, that includes Dumna Yokuts from the Millerton and Friant area.

2.3 PRE-CONTACT ARCHAEOLOGICAL BACKGROUND

The southern San Joaquin Valley region has received minimal archaeological attention compared to other areas of the state. In part, this is because the majority of California archaeological work has concentrated in the Sacramento Delta, Santa Barbara Channel, and central Mojave Desert areas (see Moratto 1984). Although knowledge of the region's prehistory is limited, enough is known to determine that the archaeological record is broadly similar to south-central California as a whole (see Gifford and Schenk 1926; Hewes 1941; Wedel 1941; Fenenga 1952; Elsasser 1962; Fredrickson and Grossman 1977; Schiffman and Garfinkel 1981). Based on these sources, the general prehistory of the region can be outlined as follows.

Initial occupation of the region occurred at least as early as the *Paleoindian Period*, or prior to about 10,000 years before present (YBP). Evidence of early use of the region is indicated by characteristic fluted and stemmed points found around the margin of Tulare Lake, in the foothills of the Sierra, and in the Mojave Desert proper.

Both fluted and stemmed points are particularly common around lake margins, suggesting a terminal Pleistocene/early Holocene lakeshore adaptation similar to that found throughout the far west at the same time; little else is known about these earliest peoples. Over 250 fluted points have been recovered from the Witt Site (CA-KIN-32), located along the western shoreline of ancient Tulare Lake north of the study area, demonstrating the importance of this early occupation in the San Joaquin Valley specifically (see Fenenga 1993). Additional finds consist of a Clovis-like projectile point discovered in a flash-flood cut-bank near White Oak Lodge in 1953 on Tejon Ranch (Glennan 1987a, 1987b). More recently, a similar fluted point was found near Bakersfield (Zimmerman et al. 1989), and a number are known from the Edwards Air Force Base and Boron area of the western Mojave Desert. Although human occupation of the state is well-established during the Late Pleistocene, relatively little can be inferred about the nature and distribution of this occupation with a few exceptions. First, little evidence exists to support the idea that people at that time were big-game hunters, similar to those found on the Great Plains. Second, the western Mojave Desert evidence suggests small, very mobile populations that left a minimal archaeological signature. The evidence from the ancient Tulare Lake shore, in contrast, suggests much more substantial population and settlements which, instead of relying on big

game hunting, were tied to the lacustrine lake edge. Variability in subsistence and settlement patterns is thus apparent in California, in contrast to the Great Plains.

Substantial evidence for human occupation across California, however, first occurs during the middle Holocene, roughly 7,500 to 4,000 YBP. This period is known as the *Early Horizon*, or alternatively as the Early Millingstone along the Santa Barbara Channel. In the south, populations concentrated along the coast with minimal visible use of inland areas. Adaptation emphasized hard seeds and nuts with tool-kits dominated by mullers and grindstones (manos and metates). Additionally, little evidence for Early Horizon occupation exists in most inland portions of the state, partly due to a severe cold and dry paleoclimatic period occurring at this time, although a site deposit dating to this age has been identified along the ancient Buena Vista shoreline in Kern County to the south (Rosenthal et al. 2007). Regardless of specifics, Early Horizon population density was low with a subsistence adaptation more likely tied to plant food gathering than hunting.

Environmental conditions improved dramatically after about 4,000 YBP during the *Middle Horizon* (or Intermediate Period). This period is known climatically as the Holocene Maximum (circa 3,800 YBP) and was characterized by significantly warmer and wetter conditions than previously experienced. It was marked archaeologically by large population increase and radiation into new environments along coastal and interior south-central California and the Mojave Desert (Whitley 2000). In the Delta region to the north, this same period of favorable environmental conditions was characterized by the appearance of the Windmiller culture which exhibited a high degree of ritual elaboration (especially in burial practices) and perhaps even a rudimentary mound-building tradition (Meighan, personal communication, 1985). Along with ritual elaboration, Middle Horizon times experienced increasing subsistence specialization, perhaps correlating with the appearance of acorn processing technology. Penutian speaking peoples (including the Yokuts) are also posited to have entered the state roughly at the beginning of this period and, perhaps to have brought this technology with them (cf. Moratto 1984). Likewise, it appears the so-called "Shoshonean Wedge" in southern California, the Takic speaking groups that include the Gabrielino/Fernandeño, Tataviam and Kitanemuk, may have moved into the region at that time (Sutton 2009, rather than at about 1500 YBP as first suggested by Kroeber (1925).

Evidence for Middle Horizon occupation of interior south-central California is substantial. For example, in northern Los Angeles County along the upper Santa Clara River, to the south of the San Joaquin Valley, the Agua Dulce village complex indicates occupation extending back to the Intermediate Period, when the population of the village may have been 50 or more people (King et al. n.d.). Similarly, inhabitation of the Hathaway Ranch region near Lake Piru, and the Newhall Ranch near Valencia, appears to date to the Intermediate Period (W & S Consultants 1994). To the west, little or no evidence exists for pre-Middle Horizon occupation in the upper Sisquoc and Cuyama River drainages; populations first appear there at roughly 3,500 YBP (Horne 1981). The Carrizo Plain, the valley immediately west of the San Joaquin, experienced a major population expansion during the Middle Horizon (W & S Consultants 2004; Whitley et al. 2007), and recently collected data indicates the Tehachapi Mountains region was first significantly occupied during the Middle Horizon (W & S Consultants 2006). A parallel can be drawn to the inland Ventura County region where a similar pattern has been identified (Whitley

and Beaudry 1991), as well as the western Mojave Desert (Sutton 1988a, 1988b), the southern Sierra Nevada (W & S Consultants 1999), and the Coso Range region (Whitley et al. 1988). In all of these areas a major expansion in settlement, the establishment of large site complexes and an increase in the range of environments exploited appear to have occurred sometime roughly around 4,000 years ago. Although most efforts to explain this expansion have focused on local circumstances and events, it is increasingly apparent this was a major southern California-wide occurrence and any explanation must be sought at a larger level of analysis (Whitley 2000). Additionally, evidence from the Carrizo Plain suggests the origins of the tribelet level of political organization developed during this period (W & S Consultants 2004; Whitley et al. 2007). Whether this same demographic process holds for the southern San Joaquin Valley, including the study area, is yet to be determined.

The beginning of the *Late Horizon* is set variously at 1,500 and 800 YBP, with a growing archaeological consensus for the shorter chronology. Increasing evidence suggests the importance of the Middle-Late Horizons transition (AD 800 to 1200) in the understanding of south-central California prehistory. This corresponds to the so-called Medieval Climatic Anomaly, followed by the Little Ice Age, and this general period of climatic instability extended to about A.D. 1860. It included major droughts matched by intermittent "mega-floods," and resulted in demographic disturbances across much of the west (Jones et al. 1999). It is believed to have resulted in major population decline and abandonments across south-central California, involving as much as 90% of the interior populations in some regions, including the Carrizo Plain (Whitley et al. 2007). It is not clear whether site abandonment was accompanied by a true reduction in population or an agglomeration of the same numbers of peoples into fewer but larger villages in more favorable locations. Population along the Santa Barbara coast appears to have spiked at about the same time that it collapsed on the Carrizo Plain (ibid). Along Buena Vista Lake, in Kern County to the south, population appears to have been increasingly concentrated towards the later end of the Medieval Climatic Anomaly (Culleton 2006), and population intensification also appears to have occurred in the well-watered Tehachapi Mountains during this same period (W & S Consultants 2006).

What is then clear is that Middle Period villages and settlements were widely dispersed across the south-central California landscape, including in the Sierras and the Mojave Desert. Many of these sites are found at locations that lack existing or known historical fresh water sources. Late Horizon sites, in contrast, are typically concentrated in areas where fresh water was available during the historical period, if not currently.

One extensively studied site that shows evidence of intensive occupation during the Middle-Late Horizons transition (~1,500 – 500 YBP) is the Redtfeldt Mound (CA-KIN-66/H), located west of the current study area, near the north shore of ancient Tulare Lake and Lemoore. There, Siefkin (1999) reported on human burials and a host of artifacts and ecofacts excavated from a modest-sized mound. He found that both Middle Horizon and Middle-Late Horizons transition occupations were more intensive than Late Horizon occupations, which were sporadic and less intensive (Siefkin 1999:110-111).

The Late Horizon can then be understood as a period of recovery from a major demographic collapse. One result is the development of regional archaeological cultures as the precursors to

ethnographic Native California; suggesting that ethnographic life-ways recorded by anthropologists extend roughly 800 years into the past.

The position of San Joaquin Valley prehistory relative to patterns seen in surrounding areas is still somewhat unknown. The presence of large lake systems in the valley bottoms appears to have mediated some of the desiccation seen elsewhere. But, as the reconstruction of Soda Lake in the nearby Carrizo Plain demonstrates (see Whitley et al. 2007) environmental perturbations had serious impacts on lake systems too. Identifying certain of the prehistoric demographic trends for the San Joaquin Valley, and determining how these trends (if present) correlate with those seen elsewhere, is a current important research objective.

2.4 HISTORICAL BACKGROUND

Spanish explorers first visited the San Joaquin Valley in 1772, but its lengthy distance from the missions and presidios along the Pacific Coast delayed permanent settlement for many years, including during the Mexican period of control over the Californian region. In the 1840s, Mexican rancho owners along the Pacific Coast allowed their cattle to wander and graze in the San Joaquin Valley (JRP Historical Consulting 2009). The Mexican government granted the first ranchos in the southern part of the San Joaquin Valley in the early 1840s, but these did not result in permanent settlement. It was not until the annexation of California in 1848 that the exploitation of the southern San Joaquin Valley began (Pacific Legacy 2006).

The discovery of gold in northern California in 1848 resulted in a dramatic increase of population, consisting in good part of fortune seekers and gold miners, who began to scour other parts of the state. After 1851, when gold was discovered in the Sierra Nevada Mountains in eastern Kern County, the population of the area grew rapidly. Some new immigrants began ranching in the San Joaquin Valley to supply the miners and mining towns. Ranchers grazed cattle and sheep, and farmers dry-farmed or used limited irrigation to grow grain crops, leading to the creation of small agricultural communities throughout the valley (JRP Historical Consulting 2009).

After the American annexation of California, the southern San Joaquin Valley became significant as a center of food production for this new influx of people in California. The expansive unfenced and principally public foothill spaces were well suited for grazing both sheep and cattle (Boyd 1997). As the Sierra Nevada gold rush presented extensive financial opportunities, ranchers introduced new breeds of livestock, consisting of cattle, sheep and pig (Boyd 1997).

With the increase of ranching in the southern San Joaquin came the dramatic change in the landscape, as non-native grasses more beneficial for grazing and pasture replaced native flora (Preston 1981). After the passing of the Arkansas Act in 1850, efforts were made to reclaim small tracts of land in order to create more usable spaces for ranching. Eventually, as farming supplanted ranching as a more profitable enterprise, large tracts of land began to be reclaimed for agricultural use, aided in part by the extension of the railroad in the 1870s (Pacific Legacy 2006).

Following the passage of state wide 'No-Fence' laws in 1874, ranching practices began to decline, while farming expanded in the San Joaquin Valley in both large land holdings and smaller, subdivided properties. As the farming population grew, so did the demand for irrigation. Settlers began reclamation of swampland in 1866, building small dams across the rivers to divert water for agricultural purposes. During this period of reclaiming unproductive land in the San Joaquin Valley, grants were given to individuals who had both the resources and the finances to undertake the operation alone. But three competing partnerships developed during this period which had a great impact on control of water, land reclamation and ultimately agricultural development in the San Joaquin Valley: Livermore and Chester, Haggin and Carr, and Miller and Lux, perhaps the most famous of the enterprises. Livermore and Chester were responsible, among other things, for developing the large Hollister plow (three feet wide by two feet deep), pulled by a 40-mule team, which was used for ditch digging. Haggin and Carr were largely responsible for reclaiming the beds of the Buena Vista and Kern lakes, and for creating the Calloway Canal, which drained through the Rosedale area in Bakersfield to Goose Lake (Morgan 1914). Miller and Lux ultimately became one of the biggest private property holders in the country, controlling the rights to over 22,000 square miles. They recognized early-on that control of water would have important economic implications, and they played a major role in the water development of the state. They controlled, for example, over 100 miles of the San Joaquin River with the San Joaquin and Kings River Canal and Irrigation System. They were also embroiled for many years in litigation against Haggin and Carr over control of the water rights to the Kern River. Descendants of Henry Miller continue to play a major role in California water rights, with his great grandson, George Nickel, Jr., the first to develop the concept of water banking, thus creating a system to buy and sell water (http://exiledonline.com/california-class-war-history-meet-the-oligarch-family-thats-been-scamming-taxpayers-for-150-years-and-counting/).

Millerton, now inundated by Millerton Lake, was the original historical focus of settlement in the region, initially serving as the capital of Fresno County. After its inundation in the great San Joaquin River flood of 1867, the focus of settlement shifted to what is now Fresno, especially after 1872 when the Southern Pacific Railroad created a station in this then-small town. Madera County was formed from the northern portion of Fresno County in 1893, but the metropolitan Fresno area remains the greatest population center in the region,

The San Joaquin Valley was dominated by agricultural pursuits until the oil boom of the early 1900s, which saw a shift in the region, as some reclaimed lands previously used for farming were leased to oil companies. Nonetheless, the shift of the San Joaquin Valley towards oil production did not halt the continued growth of agriculture (Pacific Legacy 2006). The Great Depression of the 1930s brought with it the arrival of great number of migrants from the drought-affected Dust Bowl region, looking for agricultural labor. These migrants established temporary camps in the valley, staying on long past the end of the drought and the Great Depression, eventually settling in towns such as Bakersfield and Fresno where their descendants live today (Boyd 1997).

The Hidden Lakes Estates community is a small rural/suburban cluster of homes developed approximately 50 years ago as a vacation and bedroom community for Fresno.

2.5 RESEARCH DESIGN

2.5.1 Pre-Contact Archaeology

Previous research and the nature of the pre-contact archaeological record suggest two significant NRHP themes, both of which fall under the general Pre-Contact Archaeology area of significance. These are the Expansion of Pre-Contact Populations and Their Adaptation to New Environments; and Adaptation to Changing Environmental Conditions.

The Expansion of Pre-Contact Populations and Their Adaptation to New Environments theme primarily concerns the Middle Horizon/Holocene Maximum. Its period of significance runs from about 4,000 to 1,500 YBP. It involves a period during which the prehistoric population appears to have expanded into a variety of new regions, developing new adaptive strategies in the process.

The Adaptation to Changing Environmental Conditions theme is partly related to the Holocene Maximum, but especially to the Medieval Climatic Anomaly. The period of significance for this theme, accordingly, extends from about 4,000 to 800 YBP. This theme involves the apparent collapse of many inland populations, presumably with population movements to better environments such as the coast. It is not yet known whether the southern San Joaquin Valley, with its system of lakes, sloughs and swamps, experienced population decline or, more likely, population increase due to the relatively favorable conditions of this region during this period of environmental stress.

The range of site types that are present in this region include:

- Villages, primarily located on or near permanent water sources, occupied by large groups during the winter aggregation season;
- Seasonal camps, again typically located at water sources, occupied during other parts of the year tied to locally and seasonally available food sources;
- Special activity areas, especially plant processing locations containing bedrock mortars (BRMs), commonly (though not exclusively) near existing oak woodlands, and invariably at bedrock outcrops or exposed boulders;
- Stone quarries and tool workshops, occurring in two general contexts: at or below naturally occurring chert exposures on the eastern front of the Temblor Range; and at quartzite cobble exposures, often on hills or ridges;
- Ritual sites, most commonly pictographs (rock art) found at rockshelters or large exposed boulders, and cemeteries, both commonly associated with villages; and
- A variety of small lithic scatters (low density surface scatters of stone tools).

The first requisites in any research design are the definition of site age/chronology and site function. The ability to determine either of these basic kinds of information may vary between survey and test excavation projects, and due to the nature of the sites themselves. BRM sites without associated artifacts, for example, may not be datable beyond the assumption that they post-date the Early Horizon and are thus less than roughly 4,000 years old.

A second fundamental issue involves the place of site in the settlement system, especially with respect to water sources. Because the locations of the water sources have sometimes changed over time, villages and camps are not exclusively associated with existing (or known historical) water sources (W&S Consultants 2006). The size and locations of the region's lakes, sloughs and delta channels, to cite the most obvious example, changed significantly during the last 12,000 years due to major paleoclimatic shifts. This altered the area's hydrology and thus prehistoric settlement patterns. The western shoreline of Tulare Lake was relatively stable, because it abutted the Kettleman Hills. But the northern, southern and eastern shorelines comprised the near-flat valley floor. Relatively minor fluctuations up or down in the lake level resulted in very significant changes in the areal expression of the lake on these three sides, and therefore the locations of villages and camps. Although perhaps not as systematic, similar changes occurred with respect to stream channels and sloughs, and potential site locations associated with them. This circumstance has implications for predicting site locations and archaeological sensitivity. Site sensitivity is then hardest to predict in the open valley floor, where changes in stream courses and lake levels occurred on numerous occasions.

Nonetheless, the position of San Joaquin Valley prehistory relative to the changing settlement and demographic patterns seen in surrounding areas is still somewhat unknown (cf. Siefkin 1999), including to the two NRHP themes identified above. The presence of large lake systems in the valley bottoms can be expected to have mediated some of the effects of desiccation seen elsewhere. But, as the reconstruction of Soda Lake in the nearby Carrizo Plain demonstrates (see Whitley et al. 2007), environmental perturbations had serious impacts on lake systems too. Identifying certain of the prehistoric demographic trends for the San Joaquin Valley, and determining how these trends (if present) correlate with those seen elsewhere, is another primary regional research objective.

Archaeological sites would primarily be evaluated for NRHP eligibility under Criterion D, research potential.

2.5.2 Historical Archaeology: Native American

Less research has been conducted on the regional historical archaeological record, both Native American and Euro-American. For Native American historical sites, the ethnographic and ethnohistoric periods in the southern San Joaquin Valley extended from first Euro-American contact, in AD 1772, to circa 1900, when tribal populations were first consolidated on reservations. The major significant historic NRHP themes during this period of significance involve the related topics of Historic-Aboriginal Archaeology, and Native American Ethnic Heritage. More specifically, these concern the Adaptation of the Indigenous Population to Euro-American Encroachment and Settlement, and their Acculturation to Western Society. These processes included the impact of missionization on the San Joaquin Valley (circa 1800 to about 1845); the introduction of the horse and the development of a San Joaquin Valley "horse culture," including raiding onto the coast and Los Angeles Basin (after about 1810); the use of the region as a refuge for mission neophyte escapees (after 1820); responses to epidemics from introduced diseases (especially in the 1830s); armed resistance to Euro-American encroachment (in the 1840s and early 1850s); the origins of the reservation system and the development of new

tribal organizations and ethnic identities; and, ultimately, the adoption of the Euro-American society's economic system and subsistence practices, and acculturation into that society.

Site types that have been identified in the region dating to the ethnographic/ethnohistoric period of significance primarily include villages and habitations, some of which contain cemeteries and rock art (including pictographs and cupules). Dispersed farmsteads, dating specifically from the reservation period or post-1853, would also be expected. The different social processes associated with this historical theme may be manifest in the material cultural record in terms of changing settlement patterns and village organization (from traditional nucleated villages to single family dispersed farmsteads); the breakdown of traditional trading networks with their replacement by new economic relationships; changing subsistence practices, especially the introduction of agriculture initially via escaped mission neophytes; the use of Euro-American artifacts and materials rather than traditional tools and materials; and, possibly, changing mortuary practices.

Inasmuch as culture change is a primary intellectual interest in archaeology, ethnographic villages and habitations may be NRHP eligible under Criterion D, research potential. Rock art sites, especially pictographs, may be eligible under Criterion C as examples of artistic mastery. They may also be eligible under Criterion A, association with events contributing to broad patterns of history. Ethnographic sites, further, may be NRHP eligible as Traditional Cultural Properties due to potential continued connections to tribal descendants, and their resulting importance in traditional practices and beliefs, including their significance for historical memory, tribal- and self-identity formation, and tribal education.

For Criteria A, C and D, eligibility requires site integrity (including the ability to convey historical association for Criterion A). These may include intact archaeological deposits for Criterion D, as well as setting and feel for Criteria C and A. Historical properties may lack physical integrity, as normally understood in heritage management, but still retain their significance to Native American tribes as Traditional Cultural Properties if they retain their tribal associations and uses.

2.5.3 Historical Archaeology: Euro-American

Approaches to historical Euro-American archaeological research relevant to the region have been summarized by Caltrans (1999, 2000, 2007, 2008). These concern the general topics of historical landscapes, agriculture and farming, irrigation (water conveyance systems), and mining. Caltrans has also identified an evaluation matrix aiding determinations of eligibility. The identified research issues include site structure and land-use (lay-out, land use, feature function); economics (self-sufficiency, consumer behavior, wealth indicators); technology and science (innovations, methods); ethnicity and cultural diversity (religion, race); household composition and lifeways (gender, children); and labor relations. Principles useful for determining the research potential of an individual site or feature are conceptualized in terms of the mnemonic AIMS-R, as follows:

1. *Association* refers to the ability to link an assemblage of artifacts, ecofacts, and other cultural remains with an individual household, an ethnic or socioeconomic group, or a specific activity or property use.

2. *Integrit*y addresses the physical condition of the deposit, referring to the intact nature of the archaeological remains. In order for a feature to be most useful, it should be in much the same state as when it was deposited. However, even disturbed deposits can yield important information (e.g., a tightly dated deposit with an unequivocal association).

3. *Materials* refers to the number and variety of artifacts present. Large assemblages provide more secure interpretations as there are more datable items to determine when the deposit was made, and the collection will be more representative of the household, or activity. Likewise, the interpretive potential of a deposit is generally increased with the diversity of its contents, although the lack of diversity in certain assemblages also may signal important behavioral or consumer patterns.

4. *Stratigraphy* refers to the vertically or horizontally discrete depositional units that are distinguishable. Remains from an archaeological feature with a complex stratigraphic sequence representative of several events over time can have the added advantage of providing an independent chronological check on artifact diagnosis and the interpretation of the sequence of environmental or sociocultural events.

5. *Rarity* refers to remains linked to household types or activities that are uncommon. Because they are scarce, they may have importance even in cases where they otherwise fail to meet other thresholds of importance (Caltrans 2007:209).

For agricultural sites, Caltrans (2007) has identified six themes to guide research: Site Structure and Land Use Pattern; Economic Strategies; Ethnicity and Cultural Adaptation; Agricultural Technology and Science; Household Composition and Lifeways; and Labor History. Expected site types would include farm and ranch homesteads and facilities, line camps, and refuse dumps. In general terms, historical Euro-American archaeological sites would be evaluated for NRHP eligibility under Criterion D, research potential. However, they also potentially could be eligible under Criteria A and B for their associate values with major historical trends or individuals. Historical landscapes might also be considered. Historical structures are typically evaluated for NRHP eligibility under Criteria A and/or B, for their associative values with major historical trends or individuals, and C for potential design or engineering importance.

3. ARCHIVAL RECORDS SEARCH

In order to determine whether the study area had been previously surveyed for cultural resources, and/or whether any such resources were known to exist on any of them, an archival records search was conducted by the staff of the Southern San Joaquin Valley Information Center (IC). The records search was completed to determine: (i) if prehistoric or historical archaeological sites had previously been recorded within the study areas; (ii) if the project area had been systematically surveyed by archaeologists prior to the initiation of this field study; and/or (iii) whether the region of the field project was known to contain archaeological sites and to thereby be archaeologically sensitive. Records examined included archaeological site files and maps, the NRHP, Historic Property Data File, California Inventory of Historic Resources, and the California Points of Historic Interest.

According to the IC record search (Confidential Appendix A), no previous studies are known to have been conducted within the study area and no cultural resources of any kind are known to exist within it. An additional two studies had been completed within 0.5-mi of the study area (Table 1), resulting in the recording of two cultural resources within that radius (Table 2).

Table 1. Survey Reports within the 0.5-mi of the Study Area

Report No.	Year	Author (s)/Affiliation	Title
FR-00741	1962	DJ Theodoratus and J Crain/ Individual Consultants	Reconnaissance Survey of Millerton Lake State Park
MA-00365	1995	L Steidl et al./ Individual Consultants	An Archaeological Reconnaissance Survey at Millerton Lake (RMP 95 PCA 12320-378004)

Table 2. Resources within the 0.5-mi of the Study Area

Primary #	Type	Description
P-20-000570	Site	Prehistoric lithic scatter; quarry
P-20-000571	Site	Prehistoric habitation site

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File was also completed for the feasibility study. The results were negative (Appendix A). Outreach letters were sent to the tribal organizations on the NAHC contact list, with follow-up calls made (Appendix A). One written response was received, from the North Fork Rancheria of Mono Indians. They have requested an on-site visit and the presence of tribal monitors during ground disturbance activities.

Given the absence of previously recorded resources and the location of Hidden Lakes Estates on a high and steep ridge system, the study area appeared to have low potential for cultural resources.

4. METHODS AND RESULTS

4.1 FIELD METHODS

An intensive Class III inventory/Phase I survey of the MD-1 Water System Improvement Feasibility Project study area was conducted by Robert Azpitarte, B.A., ASM Associate Archaeologist/Crew Chief, and Daniela Medin, B.A., ASM Assistant Archaeologist, in July 2019. The field methods employed included intensive pedestrian examination of the ground surface for evidence of archaeological sites in the form of artifacts, surface features (such as bedrock mortars, historical mining equipment), and archaeological indicators (e.g., organically enriched midden soil, burnt animal bone); the identification and location of any discovered sites, should they be present; tabulation and recording of surface diagnostic artifacts; site sketch mapping; preliminary evaluation of site integrity; and site recording, following the California Office of Historic Preservation Instructions for Recording Historic Resources, using DPR 523 forms.

Because the water distribution system falls within existing paved and dirt roads, 15-m wide survey transects were walked along each side of the roads, wherever possible due to slope considerations, providing buffers and the best coverage for potential cultural resources. Multiple transects on each side of the road were walked where grass covered the road buffers, with special attention paid to rodent back-dirt piles and other clear areas to provide adequate survey coverage.

4.2 SURVEY RESULTS

As noted above, the study area consisted of paved and dirt roads largely graded into the sides of slopes (Figure 2). A significant portion of the buffers on the sides of the roads were too steep to safely accommodate transects; these areas likewise would not preserve cultural resources, however.

No cultural resources of any kind were observed in the MD-1 Water System Improvement Feasibility Project study area.

Figure 2. MD-1 Feasibility Project study area showing field conditions, at Anza Drive looking southwest.

5. SUMMARY AND RECOMMENDATIONS

An intensive Class III archaeological inventory/Phase I survey was conducted for the MD-1 Water System Improvement Feasibility Project study area, Hidden Lakes Estates, Madera County, California. A records search was conducted at the Southern San Joaquin Valley Archaeological Information Center, California State University, Bakersfield. This indicated that the study area had not been previously surveyed and that no cultural resources of any kind were known to exist within it. The NAHC Sacred Lands Files were also consulted, with negative results. Outreach letters and follow-up calls were sent to tribal organizations on the NAHC contact list. The North Fork Rancheria of Mono Indians responded in writing. They have requested an on-site visit and the presence of tribal monitors during future ground disturbance activities.

The Class III inventory/Phase I survey fieldwork was conducted with parallel transects spaced at 15-meter intervals along the water distribution system pipeline route. No cultural resources of any kind were identified within the study area.

5.1 RECOMMENDATIONS

An intensive Class III inventory/Phase I survey demonstrated that the MD-1 Water System Improvement Feasibility Project study area, Madera County, California, does not contain significant or unique historical resources or historic properties. A determination of no effect is therefore recommended for any future implementation of a project that would improve the existing water distribution system.

The North Fork Rancheria of Mono Indians are concerned about potential adverse impacts or effects to tribal cultural resources. Per their request, it is recommended that an on-site visit be conducted to any future implementation project area, and that a tribal monitor be present during ground disturbance.

In the unlikely event that cultural resources are discovered during the construction and operation of any future implemented project, however, it is recommended that an archaeologist be contacted to evaluate the find and to assist with the development of a treatment plan, if warranted.

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Appendix D

NRCS Soils Report

United States Department of Agriculture

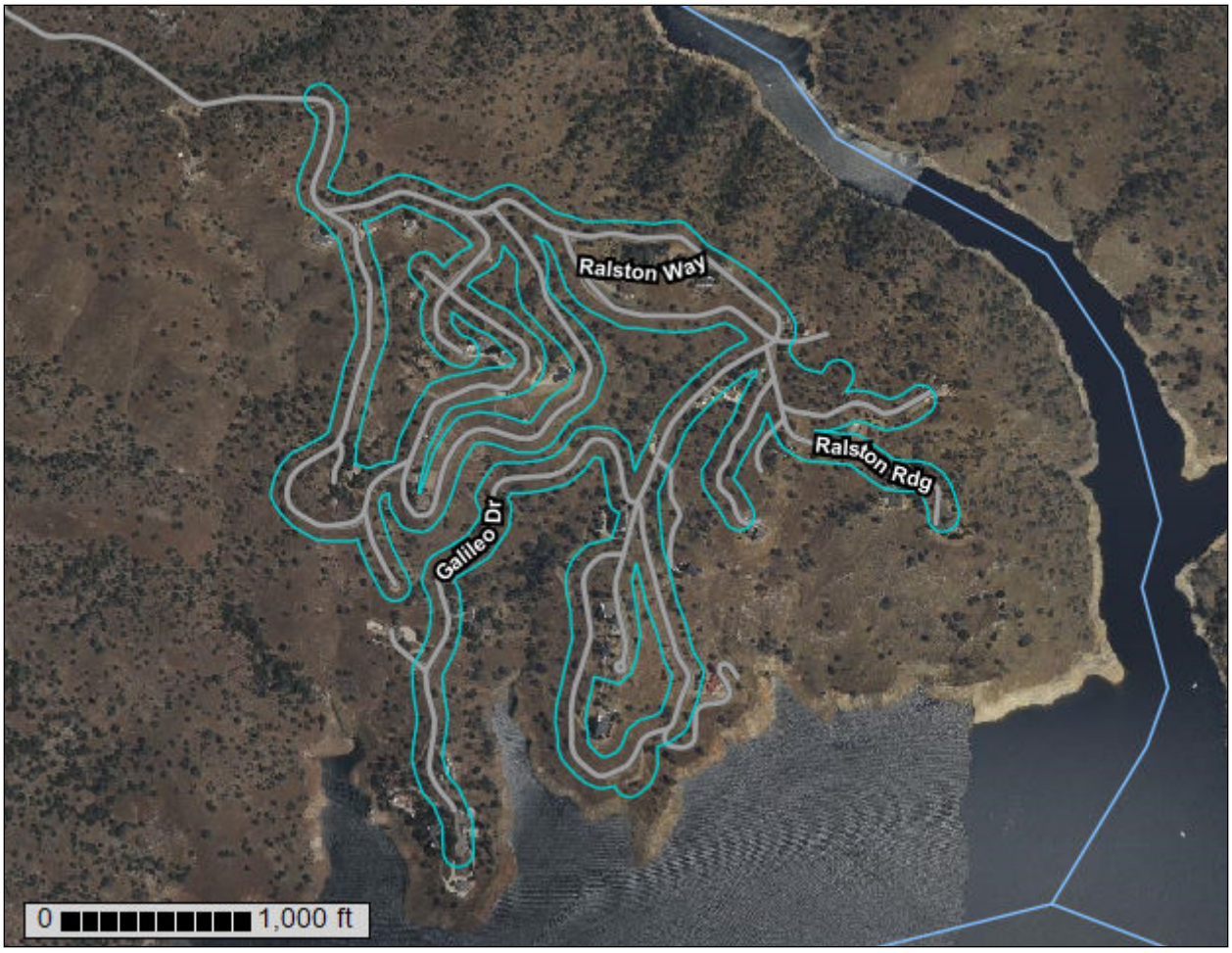
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Madera Area, California

MD-1 Hidden Lakes Water Distribution Project



September 16, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:8,580 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Madera Area, California
Survey Area Data: Version 14, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 4, 2019—Jun 19, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ArF	Ahwahnee and Vista very rocky coarse sandy loams, 30 to 75 percent slopes	0.5	0.5%
CkF	Coarsegold rocky loam, 30 to 75 percent slopes	93.4	99.5%
Totals for Area of Interest		**93.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Madera Area, California

ArF—Ahwahnee and Vista very rocky coarse sandy loams, 30 to 75 percent slopes

Map Unit Setting

National map unit symbol: hk3v
Elevation: 200 to 3,900 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 175 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Ahwahnee and similar soils: 26 percent
Vista and similar soils: 24 percent
Rock outcrop: 20 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ahwahnee

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from granite

Typical profile

H1 - 0 to 8 inches: coarse sandy loam
H2 - 8 to 36 inches: sandy loam
Cr - 36 to 60 inches: weathered bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 36 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Vista

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Residuum weathered from granite

Typical profile

H1 - 0 to 12 inches: coarse sandy loam
H2 - 12 to 36 inches: coarse sandy loam
H3 - 36 to 60 inches: weathered bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 36 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Rock Outcrop

Typical profile

H1 - 0 to 4 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Coarsegold

Percent of map unit: 10 percent
Hydric soil rating: No

Auberry

Percent of map unit: 10 percent

Hydric soil rating: No

Tollhouse

Percent of map unit: 10 percent
Hydric soil rating: No

CkF—Coarsegold rocky loam, 30 to 75 percent slopes

Map Unit Setting

National map unit symbol: hk54
Elevation: 500 to 4,500 feet
Mean annual precipitation: 18 to 35 inches
Mean annual air temperature: 59 degrees F
Frost-free period: 160 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Coarsegold and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Coarsegold

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from metasedimentary rock

Typical profile

H1 - 0 to 5 inches: loam
H2 - 5 to 17 inches: gravelly loam
H3 - 17 to 27 inches: gravelly loam
H4 - 27 to 38 inches: loam
H5 - 38 to 42 inches: weathered bedrock

Properties and qualities

Slope: 30 to 75 percent
Depth to restrictive feature: 38 to 42 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Available water capacity: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Trabuco

Percent of map unit: 5 percent
Hydric soil rating: No

Ahwahnee

Percent of map unit: 5 percent
Hydric soil rating: No

Auberry

Percent of map unit: 5 percent
Hydric soil rating: No

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Appendix E

Geotechnical Engineering Investigation Report

GEOTECHNICAL ENGINEERING INVESTIGATION REPORT

WATER PIPELINES REPLACEMENT – MD - 1
HIDDEN LAKES
MADERA COUNTY, CALIFORNIA 93653

BSK PROJECT G19-075-10F

PREPARED FOR:

PROVOST & PRITCHARD CONSULTING GROUP
286 W. CROMWELL AVENUE
FRESNO, CALIFORNIA 93711

MAY 8, 2019

GEOTECHNICAL ENGINEERING INVESTIGATION REPORT
WATER PIPELINES REPLACEMENT – MD - 1
HIDDEN LAKES
MADERA COUNTY, CALIFORNIA 93653

Prepared for:

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BSK Project: G19-075-10F

May 8, 2019

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1.0 INTRODUCTION

1.1 General

This report presents the results of our geotechnical engineering investigation for the proposed Bid Package 1 portion of the MD-1: Hidden Lakes Water System Improvements Project to be located in the Hidden Lakes Community of Madera County, California as shown on the site vicinity map, Figure 1. The geotechnical engineering investigation was conducted in general accordance with the scope of services outlined in BSK Proposal GF17-15549, dated March 22, 2019. The proposed improvements and exploratory borings are shown on Figure 3, Overall Site Map.

1.2 Project Description

We understand the project consists of replacing approximately 4,242 feet of distribution pipeline, and approximately 2,600 feet of raw water pipeline along Hidden Lake Boulevard, Capitan Avenue, and Lake View Drive in the Hidden Lakes area at Millerton Lake in Madera County, California. The pipe invert depth is not anticipated to exceed 10 feet below ground surface (bgs). The replacement pipelines are anticipated to be less than 12 inches in diameter, PVC or ductile iron pipe.

In the event significant changes occur in the design of these planned facilities, our conclusions and recommendations may not be appropriate until the changes are reviewed with BSK Associates (BSK) and pertinent conclusions and recommendations are formulated and provided in writing.

1.3 Purpose and Scope of Services

The purpose of the geotechnical investigation is to assess soil conditions at the project site and provide geotechnical engineering recommendations for use by the project designers. The scope of the investigation included a field exploration, laboratory testing, engineering analysis, and preparation of this report.

2.0 FIELD INVESTIGATION AND LABRATORY TESTING

2.1 Field Exploration

The field exploration, conducted on April 22, 2019 consisted of a site reconnaissance and drilling five (5) exploratory test borings. The test borings were drilled to a maximum depth of approximately 7.5 feet below ground surface (bgs) due to auger refusal. The test borings were drilled with a truck-mounted drill rig, equipped with 6-inch diameter hollow stem augers and a manually operated hand auger. The drilled holes were backfilled with soil cuttings and capped with permanent asphalt cold patch in pavement areas. The approximate boring locations are presented on Figure 3. Details of the field exploration and the boring logs are provided in Appendix A.

2.2 Laboratory Testing

Laboratory testing of selected soil samples were performed to evaluate in-situ moisture and density, gradation, direct shear, R-Values, and corrosion potential. The in-situ moisture and dry density test results are presented on the boring logs in Appendix A. Descriptions of the laboratory test methods and test results are provided in Appendix B.

3.0 SITE CONDITIONS

The following sections address site description, surface and subsurface conditions, and groundwater conditions for the alignment.

3.1 Site Description

The project alignment is located in a rural mountain community. The proposed alignment is anticipated to follow the previous alignment, which is primarily in the roadway. At the time of our field investigation, the roadway surface was asphalt concrete paved. The area of the alignment to the pump station was unpaved, and contained little to moderate seasonal vegetation and weeds. A tree had fallen along Hidden Lakes Boulevard, blocking the road at the southwestern alignment. The elevation changes ranged from shallow to steep, with a total elevation change of up to 300 feet.

3.2 Subsurface Conditions

The proposed alignment is located in an area generally mapped as metamorphosed volcanic and granitic materials. The near surface materials consist of weathered in-place residual soils, including silty sand, clayey sand, and sandy clay, underlain by decomposed granitic rock to the maximum depth of exploration (7.5 feet bgs). The borings were terminated due to auger refusal at depths of 2.5 to 7.5 feet bgs. The relative density of coarse grained soils were medium dense to very dense while the relative consistency of the fine grained soils were stiff. The boring logs in Appendix A provide a more detailed description of the soils encountered in each boring, including the applicable Unified Soil Classification System symbols.

Borings were drilled through existing pavement at some of the locations. The pavement section thicknesses were measured and are presented in Table 1.

TABLE 1
Pavement Thickness at Borings

Test Boring	Asphalt[1] (in)	Aggregate Base[1] (in)
B-1	3	6
B-2	-	-
B-3	8.5	NE
B-4	3	NE
B-5	-	-

Notes: 1. NE = Not Encountered

3.3 Groundwater Conditions

Groundwater was not encountered in the test borings explored at the time of our field exploration. The ground water is anticipated to correspond to the water level in Millerton Lake. However, fluctuations in the groundwater level or the presence of perched groundwater may occur due to variations in rainfall, seasonal factors, pumping from wells and other factors that were not evident at the time of our investigation.

4.0 CONCLUSION AND RECOMMENDATIONS

4.1 General

Based upon the data collected during this investigation, and from a geotechnical engineering standpoint, it is our opinion that there are not soil conditions that would preclude the construction of the proposed improvements provided the recommendations presented herein are incorporated in the design and construction of the project.

Weathered rock encountered in the test borings should generally be rippable using heavy construction equipment, except for localized areas of hard rock, isolated hard rock intrusions or resistant core stones within the weathered rock mass. Trench backfill materials or any structures should use select fill or import fill following the recommendations presented in Section 4.3.

Subsurface conditions observed during our field exploration typically present favorable geotechnical engineering characteristics for lateral restraint available at pipe invert elevations. Undisturbed soils are typically firm and insensitive to settlement under expected loads imposed by the pipe network. Trench sidewalls offer adequate passive resistance capacity and confinement of backfill without significant deformation.

Site conditions described above represent only our observations of predominant trends. The boring logs should be reviewed for specific conditions.

4.2 Soil Corrosivity

Based on test results, presented in Appendix B, on-site near-surface soils have a low soluble sulfate and chloride contents and a moderate minimum resistivity, and are alkaline. Thus, on-site soils are considered to have a low corrosion potential with respect to buried concrete and a moderate corrosive potential with respect to unprotected metal in contact with subgrade soils. It is recommended that Type II cement and maximum water-cement ratio of 0.45 be used in the formulation of concrete. Buried reinforcing steel protection be provided with the minimum concrete cover required by the American Concrete Institute (ACI) Building Code for Structural Concrete, ACI 318, Chapter 20. Buried metal conduits must have protective coatings in accordance with the manufacturer's specifications. If detailed recommendations for corrosion protection are desired, a corrosion specialist should be consulted.

4.3 Excavation and Trenching

Open Trench excavation depth are expected to be up to 5 feet. Soils within these depths comprise granular deposits of silty sand, clayey sand, clay and decomposed rock. These soils are consistent with OSHA Type "C" in the upper two to four feet underlain by type "A" materials.

Temporary excavations for the project construction should be left open for as short a time as possible and should be protected from water runoff. In addition, equipment and/or soil stockpiles must be maintained at least 10 feet away from the top of the excavations. If it becomes necessary to encroach within the setbacks, surcharging effects should be evaluated. Because of variability in soils, BSK must be afforded the opportunity to observe and document sloping and shoring conditions at the time of construction. Slope height, slope inclination, and excavation depths (including utility trench excavations) must in no case exceed those specified in local, state, or federal safety regulations, (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations).

4.4 Trench Backfill and Compaction

Processed on-site soils comprising silty sand and sand, which are free of organic material, and less than 3 inches in diameter, are suitable for use as general trench backfill above the pipe envelope. Removed pavement may be used as base material provided it is pulverized and sufficiently blended to meet Caltrans Class 2 aggregate base.

Imported fill materials must be free of deleterious substances and have less than 3 percent organic content by weight. The project specifications must require the contractor to contact BSK for review of the proposed import fill materials for conformance with these recommendations at least two weeks prior to importing to the site, whether from on-site or off-site borrow areas. Imported fill soils must be non-hazardous and be derived from a single, consistent soil type source conforming to the following criteria:

Maximum Particle Size:	3-inches

Percent Passing #4 Sieve:	65 – 100
Percent Passing #200 Sieve:	20 – 45
Plasticity Index:	less than 12
Expansion Index:	< 20
R-Value	>46

Low Corrosion Potential:

Soluble Sulfates:	< 1,500 mg/kg
Soluble Chlorides:	< 300 mg/kg
Soil Resistivity:	> 2,000 ohm-cm

The backfill must be placed in thin layers, not exceeding 12-inches in loose thickness, scarified (if necessary) to achieve a smooth and consistent texture, moisture conditioned to at or above optimum moisture content, and compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557. The uppermost 12-inches of trench backfill below pavement must be compacted to at least 95 percent of the maximum dry density as determined by ASTM D1557 within proposed pavement areas, or as per Madera County or Caltrans Standards. Mechanical compaction methods are recommended, ponding or jetting must not be used. Moisture content within two percent of optimum moisture content must be maintained while compacting the upper 12-inch zone.

Field density testing must conform to ASTM Test Methods D1556, and/or D6938. We recommend that field density tests be performed in the utility trench bedding, envelope and backfill for every vertical lift, at an approximate longitudinal spacing of not greater than 250-feet. Backfill that does not conform to the criteria represented by the failing test must be removed or reworked as applicable over the trench length represented by the failing tests so as to conform to BSK recommendations.

Grading operations must be scheduled as to avoid working during periods of inclement weather. Should these operations be performed during or shortly following periods of inclement weather, unstable soil conditions may result in the soils exhibiting a "pumping" condition. This condition is caused by excess moisture, in combination with compaction, resulting in saturation and near zero air voids in the soils. If this condition occurs, the affected soils must be over-excavated to the depth at which stable soils are encountered and replaced with suitable soils compacted as engineered fill. Alternatively, the Contractor may proceed with grading operations after utilizing a method to stabilize the soil subgrade, which must be subject to review by BSK prior to implementation.

4.5 Pipe Subgrade Preparation

Excavations to pipe subgrade elevation and setting of final grade is expected to produce soil disturbance, particularly in the sandier zones. In disturbed zones, six (6) inches below final subgrade elevation must be compacted to a minimum of 90 percent. Moisture conditions during compaction must be not less than optimum but not greater than 3 percent above optimum.

4.6 Pipe Bedding and Envelope

A minimum thickness of six inches of bedding material or the thickness equivalent to 1/4 the pipe outside diameter whichever is the greater, is recommended for pipe installation. The bedding thickness may be adjusted to achieve the desired bedding angle and corresponding bedding constant. Bedding material must consist of sand with not more than 5 percent passing the #200 Sieve and with 100 percent passing the 3/8-inch Sieve. We recommend that the pipe zone up to the spring line also be backfilled with the bedding materials described above.

The remaining pipe zone up to 12-inches above the top of the pipe must consist of friable granular backfill. Silty sand deposits with 35 percent or less passing the #200 sieve are suitable for backfill.

Sand-cement slurry may be used for envelope backfill (50-200 psi at 28 days).

4.6 Modulus of Soil Reaction E´

Modulus of Soil Reaction E´ values for use in the Iowa Formula for estimating the deflection of buried flexible pipes are provided in Table 2. The materials include undisturbed native soils (trench sidewalls), compacted native soil backfill, Class 2 base rock conforming to Caltrans Section 26 of Standard Specifications and sand-cement slurry (50 psi at 7 days).

TABLE 2
Modulus of Subgrade Reaction (E´)

Material Designation	Modulus of Subgrade Reaction (E´), psi	Degree of Compaction of Bedding & Envelope (ASTM D1557)
Trench Sidewalls: 0'-5' (SM)(DG)*	3,000	-
Compacted Native Soil Backfill	1,350	90 percent
Class 2 Base Rock	3,400	95 percent
Sand-Cement Slurry	4,000	--

Note: * - Derived from standard penetration tests SM: Silty Sand, DG: Decomposed Granitic

The Modulus of Subgrade Reaction is applicable to the determination of initial deflection only. For long-term deflection, a deflection lag factor of 1.25 is recommended for design purposes.

4.7 Pipe Loading Design Factors

Pipe loading design factors listed in Table 3 are provided for bedding material consisting of:

1) Native and imported sand or silty sand soil with less than 35 percent passing the #200 sieve and 100 percent passing the 3/8-inch sieve (SM/DG);
2) Class 2 crushed base rock conforming to Caltrans Section 26 of standard specifications;
3) Sand-cement slurry with 28-day compressive strength of 50-200 psi.

TABLE 3
Pipe Loading Design Factors

Materials Classification	Angle of Internal Friction, Degrees	Kμ (Marston's Formula)	Degree of Compaction ASTM D1557
(1) SM/DG	30	0.19	90
(2) Class 2 Aggregate Base	45	0.17	95
(3) Cement/Sand Slurry (CLSM)	55	0.14	--

A bulk unit weight of 115 pcf is recommended for compacted soil backfill within the pipe bedding and envelope. For Class 2 aggregate base, a unit weight of 140 pcf is recommended.

In the determination of the load coefficient, Kμ, "K" is Rankine's lateral earth pressure ratio and μ is equal to the coefficient of friction.

4.8 Horizontal Bearing Capacity-Thrust Blocks

We recommend that thrust blocks size determinations, in cases when force mains stabilization is required at pipe direction changes, be based on the bearing values for shallow and deep thrust blocks presented in Table 4. Shallow thrust blocks have a height greater than 70% of depth to center of pipeline. Deep thrust blocks have a height less than 70% of the depth to the pipe center.

TABLE 4
Horizontal Bearing Capacity – Thrust Blocks

Loading	Thrust Block	Design Horizontal Bearing Capacity (psf)
Sustained	Shallow	300 psf/ft of depth
	Deep	1650H psf
Test	Shallow	400 psf/ft of depth
	Deep	2500H psf

Note: H is block height in feet

The thrust blocks must be cast between the pipe and undisturbed soil at the trench sidewalls. The horizontal deformation associated with the available capacity of shallow thrust blocks is 0.005D for test and sustained loading, where D is the depth to the bottom of the thrust block. It is anticipated the lateral movement associated with the available lateral bearing of deep thrust blocks under sustained or test loading is about 0.2 inch per 2500 psf of horizontal loading.

4.9 Surface Drainage Control

Final grading around site improvements must provide for positive and enduring drainage. Ponding of water must not be allowed on or near the improvements/roadways. Saturation of the soils immediately

adjacent to or below improvements must not be allowed. Although landscaping is not anticipated, irrigation water must be applied in amounts not exceeding those required to offset evaporation, sustain plant life, and maintain a relatively uniform moisture profile around and below, site improvements. Fill elevations are anticipated to be less than 3 feet above natural grade to achieve positive site drainage.

5.0 PLANS AND SPECIFICATION REVIEW

BSK recommends that it be retained to review the draft plans and specifications for the project, with regard to pavements and earthwork, prior to being finalized and issued for construction bidding.

6.0 CONSTRUCTION TESTING AND INVESTIGATION

Geotechnical testing and observation during construction is a vital extension of this geotechnical investigation. BSK recommends that it be retained for those services. Field review during site preparation allows for evaluation of the exposed soil conditions and confirmation or revision of the assumptions and extrapolations made in formulating the design parameters and recommendations. BSK's observations must be supplemented with periodic compaction tests to establish substantial conformance with these recommendations. BSK must also be called to the site during earthwork operation, in order to assess whether the actual subgrade conditions are compatible with the conditions anticipated during the preparation of this report.

If a firm other than BSK is retained for these services during construction, that firm must notify the owner, project designers, governmental building officials, and BSK that the firm has assumed the responsibility for all phases (i.e., both design and construction) of the project within the purview of the geotechnical engineer. Notification must indicate that the firm has reviewed this report and any subsequent addenda, and that it either agrees with BSK's conclusions and recommendations, or that it will provide independent recommendations.

7.0 LIMITATION

The analyses and recommendations submitted in this report are based upon the data obtained from the test borings performed at the locations shown on Figure 3. The report does not reflect variations, which may occur between or beyond the borings. The nature and extent of such variations may not become evident until additional exploration and testing is performed or construction is initiated. If variations then appear, a re-evaluation of the recommendations of this report will be necessary after performing on-site observations during the excavation period and noting the characteristics of the variations.

The validity of the recommendations contained in this report is also dependent upon an adequate testing and observation program during the construction phase. BSK assumes no responsibility for construction compliance with the design concepts or recommendations unless it has been retained to perform the testing and observation services during construction as described above.

The findings of this report are valid as of the present. However, changes in the conditions of the site can occur with the passage of time, whether caused by natural processes or the work of man, on this property or adjacent property. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation, governmental policy or the broadening of knowledge.

BSK has prepared this report for the exclusive use of the Client and members of the project design team. The report has been prepared in accordance with generally accepted geotechnical engineering practices, which existed in Madera County at the time the report was written. No other warranties either express or implied are made as to the professional advice provided under the terms of BSK's agreement with Client and included in this report.

FIGURES

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REFERENCE IMAGE: Google Earth

BSK ASSOCIATES
550 West Locust Avenue
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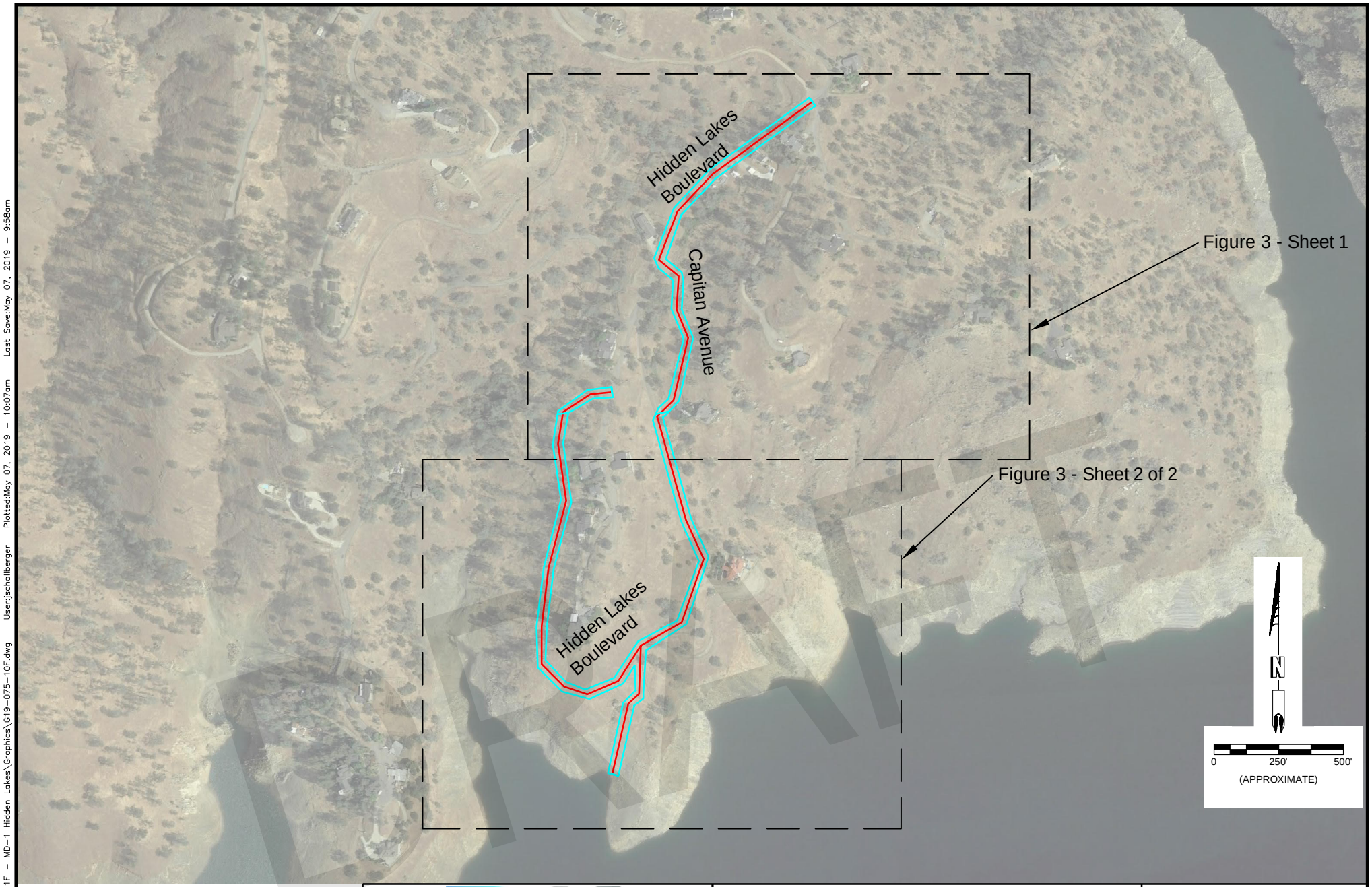
SITE VICINITY MAP

Water Pipeline Replacement - MD-1
Hidden Lakes
Madera County, California 93653

FIGURE 1

JOB NO. G19-075-10F
DATE April 18, 2019
DR. BY JS
CH. BY NP
SCALE AS SHOWN
SHEET NO. 1 OF 1 SHEETS



OVERALL SITE MAP

FIGURE 2

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Water Pipeline Replacement - MD-1
Hidden Lakes
Madera County, California 93653

JOB NO. G19-075-10F
DATE May 7, 2019
DR. BY JS
CH. BY NP
SCALE AS SHOWN
SHEET NO. 1
OF 1 SHEETS

REFERENCE IMAGE: Google Earth

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LEGEND:
B-3 APPROXIMATE BORING LOCATIONS

REFERENCE IMAGE: Google Earth

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BORING LOCATION MAP

Water Pipeline Replacement - MD-1
Hidden Lakes
Madera County, California 93653

FIGURE 3

JOB NO. G19-075-10F
DATE May 7, 2019
DR. BY JS
CH. BY NP
SCALE AS SHOWN
SHEET NO. 1
OF 2 SHEETS

LEGEND:
B-5 APPROXIMATE BORING LOCATIONS

REFERENCE IMAGE: Google Earth

BSK ASSOCIATES
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Tel. (559) 497-2880

BORING LOCATION MAP

Water Pipeline Replacement - MD-1
Hidden Lakes
Madera County, California 93653

FIGURE 2

JOB NO. G19-075-10F
DATE May 7, 2019
DR. BY JS
CH. BY NP
SCALE AS SHOWN

SHEET NO. 2
OF 2 SHEETS

APPENDIX A

Field Exploration and Boring Logs

APPENDIX A
Field Exploration

The field exploration was conducted on April 22, 2019, under the oversight of a BSK staff engineer. Five (5) test borings were excavated to a maximum depth of 7.5 feet below existing ground surface (bgs) within the alignment of the pipeline. The borings were excavated with a Mobile B-61 drill rig, equipped with 6-inch diameter hollow stem augers and a manually-operated hand auger. The approximate locations of the test borings are presented on Figure 3, Boring Location Map.

The soil materials encountered in the test borings were visually classified in the field, and logs were recorded during the drilling and sampling operations. Visual classification of the materials encountered in the test borings was made in general accordance with the Unified Soil Classification System (ASTM D2487). A soil classification chart is presented herein. Borings are presented herein and should be consulted for more details concerning subsurface conditions. Stratification lines were approximated by the Engineer on the basis of observations made at the time of drilling, while the actual boundaries between different soil types may be gradual and soil conditions may vary at other locations.

Subsurface samples were obtained at the successive depths shown on the boring logs by driving samplers which consisted of a 2.5-inch inside diameter (I.D.) California Sampler. The samplers were driven 18-inches using a 140-pound hammer dropped from 30-inches. The number of blows required to drive the last 12-inches was recorded as the blow count (blows/foot) on the boring logs. The relatively undisturbed soil core samples were capped at both ends to preserve the samples at their natural moisture content. Soil samples obtained using the SPT Sampler were placed and sealed in polyethylene bags. At the completion of the field exploration, the test borings were backfilled with soil cuttings and capped with permanent AC patch, as needed.

It should be noted that the use of terms such as “loose”, “medium dense”, “dense” or “very dense” to describe the consistency of a soil is based on sampler blow count and is not necessarily reflective of the in-place density or unit weight of the soils being sampled. The relationship between sampler blow count and consistency is provided in the following Tables A1 and A2 for coarse-grained (sandy and gravelly) soils and fine grained (silty and clayey) soils, respectively.

Table A1: Consistency of Coarse-Grained Soil versus Sampler Blow Count		
Consistency Descriptor	**SPT Blow Count (#Blows / Foot)**	**2.5" I.D. California Sampler Blow Count (#Blows / Foot)**
Very Loose	<4	<6
Loose	4 – 10	6 – 15
Medium Dense	10 – 30	15 – 45
Dense	30 – 50	45 – 80
Very Dense	>50	>80

Table A2: Consistency of Fine-Grained Soil versus Sampler Blow Count		
Consistency Descriptor	**SPT Blow Count (#Blows / Foot)**	**2.5" I.D. Cal. Sampler Blow Count**
Very Soft	<2	<3
Soft	2 – 4	3 – 6
Medium Stiff	4 – 8	6 – 12
Stiff	8 – 15	12 – 24
Very Stiff	15 – 30	24 – 45
Hard	>30	>45

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS More than Half > #200 sieve	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 15% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 15% FINES	SM	SILTY SANDS, POOORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS More than Half < #200 sieve	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

■	Modified California	RV	R-Value
⊠	Standard Penetration Test (SPT)	SA	Sieve Analysis
☒	Split Spoon	SW	Swell Test
◪	Pushed Shelby Tube	TC	Cyclic Triaxial
▯	Auger Cuttings	TX	Unconsolidated Undrained Triaxial
✋	Grab Sample	TV	Torvane Shear
⊘	Sample Attempt with No Recovery	UC	Unconfined Compression
CA	Chemical Analysis	(1.2)	(Shear Strength, ksf)
CN	Consolidation	WA	Wash Analysis
CP	Compaction	(20)	(with % Passing No. 200 Sieve)
DS	Direct Shear	▽	Water Level at Time of Drilling
PM	Permeability	▼	Water Level after Drilling(with date measured)
PP	Pocket Penetrometer		

SOIL CLASSIFICATION CHART AND LOG KEY

BSK ASSOCIATES

BSK Associates
550 W. Locust Avenue
Fresno, California 93650
Telephone: (559) 497-2880

Project: MD - 1 - Hidden Lakes

Location: Hidden Lake, Madera County

Project No.: G19-075-11F

Logged By: J. Schallberger

Checked By: N. Popenoe

Boring: **B-1**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
0									ASPHALT - 3"	
								GM	**Silty Gravel** - brown, moist, fine to coarse grained (fill)	
1									**Decomposed Rock** - yellowish brown, decomposed; (Silty SAND (SM), moist, medium dense, fine to medium grained, red striations	
2										
3			41	121.0	8.3	26				ø = 30°, c = 460 psf
4										
5			50/ 3"	115.4	7.5					
6									Boring terminated at approximately 5.75 feet bgs due to auger refusal. Borehole backfilled with soil cuttings. No groundwater encountered	
7										
8										
9										

Drilling Contractor: Dave's Drilling
Drilling Method: Hollow Stem Auger
Drilling Equipment: Mobile B-61
Date Started: 4/22/19
Date Completed: 4/22/19

Surface Elevation:
Sample Method: 2.5-inch I.D. modified
Groundwater Depth: Not Encountered
Completion Depth: 5.75 Feet
Borehole Diameter: 6"

* See key sheet for symbols and abbreviations used above.

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Project: MD - 1 - Hidden Lakes

Location: Hidden Lake, Madera County

Project No.: G19-075-11F

Logged By: J. Schallberger

Checked By: N. Popenoe

Boring: **B-2**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
0								GM	FILL: **Silty Gravel** - brown, moist, fine to coarse grained	
1								CL	**Sandy CLAY** - brown, moist, stiff, fine grained sand, trace fine to medium grained gravel	
2			11	121.6	10.3					
3										
4									Boring terminated at approximately 3.5 feet bgs due to auger refusal. Borehole backfilled with soil cuttings. No groundwater encountered	
5										
6										
7										
8										
9										

Drilling Contractor: Dave's Drilling
Drilling Method: Hollow Stem Auger
Drilling Equipment: Mobile B-61
Date Started: 4/22/19
Date Completed: 4/22/19

Surface Elevation:
Sample Method: 2.5-inch I.D. modified
Groundwater Depth: Not Encountered
Completion Depth: 3.5 Feet
Borehole Diameter: 6"

* See key sheet for symbols and abbreviations used above.

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Project: MD - 1 - Hidden Lakes

Location: Hidden Lake, Madera County

Project No.: G19-075-11F

Logged By: J. Schallberger

Checked By: N. Popenoe

Boring: **B-3**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
									ASPHALT - 8.5"	
1									**Decomposed Granitic Rock** - blackish brown, decomposed; (Silty SAND (SM), moist, dense, fine grained sand)	
2										
3									... trace fine gravel and mica	
4			51	137.7	3.8					
5			50/ 4"	110.9	16.3				... very dense	
6									Boring terminated at approximately 5.83 feet bgs due to auger refusal. Borehole backfilled with soil cuttings. No groundwater encountered	
7										
8										
9										

Drilling Contractor: Dave's Drilling
Drilling Method: Hollow Stem Auger
Drilling Equipment: Mobile B-61
Date Started: 4/22/19
Date Completed: 4/22/19

Surface Elevation:
Sample Method: 2.5-inch I.D. modified
Groundwater Depth: Not Encountered
Completion Depth: 5.83 Feet
Borehole Diameter: 6"

* See key sheet for symbols and abbreviations used above.

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Project: MD - 1 - Hidden Lakes

Location: Hidden Lake, Madera County

Project No.: G19-075-11F

Logged By: J. Schallberger

Checked By: N. Popenoe

Boring: **B-4**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
0									ASPHALT - 3"	
1			40					SM	**Clayey SAND** - yellowish brown, moist, medium dense, fine to medium grained, trace fine to coarse gravel	
2										
3										
4									**Decomposed Rock** - reddish brown, decomposed, moist, medium dense, fine to coarse grained	
5										
6			37							
7										
8									Boring terminated at approximately 7.5 feet bgs due to auger refusal. Borehole backfilled with soil cuttings. No groundwater encountered	
9										

Drilling Contractor: Dave's Drilling
Drilling Method: Hollow Stem Auger
Drilling Equipment: Mobile B-61
Date Started: 4/22/19
Date Completed: 4/22/19

Surface Elevation:
Sample Method: 2.5-inch I.D. modified
Groundwater Depth: Not Encountered
Completion Depth: 7.5 Feet
Borehole Diameter: 6"

* See key sheet for symbols and abbreviations used above.

BSK Associates
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Project: MD - 1 - Hidden Lakes

Location: Hidden Lake, Madera County

Project No.: G19-075-11F

Logged By: J. Schallberger

Checked By: N. Popenoe

Boring: **B-5**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
0								SM	**Silty SAND** - brown, moist, fine to medium grained, rootlets	
1				114.7	3.4			CH	**Fat Clay** - red, moist	
2										
3									Boring terminated at approximately 2.5 feet bgs. due to auger refusal. Borehole backfilled with soil cuttings. No groundwater encountered	
4										
5										
6										
7										
8										
9										

Drilling Contractor: Dave's Drilling
Drilling Method: Hand Auger
Drilling Equipment: N/A
Date Started: 4/22/19
Date Completed: 4/22/19

Surface Elevation:
Sample Method: 2.5-inch I.D. drive tube
Groundwater Depth: Not Encountered
Completion Depth: 2.5 Feet
Borehole Diameter: 4"

* See key sheet for symbols and abbreviations used above.

APPENDIX B

Laboratory Testing

APPENDIX B

Laboratory Testing

Moisture-Density Tests

The field moisture content, as a percentage of dry weight of the soils, was determined by weighing the samples before and after oven drying in accordance with ASTM D2216. Dry densities, in pounds per cubic foot, were also determined for 2.4-inch soil samples in general accordance with ASTM D2937. Test results are presented on the boring logs in Appendix A.

Sieve Analysis Test

One (1) Sieve Analysis Test was performed on selected soil samples in the area of planned construction. The test was performed in general accordance with Test Method ASTM D422. The results of the test are presented on Figure B-1.

Direct Shear Test

One (1) direct shear test was performed on test specimen trimmed from a selected soil sample. The three-point shear test was performed in general accordance with ASTM D3080, Direct Shear Test for Soil under Consolidated Drained Conditions. The test specimens, each 2.42 inches in diameter and 1 inch in height, were subjected to shear along a plane at mid-height after allowing for pore pressure dissipation. The results of the test are presented on Figure B-2.

Maximum Dry Density and Optimum Moisture Content

One (1) modified proctor test was performed to determine the maximum dry density and optimum moisture content of a selected soil sample. The sample was compacted under a standardized compaction effort at varying moisture contents in general accordance with ASTM D1557. The results are presented on Figure B-3.

Soil Corrosivity

The results of chemical analyses performed on a bulk soil sample using California Test Method 643 (for pH and minimum resistivity) and California Test Methods 417 and 422 (for soluble sulfate and chlorides, respectively), are presented below.

SUMMARY OF CHEMICAL TEST RESULTS

Sample Location	pH	Sulfate (mg/kg)	Chloride (mg/kg)	Minimum Resistivity (ohms-cm)
B-1 at 0-5´	7.3	15	6.5	3,450

BSK ASSOCIATES

Gradation Analysis Report
ASTM D-422 / ASTM C-136

FIGURE B-1

550 W. Locust Ave.
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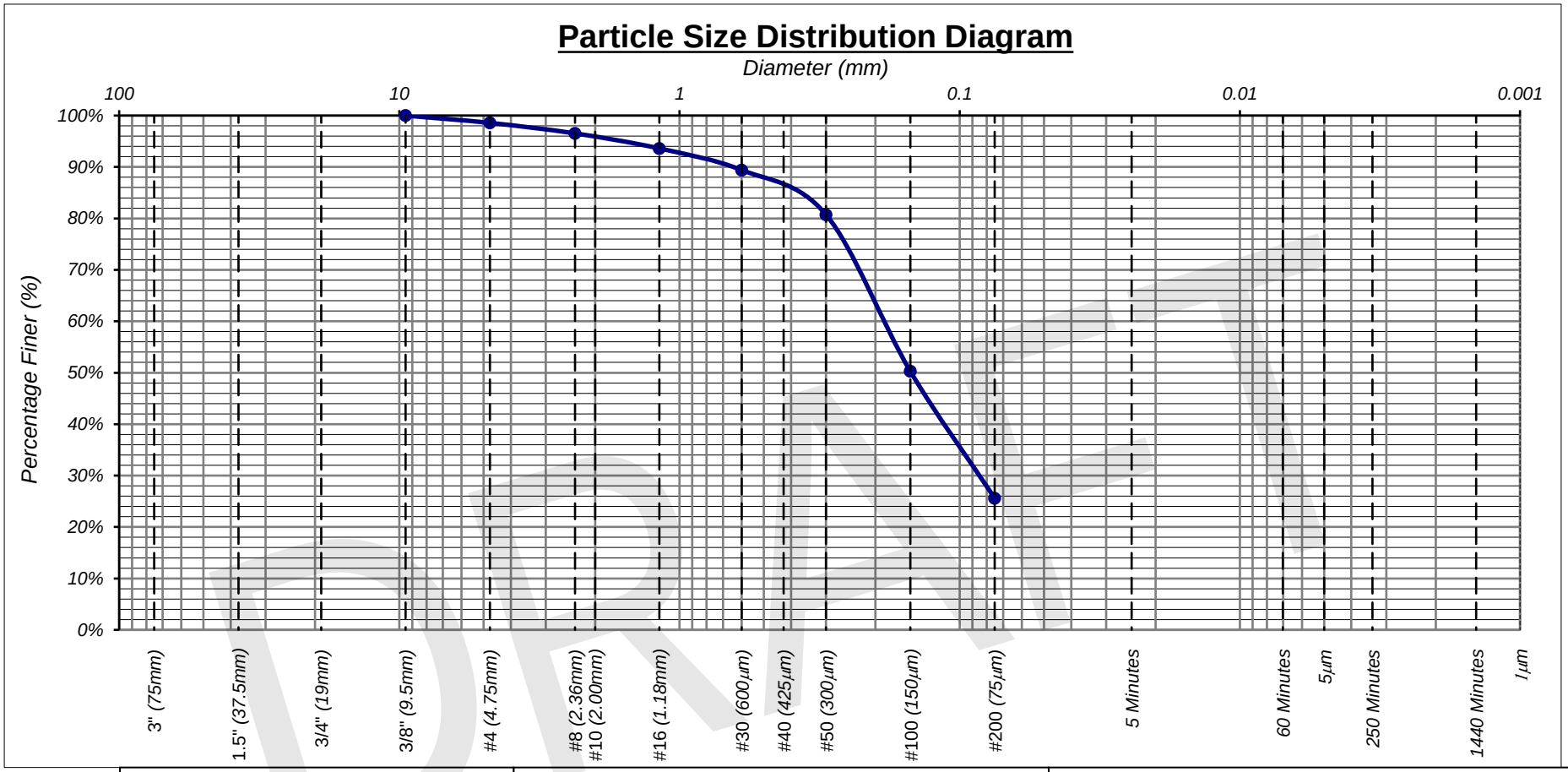
Project Name:	Water Pipeline Replacement - MD - 1	**Project Number:**	G19-075-11F	**Sample Date:**	04/22/19
Sample Location:	B-1 @ 0-5'	**Sample Lab ID:**	N/A	**Test Date:**	04/25/19
Sample Description:	Igneous Rock (Biotite Granite), brown, extremley Weathered; (Silty Sand (SM)			**Report Date:**	04/30/19

Particle Size Distribution Diagram



Clear Square Openings (ASTM C-136)			US Standard Series (ASTM D-422)			Hydrometer Readings (ASTM D-422)
Cobble	Gravel		Sand			Silt (Non-Plastic) to Clay (Plastic)
	Coarse	Fine	Coarse	Medium	Fine	

% Gravel = 1 **% Sand = 73** **% Fines = 26**

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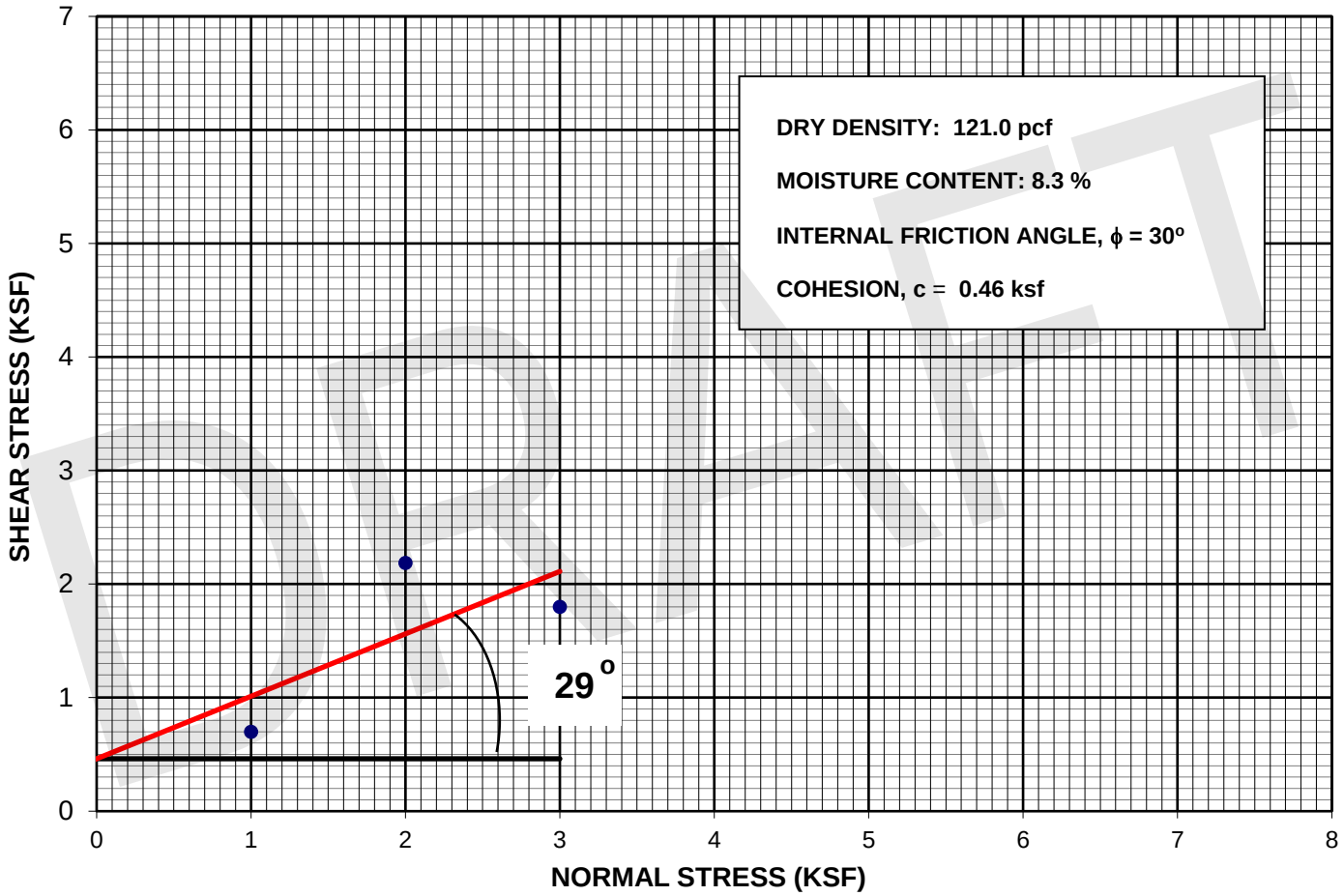
Direct Shear Test

ASTM D-3080

FIGURE B-2

Project Name:	Water Pipelines Replacements - MD-1	**Sampled By:**	J. S.	**Sample Date:**	4/22/2019
		Tested By:	D.M.	**Test Date:**	4/29/2019
Project Number:	G19-075-10F	**Lab Tracking ID:**	N/A	**Report Date:**	4/30/2019
Sample Location:	B-1 @ 3'	**Sample Description:**	Silty SAND (SM), brown, moist, fine grained		

SHEAR STRENGTH DIAGRAM



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Laboratory Compaction Curve

ASTM D-1557

FIGURE B-3

550 W. Locust Ave.
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Ph: (559) 497-2868
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Project Name:	Water Pipeline Repacement - MD - 1			**Report Date:**	4/30/2019
Project Number:	G19-075-11F	**Sampled By:**	J.Schallberger	**Sample Date:**	4/22/2019
Lab Tracking ID:	N/A	**Tested By:**	S. Jue	**Test Date:**	4/26/2019
Sample Location:	B-1 @ 0-5'				
Sample Description:	Igneous Rock (Biotite Granite), brown, extremley Weathered; (Silty Sand (SM)				

PROCEDURE USED

Procedure A	x	**Procedure B**		**Procedure C**