



MITIGATED NEGATIVE DECLARATION

San Joaquin Phase 2 Water System Improvements

December 2018

PREPARED FOR:



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San Joaquin, CA 93660

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Initial Study/Mitigated Negative Declaration
San Joaquin Phase 2 Water System Improvements

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Chapter 1

INTRODUCTION

INTRODUCTION

1.1 Project Summary

This document is the Initial Study/Mitigated Negative Declaration describing the potential environmental effects of constructing a new well / tank, Manganese removal treatment system and associated pipelines. The City is currently in violation of the manganese maximum contaminant levels (MCL) set forth by the U.S. Environmental Protection Agency. The proposed Project is more fully described in Chapter Two – Project Description.

The City of San Joaquin will act as the Lead Agency for this project pursuant to the *California Environmental Quality Act (CEQA)* and the *CEQA Guidelines*.

The Project is expected to be funded through a combination of City funds, Drinking Water State Revolving Fund (DWSRF) funds administered through the California State Water Resources Control Board (Water Board), and a Community Development Block Grant from the U.S. Department of Housing and Urban Development. One requirement of DWSRF funding is that the City will be required to comply with the Water Board's environmental requirements including CEQA-Plus. CEQA-Plus involves additional environmental analysis of certain topics to include federal thresholds, rules and regulations (for topics such as air, biology, cultural, etc.). In addition to this Mitigated Negative Declaration, the City is preparing a separate Environmental Package for submittal to the Water Board which includes the CEQA-Plus analysis.

1.2 Document Format

This IS/MND contains five chapters, and appendices. Section 1, Introduction, provides an overview of the project and the CEQA environmental documentation process. Chapter 2, Project Description, provides a detailed description of project objectives and components. Chapter 3, Initial Study Checklist, presents the CEQA checklist and environmental analysis for all impact areas, mandatory findings of significance, and feasible mitigation measures. If the proposed 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 4, Mitigation Monitoring and Reporting Program, provides the proposed mitigation measures,

completion timeline, and person/agency responsible for implementation and Chapter 5, List of Preparers, provides a list of key personnel involved in the preparation of the IS/MND.

Environmental impacts 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 After 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 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.)

Regardless of the type of CEQA document that must be prepared, the basic purpose of the CEQA process as set forth in the CEQA Guidelines Section 15002(a) is to:

- (1) Inform governmental decision makers and the public about the potential, significant environmental effects of proposed activities.
- (2) Identify ways that environmental damage can be avoided or significantly reduced.
- (3) Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- (4) Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

According to Section 15070(b), a Mitigated Negative Declaration is appropriate if it is determined that:

- (1) Revisions in the project plans or proposals made by or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and
- (2) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

The Initial Study contained in Section Three of this document has determined that with mitigation measures and features incorporated into the project design and operation, the environmental impacts are less than significant and therefore a Mitigated Negative Declaration will be adopted.

Chapter 2

PROJECT DESCRIPTION

Project Description

2.1 Location

The City of San Joaquin (City) is located within the San Joaquin Valley, approximately 25 miles southwest of the City of Fresno, in Fresno County. The City is approximately six miles northwest of State Route 145 and 15 miles east of Interstate 5 (see Figure 1 – Location Map). The San Joaquin Phase 2 Water System Improvements Project (Project) is within the City limits of San Joaquin in Township 15 South, Range 16 East, Sections 23, 24, 25, and 26, as depicted on the San Joaquin, California, U.S. Geological Survey 7.5-minute quadrangle. Well #6 will be installed in a vacant dirt field at the eastern terminus of 6th Street, near Elm Avenue, adjacent to the San Joaquin Sports Complex, and all other infrastructure will be installed within existing roadways and other developed or disturbed land (see Figure 2 – Site Aerial).

2.2 Setting and Surrounding Land Use

The proposed Project site is located in the central-western portion of the San Joaquin Valley of California. The valley is a large, nearly flat alluvial plain bordered by the Sierra Nevada to the east, the Tehachapi Mountains to the south, the California coast ranges to the west, and the Sacramento-San Joaquin Delta to the north.

Like most of California, the central/southern San Joaquin Valley experiences 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. According to the Western Regional Climate Center, annual precipitation in the vicinity of the project sites is about 12 inches, about 85% of which falls between the months of October and March. Nearly all precipitation falls in the form of rain.

The proposed Project sites consist of developed and disturbed land cover in a mostly urban setting. The proposed new well (Well #6) and associated infrastructure is located in a fallow agricultural field bordered by residential development to the west and south, a public park to the southeast, and agricultural land cover to the north and east (see Figure 3 – Well #6 Treatment Site). The pipelines will be installed underground within existing roadways and alleys.

Figure 1 – Location Map

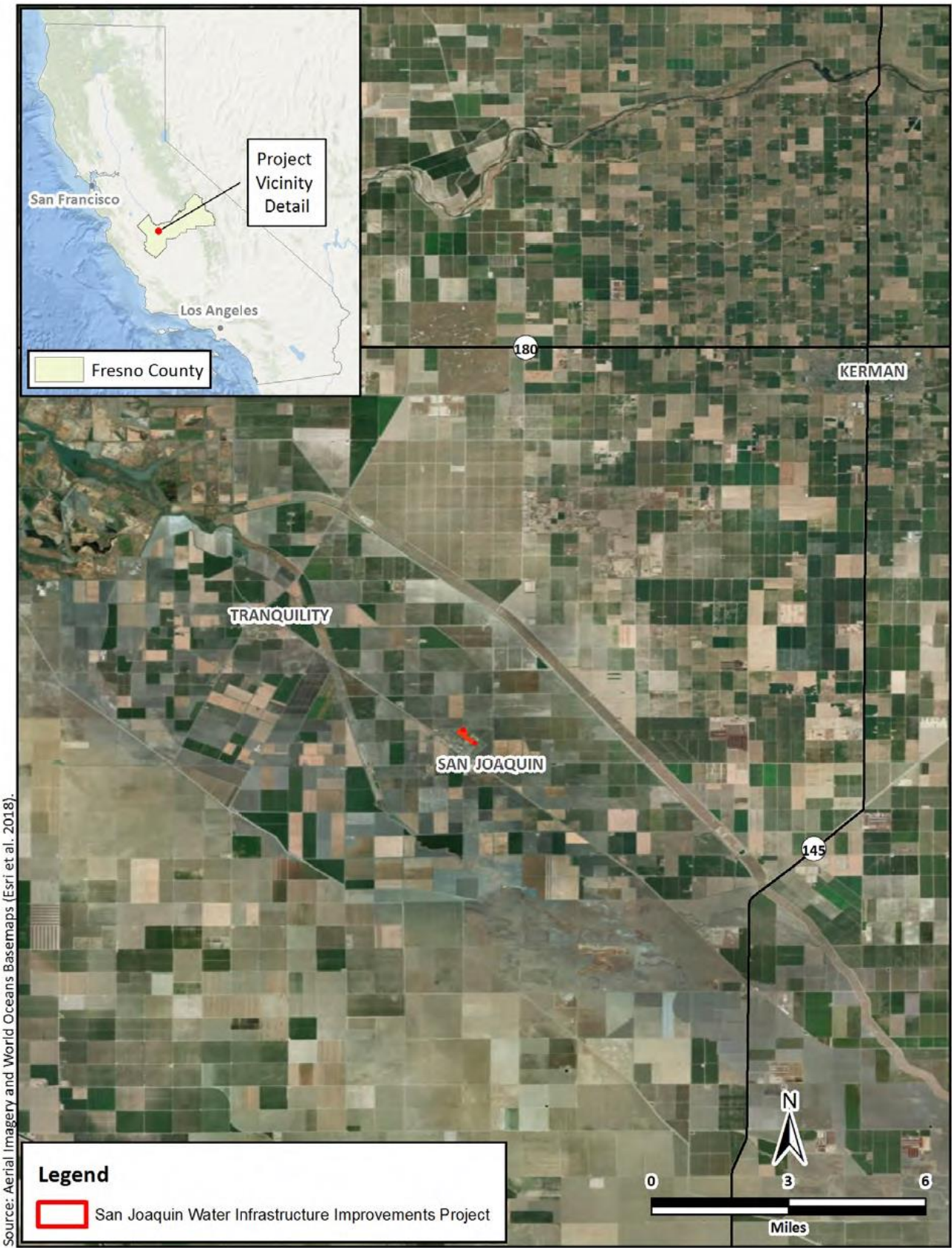


Figure 2 – Site Aerial

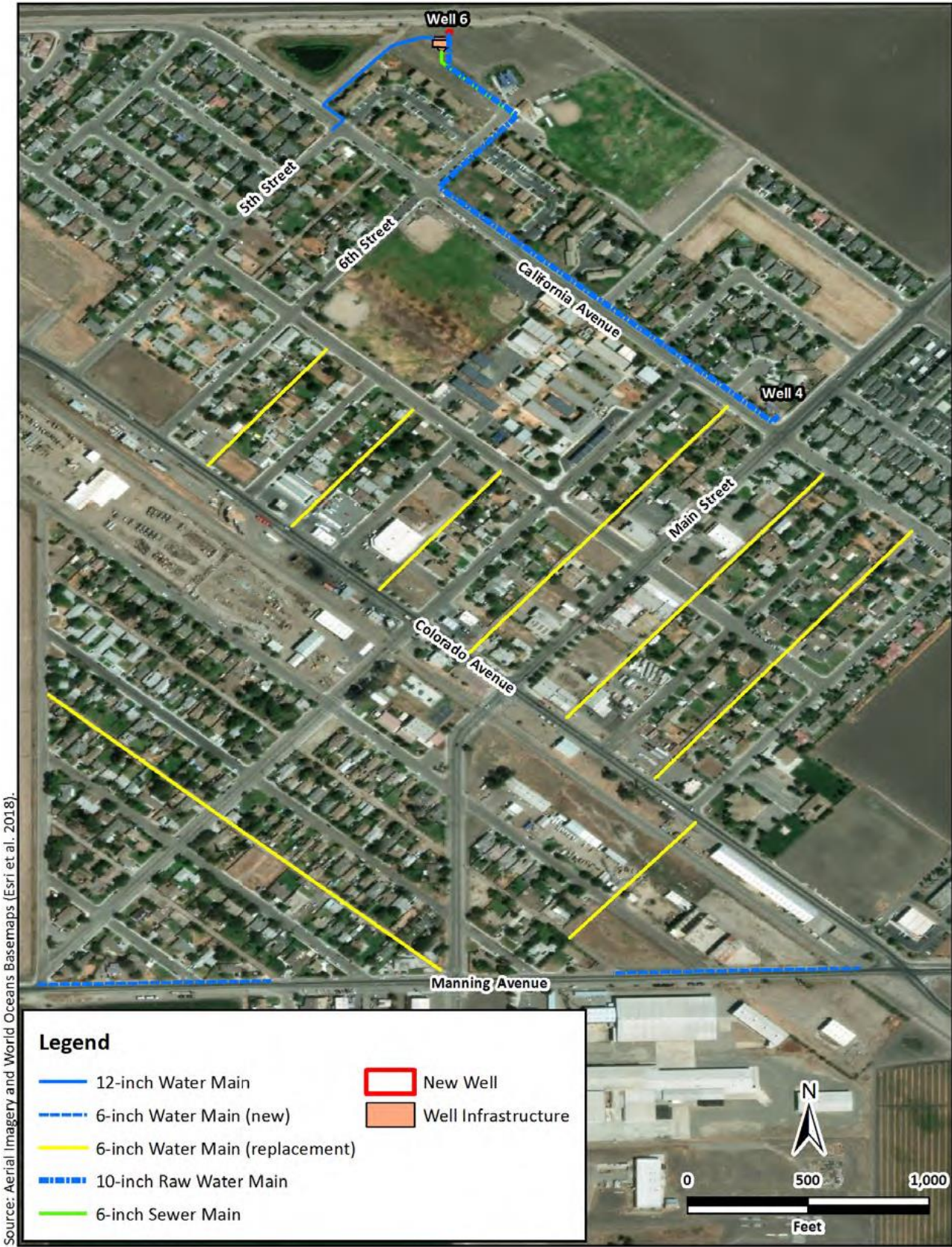


Figure 3 – Well #6 Treatment Site



2.3 Project Background

As outlined in the City of San Joaquin Water Supply, Treatment, Storage, and Distribution Improvement Preliminary Engineering Report (Gouveia Engineering 2017), the current Project consists of Water Supply Alternative B, Water Treatment Alternative II, and distribution system improvements. Alternative B is the construction of Well #6 to replace existing Well #4, which was constructed in 1978 and has undergone recurrent maintenance to replace failed casings, correct sand intrusion, and reduce bacteria levels. The well was rehabilitated in 2016 after being taken offline in 2010 due to SWRCB Division of Drinking Water (DDW) threshold violations.

However, repairs to Well #4 are not expected to endure over time. Following the DDW's 2010 recommendation, Alternative B, or installation of Well #6, has been proposed. The new Well #6 would pump from the San Joaquin Groundwater Basin—Kings Subbasin. As a newly established well, it would require manganese treatment. Construction of Well #6 would include drilling a test well, drilling the production well, equipping the production well (pump, motor, controls, etc.), treatment, site improvements, and connecting the well to the existing water system. After Well #6 is in operation, Well #4 would be used as a backup water source as needed.

Water Treatment Alternative II is the construction of a consolidated system for treating groundwater produced by Wells #4 and #6. Development of the treatment system includes installation of a pressure filter system near Well #6 to treat water produced by Wells #4 and #6.

Funding

As described in Chapter 1 - Introduction, the Project is expected to be funded through a combination of City funds, Drinking Water State Revolving Fund (DWSRF) funds administered through the California State Water Resources Control Board (Water Board), and potentially a Community Development Block Grant from the U.S. Department of Housing and Urban Development (requiring NEPA documentation). One requirement of DWSRF funding is that the City will be required to comply with the Water Board's environmental requirements including CEQA-Plus. CEQA-Plus involves additional environmental analysis of certain topics to include federal thresholds, rules and regulations (for topics such as air, biology, cultural, etc.). In addition to this Mitigated Negative Declaration, the City is preparing a separate Environmental Package for submittal to the Water Board which includes the CEQA-Plus analysis.

2.4 Project Description

The City's Phase 2 Water System Improvements Project consists of several improvements to the existing treatment and distribution system. The Project will involve installing a new well (Well #6), a 71,000-gallon tank for backwash storage and sludge settling and associated filtration equipment, approximately 2,300 linear feet of 10- inch diameter pipeline to convey raw ground water from Well #4 to Well #6, approximately 700 feet of 12-inch pipeline to connect Well #6 to the existing water distribution system, and approximately 400 feet of 6-inch sewer pipe to connect the new well filtration system to the existing sewer system to dispose of manganese sludge. In addition, approximately 1,620 feet of new 6-inch water main will be installed and approximately 8,200 feet of existing 6-inch water main will be replaced. These infrastructure improvements will help the City reliably meet the maximum daily demand of 1,500 Gallons Per Minute (GPM) and the peak hour demand of 3,339 GPM.

Improvements to the aging distribution system include the installation of a 6-inch-diameter pipeline along Manning Avenue to complete the connection of replacement pipelines between Railroad Avenue and Colorado Avenue and along various alleys between West Colorado Avenue and Nevada Avenue, Idaho Avenue, and Railroad Street, and from Manning Street to Pine Avenue between Oregon Avenue and Idaho Avenue.

The locations of the improvements are shown in Figures 2 and 3. Refer to the City of San Joaquin Water Supply, Treatment, Storage, and Distribution Improvement Preliminary Engineering Report (Gouveia Engineering 2017) for the full description of improvements.

Construction:

Construction will occur as plans and funding are in place and is expected to start in 2019. All construction staging of equipment and materials for the well and water treatment system will be within the Well #6 site and the vacant areas surrounding the site.

2.5 Objectives

The primary objectives of the proposed project are as follows:

- To provide water treatment while maintaining existing levels of regulatory compliance for the protection of water quality and public health.

- To operate the water treatment and distribution system with the most cost-effective methods available that meet the City's overall system performance and regulatory compliance requirements.

2.6 Other Required Approvals

The proposed Project will include, but not be limited to, the following regulatory requirements:

- The adoption of a Mitigated Negative Declaration by the City of San Joaquin.
- State Water Resources Control Board approval.

Chapter 3

IMPACT ANALYSIS

Initial Study Checklist

3.1 Environmental Checklist Form

Project title:

San Joaquin Phase 2 Water System Improvements Project

Lead agency name and address:

City of San Joaquin
21900 Colorado Avenue
San Joaquin, CA 93660

Contact person and phone number:

Elizabeth Nunez, City Manager: 559.693.4311
Alfonso Manrique, PE: 559.473.1371

Project location:

See Section 2.1

Project sponsor's name/address:

City of San Joaquin

General plan designation:

Various - Citywide
Pipelines will be in existing roadways/alleys

Zoning:

Various - Citywide
Pipelines will be in existing roadways/alleys

Description of Project:

See Section 2.4

Surrounding land uses/setting:

See Section 2.2

Other public agencies whose approval or consultation is required (e.g., permits, financing approval, participation agreements):

See Section 2.6

3.2 Environmental Factors Potentially Affected

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

- | | | |
|--|--|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture Resources
and Forest Resources | <input type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology /Soils |
| <input type="checkbox"/> Greenhouse Gas
Emissions | <input type="checkbox"/> Hazards & Hazardous
Materials | <input type="checkbox"/> Hydrology / Water
Quality |
| <input type="checkbox"/> Land Use / Planning | <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Noise |
| <input type="checkbox"/> Transportation/Traffic | <input type="checkbox"/> Utilities / Service
Systems | <input type="checkbox"/> Mandatory
Findings of
Significance |

3.3 Determination

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.

Elizabeth Nunez

City Manager

City of San Joaquin

Date

I. AESTHETICS

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SETTING

The City of San Joaquin (City) lies in the San Joaquin Valley's central-western region, in western Fresno County. The City is approximately 15 miles east of the Coast Range. The proposed Project sites consist of developed and disturbed land cover in a mostly urban setting. The proposed new well (Well #6) and associated infrastructure is located in a fallow agricultural field bordered by residential development to the west and south, a public park to the southeast, and agricultural land cover to the north and east (see Figure 3 – Well #6 Treatment Site). No State Routes are within five miles of the City and there are no designated scenic vistas or scenic resources in the proposed Project vicinity.

RESPONSES

a. Have a substantial adverse effect on a scenic vista?

No Impact. The proposed Project involves installing a new water well (Well #6), a 71,000 gallon tank for backwash storage / sludge settling, and associated underground pipelines.

The City of San Joaquin and Fresno County General Plans do not identify any scenic vistas within the Project area; however, the foothills to the west could be considered scenic. A scenic vista is generally considered a view of an area that has remarkable scenery or a resource that is indigenous to the area. The Project will not impede any views of the foothills.

Construction activities will occur over a 12-month period and will be visible from the adjacent roadsides; however, the construction activities will be temporary in nature and will not affect a scenic vista, as none exist in the Project area. There is *no impact*.

Mitigation Measures: None are required.

b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. There are no state designated scenic highways within the immediate proximity to the Project site. California Department of Transportation Scenic Highway Mapping System identifies SR 198 west of Interstate 5 as an Eligible State Scenic Highway. This is the closest scenic highway, located approximately 23 miles south of the Project site; however, the Project site is both physically and visually separated from SR 198 by intervening land uses. In addition, no scenic highways or roadways are listed within the Project area in the City of San Joaquin's General Plan or Fresno County's General Plan. The proposed Project would not damage any trees, rock outcroppings or historic buildings within a State scenic highway corridor. There is *no impact*.

Mitigation Measures: None are required.

c. Substantially degrade the existing visual character or quality of the site and its surroundings?

No Impact. The proposed Project involves installing a new water well (Well #6), a 71,000 gallon tank for backwash storage / sludge settling, and associated underground pipelines. The pipelines will be installed within the existing roadway or alley right-of-way and will not be visible once installed. The new Well #6 will be located on a vacant dirt field that is surrounded by agricultural fields (and Elm Avenue) to the north and west, a small park/playground approximately 200 feet south, and multi-family apartments approximately 150 feet west. The well is a relatively small structure and will be enclosed within a chain link fence. The site consists of a disked dirt field and does not provide high quality visual character.

The well is not likely to be seen as unusual or out of place in the surrounding setting. In addition, public facilities are found in close proximity to both rural and urban parts of the Central Valley. The

pipelines will be installed underground and will not be noticeable once construction is complete. All areas where pipeline is to be installed will be returned to existing conditions after installation. As such, the proposed Project will not degrade the existing visual character or quality of the area or its surroundings.

There is *no impact*.

Mitigation Measures: None are required.

d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less Than Significant Impact. Currently the sources of light in the Project area are from street lights, the vehicles traveling along surrounding roads, and security lights at the apartment complex to the west. No lighting will be associated with pipeline installation. Well #6 may include a minimal amount of additional security lighting; however, any additional lighting would not be expected to appreciably change any existing glare or lighting conditions because the visibility of the site from residential areas and public spaces and roadways is limited. In addition, security lighting will be faced downward in a manner that would reduce light spill onto adjacent properties. Accordingly, the proposed Project would not create substantial new sources of light or glare. Potential impacts are *less than significant*.

Mitigation Measures: None are required.

II. AGRICULTURE AND FOREST RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

There are 220 acres of agricultural land in the City, generally located on the periphery of the City. None of these agricultural lands are under a Williamson Act Contract.¹

The proposed Project site is located in an area of the City considered urban, built up land by the State Farmland Mapping and Monitoring Program (FMMP). Land north of Well #6 is considered Prime Farmland by the FMMP, but is not impacted by the Project. Other land uses in the Project vicinity include active agricultural fields, a small park and the residential housing in the City of San Joaquin.

RESPONSES

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?

No Impact. The Project does not include conversion of farmland to non-farmland. The Project site is located in an area of the City considered urban, built up land by the FMMP. The purpose of the Project is to install a new water well and to provide treatment so that manganese levels fall below MCL's. The proposed Project does not have the potential to result in the conversion of farmland to non-agricultural uses or forestland uses to non-forestland. There is *no impact*.

Mitigation Measures: None are required.

b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. There are no agricultural lands in the City under a Williamson Act Contract. The proposed Project is not zoned for agricultural and does not propose any zone changes related to agriculture. There is *no impact*.

Mitigation Measures: None are required.

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))?

¹ City of San Joaquin 2040 Community Plan. Background Report. June 11. Page 57.

No Impact. The proposed Project is not zoned for forestland and does not propose any zone changes related to forest or timberland. There is *no impact*.

Mitigation Measures: None are required.

d. Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. No conversion of forestland, as defined under Public Resource Code or General Code, as referenced above, would occur as a result of the proposed Project. There is *no impact*.

Mitigation Measures: None are required.

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?

No Impact. No land conversion from Farmland would occur as a result of the proposed Project. Surrounding land uses include residential, commercial and industrial lands, vacant land, and agricultural land. The purpose of the Project is to install a new water well and to provide treatment so that manganese levels fall below MCL's. As such, the proposed Project does not have the potential to result in the conversion of Farmland to non-agricultural uses or forestland uses to non-forestland. There is *no impact*.

Mitigation Measures: None are required.

III. AIR QUALITY

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SETTING

The climate of the San Joaquin Valley is characterized by long, hot summers and stagnant, foggy, winters. Precipitation is low and temperature inversions are common. These characteristics are conducive to the formation and retention of air pollutants and are in part influenced by the surrounding mountains which intercept precipitation and act as a barrier to the passage of cold air and air pollutants. The proposed Project lies within the San Joaquin Valley Air Basin (Air Basin), which is managed by the San Joaquin Valley Air Pollution Control District (SJVAPCD or Air District). National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been established for the following criteria pollutants: carbon monoxide (CO), ozone (O₃), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM_{2.5}), and lead (Pb). The CAAQS also set standards for sulfates, hydrogen sulfide, and visibility.

Air quality plans or attainment plans are used to bring the applicable air basin into attainment with all state and federal ambient air quality standards designed to protect the health and safety of residents within that air basin. Areas are classified under the Federal Clean Air Act as either “attainment”, “non-attainment”, or “extreme non-attainment” areas for each criteria pollutant based on whether the NAAQS have been achieved or not. Attainment relative to the State standards is determined by the California Air Resources Board (CARB). The San Joaquin Valley is designated as a State and Federal extreme non-attainment area for O₃, a State and Federal non-attainment area for PM_{2.5}, a State non-attainment area for PM₁₀, and Federal and State attainment area for CO, SO₂, NO₂, and Pb.

Clean Air Act

The federal Clean Air Act of 1970 (as amended in 1990) required the U.S. Environmental Protection Agency (EPA) to develop standards for pollutants considered harmful to public health or the environment. Two types of National Ambient Air Quality Standards (NAAQS) were established. Primary standards protect public health, while secondary standards protect public welfare, by including protection against decreased visibility, and damage to animals, crops, landscaping and vegetation, or buildings. NAAQS have been established for six “criteria” pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), and lead (Pb).

California Air Resources Board

The California Air Resources Board (CARB) is the state agency responsible for implementing the federal and state Clean Air Acts. CARB has established California Ambient Air Quality Standards (CAAQS), which include all criteria pollutants established by the NAAQS, but with additional regulations for Visibility Reducing Particles, sulfates, hydrogen Sulfide (H₂S), and vinyl chloride.

The proposed Project is located within the Air Basin, which includes San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and parts of Kern counties and is managed by the SJVAPCD.

Air basins are classified as attainment, nonattainment, or unclassified. Attainment is achieved when monitored ambient air quality data is in compliance with the standards for a specified pollutant. Non-compliance with an established standard will result in a nonattainment designation and an unclassified designation indicates insufficient data is available to determine compliance for that pollutant.

Standards and attainment status for listed pollutants in the Air District can be found in Table 1. Note that both state and federal standards are presented.

Table 1
Standards and Attainment Status for Listed Pollutants in the Air District

	Federal Standard	California Standard
Ozone	0.075 ppm (8-hr avg)	0.07 ppm (8-hr avg) 0.09 ppm (1-hr avg)
Carbon Monoxide	9.0 ppm (8-hr avg) 35.0 ppm (1-hr avg)	9.0 ppm (8-hr avg) 20.0 ppm (1-hr avg)
Nitrogen Dioxide	0.053 ppm (annual avg)	0.30 ppm (annual avg) 0.18 ppm (1-hr avg)
Sulfur Dioxide	0.03 ppm (annual avg) 0.14 ppm (24-hr avg) 0.5 ppm (3-hr avg)	0.04 ppm (24-hr avg) 0.25 ppm (1-hr avg)
Lead	1.5 µg/m ³ (calendar quarter) 0.15 µg/m ³ (rolling 3-month avg)	1.5 µg/m ³ (30-day avg)
Particulate Matter (PM ₁₀)	150 µg/m ³ (24-hr avg)	20 µg/m ³ (annual avg) 50 µg/m ³ (24-hr avg)
Particulate Matter (PM _{2.5})	15 µg/m ³ (annual avg)	35 µg/m ³ (24-hr avg) 12 µg/m ³ (annual avg)

µg/m³ = micrograms per cubic meter

Additional State regulations include:

CARB Portable Equipment Registration Program – This program was designed to allow owners and operators of portable engines and other common construction or farming equipment to register their equipment under a statewide program so they may operate it statewide without the need to obtain a permit from the local air district.

U.S. EPA/CARB Off-Road Mobile Sources Emission Reduction Program – The California Clean Air Act (CCAA) requires CARB to achieve a maximum degree of emissions reductions from off-road mobile sources to attain State Ambient Air Quality Standards (SAAQS); off-road mobile sources include most construction equipment. Tier 1 standards for large compression-ignition engines used in off-road mobile sources went into effect in California in 1996. These standards, along with ongoing rulemaking, address emissions of nitrogen oxides (NOX) and toxic particulate matter from diesel engines. CARB is currently developing a control measure to reduce diesel PM and NOX emissions from existing off-road diesel equipment throughout the state.

California Global Warming Solutions Act – Established in 2006, Assembly Bill 32 (AB 32) requires that California's GHG emissions be reduced to 1990 levels by the year 2020. This will be implemented through a statewide cap on GHG emissions, which will be phased in beginning in 2012. AB 32 requires CARB to develop regulations and a mandatory reporting system to monitor global warming emissions levels.

San Joaquin Valley Air Pollution Control District

The San Joaquin Valley Air Pollution Control District (SJVAPCD) is the local agency charged with preparing, adopting, and implementing mobile, stationary, and area air emission control measures and standards. The SJVAPCD has rules and regulations that may apply to the Project, including, but not limited to:

Rules 4101 (Visible Emissions) and 4102 (Nuisance) – These rules apply to any source of air contaminants and prohibits the visible emissions of air contaminants or any activity which creates a public nuisance.

Rule 4702 (Internal Combustion Engine) – This rule applies to any internal combustion engine rated at 25 brake horsepower or greater.

Regulation VIII (Fugitive PM₁₀ Prohibitions) – This regulation, a series of eight regulations, is designed to reduce PM₁₀ emissions by reducing fugitive dust. Regulation VIII requires implementation of control measures to ensure that visible dust emissions are substantially reduced. The control measures are summarized in Table 2.

Table 2
San Joaquin Valley Air Pollution Control District
Regulation VIII Control Measures for Construction Related Emissions of PM₁₀

The following are required to be implemented at all construction sites:
All disturbed areas, including storage piles, which are not actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizers/suppressants, covered with a tarp or other similar cover, or vegetative
All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions during construction using water or chemical stabilizer
All land clearing, grubbing, scraping, excavation, land leveling, grading cut and fill, and demolition activities during construction shall be effectively controlled of fugitive dust emissions utilizing application of water or pre-soaking.
When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from top of container shall be maintained.
All operations shall limit, or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of
Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site at the end of each workday.
Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.

RESPONSES

a. Conflict with or obstruct implementation of the applicable air quality plan?

Less than Significant Impact. The San Joaquin Valley Air Basin (SJVAB) is designated nonattainment of state and federal health based air quality standards for ozone and PM_{2.5}. The SJVAB is designated nonattainment of state PM₁₀. To meet Federal Clean Air Act (CAA) requirements, the SJVAPCD has multiple air quality attainment plan (AQAP) documents, including:

- Extreme Ozone Attainment Demonstration Plan (EOADP) for attainment of the 1-hour ozone standard (2004);
- 2007 Ozone Plan for attainment of the 8-hour ozone standard;
- 2007 PM₁₀ Maintenance Plan and Request for Redesignation; and
- 2008 PM_{2.5} Plan.

Because of the region's non-attainment status for ozone, PM_{2.5}, and PM₁₀, if the Project-generated emissions of either of the ozone precursor pollutants (ROG or NO_x), PM₁₀, or PM_{2.5} were to exceed the SJVAPCD's significance thresholds, then the Project uses would be considered to conflict with the attainment plans. In addition, if the Project uses were to result in a change in land use and corresponding increases in vehicle miles traveled, they may result in an increase in vehicle miles traveled that is unaccounted for in regional emissions inventories contained in regional air quality control plans.

As discussed in Impact c), below, predicted construction and operational emissions would not exceed the SJVAPCD's significance thresholds for ROG, NO_x, PM₁₀, and PM_{2.5}. As a result, the Project uses would not conflict with emissions inventories contained in regional air quality attainment plans, and would not result in a significant contribution to the region's air quality non-attainment status. Additionally, the Project would comply with all applicable rules and regulations. Therefore, this impact is *less than significant*.

Mitigation Measures: None are required.

b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less than Significant Impact. Because ozone is a regional pollutant², the pollutants of concern for localized impacts are CO and fugitive PM₁₀ dust from construction. Ozone and PM₁₀ exhaust impacts are addressed under Impact c), below. The proposed Project would not result in localized CO hotspots or PM₁₀ impacts, as discussed below. Therefore, the proposed Project would not violate an air quality standard or contribute to a violation of an air quality standard in the proposed Project area.

Localized PM₁₀

Localized PM₁₀ would be generated by proposed Project construction activities, which would include earth-disturbing activities. The SJVAPCD indicates that all control measures in Regulation VIII are required for all construction sites by regulation. The SJVAPCD's Guide for Assessing and Mitigating Air Quality Impacts³ (GAMAQI) lists additional measures that may be required of very large projects or projects close to sensitive receptors. If all appropriate "enhanced control measures" in the GAMAQI are not implemented for very large projects or those close to sensitive receptors, then construction impacts would be considered significant (unless the Lead Agency provides a satisfactory detailed explanation as to why a specific measure is unnecessary). The GAMAQI also lists additional control measures (Optional Measures) that may be implemented if further emission reductions are deemed necessary by the Lead Agency. The SJVAPCD's Regulation VIII (Fugitive PM₁₀ Prohibitions) has been updated and expanded since the GAMAQI guidance was written in 2002. Regulation VIII now includes the "enhanced control measures" contained in the GAMAQI.

The proposed Project would comply with the SJVAPCD's Regulation VIII dust control requirements during any proposed construction (including Rules 8011, 8031, 8041, and 8071). Compliance with this regulation would reduce the potential for significant localized PM₁₀ impacts to *less than significant* levels.

CO Hotspot

Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. The SJVAPCD provides screening criteria to determine when to quantify local CO concentrations based on impacts to the level of service (LOS) of roadways in the Project vicinity.

As further discussed in the Transportation/Traffic checklist evaluation, the Project would not generate, or substantially contribute to, additional traffic that would reduce the level of surface on local

² San Joaquin Valley Air Pollution Control District. Air Quality Plans. Ozone Plans, 8-hour ozone standard. https://www.valleyair.org/Air_Quality_Plans/Ozone_Plans.htm. Accessed April 2017.

³ San Joaquin Valley Air Pollution Control District. March 19, 2015. Guide for Assessing and Mitigating Air Quality Impacts. http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf. Accessed April 2017.

roadways. Therefore, the Project would not significantly contribute to an exceedance that would exceed state or federal CO standards. Impacts are considered *less than significant*.

Mitigation Measures: None are required.

- c. 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less than Significant Impact. The nonattainment pollutants for the SJVAPCD are ozone, PM₁₀ and PM_{2.5}. Therefore, the pollutants of concern for this impact are ozone precursors, regional PM₁₀, and PM_{2.5}. Ozone is a regional pollutant formed by chemical reaction in the atmosphere, and the Project's incremental increase in ozone precursor generation is used to determine the potential air quality impacts, as set forth in the GAMAQI.

The annual significance thresholds to be used for the Project emissions are as follows⁴:

Pollutant/ Precursor	Construction Emissions (tpy)	Operational Emissions (permitted) (tpy)	Operational Emissions (non- permitted) (tpy)
CO	100	100	100
NOx	10	10	10
ROG	10	10	10
SOx	27	27	27
PM ₁₀	15	15	15
PM _{2.5}	15	15	15

The estimated annual construction and operational emissions are shown below. The California Emissions Estimator (CalEEMod), Version 2016.3.1, was used to estimate construction of the Project and operational (vehicle trips) emissions. The well will run off electrical power so there will be no on-site emissions generated by plant operations. The Sacramento Metropolitan Air Quality Management District's Road Construction Emissions Model, Version 8.1.0 was utilized to estimate emissions generated from installing the approximately 15,000 linear feet of pipeline (conservative number used for estimating air emissions). Modeling results are provided in Table 3 and the CalEEMod and Road Construction Emissions Model output files are provided in Appendix A.

⁴ San Joaquin Valley Air Pollution Control District. March 19, 2015. Guide for Assessing and Mitigating Air Quality Impacts. http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf. Page 80. Accessed Sept. 2018.

Table 3
Proposed Project Construction and Operation Emissions

Pollutant/ Precursor	Construction Emissions (tpy)	Threshold/ Exceed?	Operational Emissions (permitted) (tpy)	Threshold/ Exceed?
CO	0.46	100/N	0.09	100/N
NOx	0.57	10/N	0.09	10/N
ROG	0.08	10/N	0.02	10/N
SOx	0.00	27/N	0.00	27/N
PM ₁₀	0.04	15/N	0.02	15/N
PM _{2.5}	0.03	15/N	0.00	15/N
CO _{2e}	63.19	n/a	42.38	n/a

Any impacts would be considered *less than significant*.

Mitigation Measures: None are required.

d. Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact. Sensitive receptors are those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses where sensitive individuals are most likely to spend time include schools and school yards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities are also considered sensitive receptors.⁵ The nearest sensitive receptors to the proposed Project site are residential apartments located approximately 150 feet west of Well #6, and the residences along the pipeline alignments.

Construction would take place within the vicinity of sensitive receptors, however, construction emissions would be well below SJVAPCD thresholds and be temporary in nature. Therefore, the small amount of emissions generated and the short duration of the construction period would not expose sensitive receptors to substantial pollutant concentrations. Operational emissions would be limited to the minor emissions generated by the water well and the infrequent maintenance vehicle trips at the water treatment plant. Impacts to sensitive receptors would be *less than significant*.

Mitigation Measures: None are required.

⁵ San Joaquin Valley Air Pollution Control District. March 19, 2015. Guide for Assessing and Mitigating Air Quality Impacts. http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf. Page 44. Accessed April 2017.

e. Create objectionable odors affecting a substantial number of people?

Less than Significant Impact. If the proposed Project were to result in a sensitive odor receptor being located in the vicinity of an undesirable odor generator, the impact would be considered significant. The SJVAPCD regulates odor sources through its nuisance rule, Rule 4102, but has no quantitative standards for odors. The SJVAPCD presents a list of project screening trigger levels for potential odor sources in its GAMAQI, which is displayed in Table 4. If the project were to result in sensitive receptors being located closer to an odor generator in the list in Table 4 than the recommended distances, a more detailed analysis including a review of SJVAPCD odor complaint records is recommended.

Table 4
Screening Levels for Potential
Odor Sources⁶

Odor Generator	Distance (Miles)
Wastewater Treatment Facilities	2
Sanitary Landfill	1
Transfer Station	1
Composting Facility	1
Petroleum Refinery	2
Asphalt Batch Plant	1
Chemical Manufacturing	1
Fiberglass Manufacturing	1
Painting/Coating Operations (e.g., auto body shop)	1
Food Processing Facility	1
Feed Lot/Dairy	1
Rendering Plant	1

Significant odor problems are defined as more than one confirmed complaint per year averaged over a three year period or three unconfirmed complaints per year averaged over a three-year period.

The water well and pipelines would not be a source of objectionable odors to sensitive receptors. While the potential for odor formation is minimal, any odors released from the manganese treatment process would be localized to the project site. As a result, any impacts would be considered *less than significant*.

Mitigation Measures: None are required.

⁶ San Joaquin Valley Air Pollution Control District. March 19, 2015. Guide for Assessing and Mitigating Air Quality Impacts. http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf. Page 103. Accessed March 2017.

IV. BIOLOGICAL RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 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? ☐ ☐ ☐ ☒

SETTING

Colibri Ecological Consulting, LLC, (CEC) was retained to conduct a reconnaissance survey to describe the biotic resources of the proposed Project site and to evaluate potential impacts to those resources that could result from proposed Project development.

Methodology

CEC performed a search of the California Natural Diversity Database (CNDDB) and the California Native Plant Society's Inventory of Rare and Endangered Plants (CNPS) for records of special-status plants and animal species in the proposed Project area. Regional lists of special-status species were compiled using U.S. Fish and Wildlife Service, CNDDB, and CNPS database searches confined to the San Joaquin 7.5-minute United States Geological Survey topographic quad, which encompasses the proposed Project site, and the eight surrounding quads (Cantua Creek, Five Points, Helm, Jamesan, Kerman, Tranquility, Tres Picos Farms, and Westside). Local lists of special-status species were compiled using CNDDB records from within five miles of the proposed Project site and species for which the Project site does not provide suitable habitat were eliminated from further consideration. Field surveys were conducted on May 23, 2018. The results of these database searches and surveys are summarized herein and the full reports are included in Appendix B – Biological Resource Evaluation (July 2018).

Land Use, Habitats and Observed Species

The Project site is in a residential and industrial setting surrounded by agricultural land. The proposed new well (Well #6) and associated infrastructure is in a fallow agricultural field bordered by residential development to the west and south, a public park to the southeast, and agricultural land cover to the north and east. A storm-water basin is within 50 feet of the new well site and proposed water pipeline

alignment. The remainder of the Project site is within existing roads in residential and commercial areas. The proposed Project site does not occur in a designated or proposed critical habitat.

The proposed Project site supports vegetation typical of highly disturbed areas. A total of 18 plant species (3 native and 15 nonnative), one mammal species and 13 bird species were detected during the reconnaissance survey (see Table 2 of Appendix B).

Special Status Species

One special-status species, Swainson's hawk, could occur near the Project site. Swainson's hawk uses open areas such as grasslands and some agricultural fields for foraging and medium to large trees near open areas for nesting. Agricultural fields suitable for foraging and medium to large trees for nesting were within 0.5 miles of the Project site.

Swainson's hawk

The Swainson's hawk is a long-distance migrant, breeding in the Western United States and Canada and over-wintering mainly in southern South America. Historically, Swainson's hawks bred in most of the open regions of California, occupying grasslands, shrubsteppe, canyons, foothills, and small interior valleys. The current range of the species in California is substantially diminished, being largely limited to the Central Valley and Great Basin.⁷

Swainson's hawks are aerial foragers, soaring or coursing over open habitats, sometimes over long distances (up to 29 km), in search of food. During the breeding season in California, Swainson's hawks prey primarily on small mammals, including voles, pocket gophers, and deer mice. Following the breeding season, their diet shifts to largely insect prey, especially grasshoppers and crickets. Swainson's hawks occupy large territories in the Central Valley that contain a suitable nesting site and large swaths of open foraging habitat. In the Central Valley, these foraging habitats consist primarily of agricultural areas, preferring alfalfa fields to other crops. In the Central Valley, they most frequently construct their nests in cottonwoods (*Populus* sp.), willows (*Salix* sp.), sycamores (*Platanus* sp.), valley oaks (*Quercus lobata*), walnuts (*Juglans* sp.), or eucalyptus (*Eucalyptus* sp.).⁸

Although the Project site itself does not provide habitat for Swainson's hawk, potential nest trees and foraging habitat in the form of agricultural fields are present within the 0.5-mile buffer surrounding the Project site.

⁷ Biological Resource Evaluation. City of San Joaquin Water System Improvement Project. Colibri Ecological Consulting, July 2018. Appendix B.

⁸ Ibid.

Regulated Habitats

No feature on or within 50 feet of the proposed Project site qualifies as a regulated habitat. Due to the lack of direct or indirect connectivity or adjacency with navigable waters or interstate waters and the lack of potential to support interstate or foreign commerce, the ponding basin 30 feet northeast of the proposed treatment system would not qualify as a federally protected wetland as defined by Section 404 of the Clean Water Act. Therefore, the basin would not fall under the jurisdiction of the USACE. Likewise, as this feature is neither a lake nor a stream, it would not be regulated by the CDFW.

The nearest stretch of river designated as Wild and Scenic is along the Kings River, approximately 70 miles northeast of the Project site. The San Joaquin River, with no Wild and Scenic designation, is approximately 12 miles north of the proposed Project site.

No marine or estuarine fishery resources or migratory routes to and from anadromous fish spawning grounds are present in the survey area. In addition, no EFH, defined by the Magnuson-Stevens Act as those resources necessary for fish spawning, breeding, feeding, or growth to maturity, are present in the survey area.

The Project site is not within a 100-year flood plain. The nearest flood plains are approximately two miles east of the Project site along the Fresno Slough Bypass and approximately two miles south along the Fresno Slough near Floral Avenue.

RESPONSES

- 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?

Less than Significant Impact with Mitigation. The state-listed as threatened Swainson's hawk could nest in the vicinity of the proposed Project site. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Disturbance that causes nest abandonment or loss of reproductive effort is considered take by the CDFW. Loss of fertile eggs or nestlings, or any activities resulting in nest abandonment, would constitute a significant impact. Implementation of Mitigation Measure BIO-1 would reduce any impacts to Swainson's hawk to *less than significant*.

Migratory birds are expected to nest on or in the vicinity of the Project site. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise

lead to nest abandonment. Disturbance that causes nest abandonment or loss of reproductive effort is considered take by the CDFW. Loss of fertile eggs or nestlings, or any activities resulting in nest abandonment, could constitute a significant impact if the species is particularly rare in the region. Construction activities such as trenching or grading that disturb a rare nesting bird on the site or immediately adjacent to the construction zone could constitute a significant impact. Implementation of Mitigation Measure Bio-2 would reduce the potential impact to a *less than significant* level.

Mitigation Measures:

BIO-1:

1. To the extent practicable, construction shall be scheduled to avoid the Swainson's hawk nesting season, which extends from March through August.
2. If it is not possible to schedule work between September and February, a qualified biologist shall conduct a survey for active Swainson's hawk nests within 0.25 miles of the Project site no more than 14 days prior to the start of construction. If an active nest is found within 0.25 miles, and the qualified biologist determines that Project activities would disrupt nesting, a construction-free buffer or limited operating period shall be implemented in consultation with the CDFW.

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?

No Impact. There is no riparian habitat or other sensitive natural community in the proposed Project vicinity. There is *no impact*.

Mitigation Measure: None required.

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

No Impact. There are no protected wetlands in the proposed Project vicinity. There is *no impact*.

Mitigation Measure: None required.

- 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?

Less than Significant Impact with Mitigation. The Project has the potential to impede the use of nursery sites for native birds protected under the Migratory Bird Treaty Act and California Fish and Game Code. Migratory birds are expected to nest on and near the Project site. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Disturbance that causes nest abandonment or loss of reproductive effort is considered take by the CDFW. Loss of fertile eggs or nestlings, or any activities resulting in nest abandonment, could constitute a significant impact if the species is particularly rare in the region. Construction activities such as trenching and grading that disturb a rare nesting bird on the site or immediately adjacent to the construction zone could constitute a significant impact. Implementation of Mitigation Measure BIO-2 would reduce any impacts to *less than significant*.

Mitigation Measures:

BIO-2:

1. To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from February through August.
2. If it is not possible to schedule construction between September and January, preconstruction surveys for nesting birds shall be conducted by a qualified biologist to ensure that no active nests will be disturbed during Project implementation. A pre-construction survey shall be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the qualified biologist shall inspect all potential nest substrates in and immediately adjacent to the impact areas for nests. If an active nest is found close enough to the construction area to be disturbed by these activities, the qualified biologist shall determine the extent of a construction-free buffer to be established around the nest. If work cannot proceed without disturbing the nesting birds, work may need to be halted or redirected to other areas until nesting and fledging are completed or the nest has otherwise failed for non-construction related reasons.

- e.,f. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. Proposed Project design is consistent with the goals and policies of the City of San Joaquin General Plan. The Project will be consistent with the goals and policies of the Fresno County General Plan with implementation of the mitigation measures presented earlier. These measures require disturbance-free buffers around the active nests of special status animals and migratory birds, which will ensure consistency with the General Plan policy that calls for construction setbacks to protect significant wildlife resources. The Project will not conflict with the General Plan's policies related to "no-net-loss" of wetlands and preservation of riparian habitats because wetlands and riparian habitats are absent from the Project site. The Project will not result in significant loss of habitat for special status animal species and will therefore be consistent with General Plan policies related to wildlife habitat. There are no adopted habitat conservation plans or natural community conservation plans in the City of San Joaquin. There are *no impacts* with regard to this impact analysis.

Mitigation. None required.

V. CULTURAL RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SETTING

The proposed Project is in the San Joaquin Valley, the southern half of an elongated trough called the Great Valley. The Great Valley is a 50-mile-wide lowland that extends approximately 500 miles south from the Cascade Range to the Tehachapi Mountains. The Great Valley is divided by two prominent hydrologic features, the Sacramento and San Joaquin Rivers, which drain into San Francisco Bay. Between the Mesozoic and Cenozoic eras, the Great Valley served as a shallow marine embayment containing numerous lakes, primarily within the San Joaquin Valley. As a result, the upper levels of the Great Valley floor are composed of alluvium and flood materials. Below these strata are layers of marine and nonmarine rocks, including claystone, sandstone, shale, basalt, andesite, and serpentine. Waters began to diminish about 10 million years ago, eventually dwindling to the drainages, tributaries, and small lakes that have characterized much of the Holocene Epoch.⁹

⁹ Appendix C. Cultural Resource Inventory for the City of San Joaquin Wells 4 and 6 Manganese Treatment and Distribution Pipeline Project, Fresno County, California. September 2018, page 7.

The Project is situated at the boundary between the Northern and Southern Valley Yokuts, although it is within the Northern Valley Yokuts ethnographic territory. At the time of first contact with the Spanish missionaries, the Yokuts people, which also includes southern valley and foothill groups, collectively inhabited the San Joaquin Valley as well as the eastern foothills of the Sierra Nevada from the Fresno River southward to the Kern River.¹⁰

Methodology

To meet State and federal requirements, the City retained Applied EarthWorks, Inc. (Æ) to conduct background research, complete a records search, request a search of the Native American Heritage Commission's Sacred Lands File and reach out to appropriate Native American contacts, conduct a cultural resources survey, and prepare a technical report, dated September 2018 (see Appendix C). The results of the Report are summarized herein and were used to support the determinations made in this CEQA document.

Native American Outreach

On May 31, 2018, Æ contacted the Native American Heritage Commission (NAHC) in Sacramento, California. Æ provided a brief description of the Project and a map showing its location and requested that the NAHC perform a search of the Sacred Lands File to determine if any Native American resources have been recorded in the immediate study area. Æ also requested a current list of local Native American tribes and representatives to contact for additional information. For further information regarding Tribal consultation, refer to Section XVII – Tribal Cultural Resources.

Records Search and Site-Specific Research

Æ requested a records search of the CHRIS from the SSJVIC at California State University, Bakersfield on May 31, 2018. The records search encompassed the APE and land within the surrounding 0.5-mile radius. Sources consulted include archaeological site and survey base maps, historical USGS topographic maps, reports of previous investigations, and cultural resource records (DPR forms) as well as listings of the Historic Properties Directory of the Office of Historic Preservation, Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources (Appendix B of Appendix C). The objective of this records search was twofold: (1) to identify prior cultural resource investigations completed in or near the Project area, and (2) to identify prehistoric or historical cultural resources that were previously recorded within the Project area.

¹⁰ Appendix C. Cultural Resource Inventory for the City of San Joaquin Wells 4 and 6 Manganese Treatment and Distribution Pipeline Project, Fresno County, California. September 2018, page 11.

Pedestrian Survey

On June 14, 2018 Æ Staff Archaeologists Kathleen Jernigan and Eric Kowalski conducted an archaeological and built environment survey of the 4.02-acre APE. Unpaved areas in the APE were subject to intensive pedestrian survey using parallel and zig-zag transects spaced 5–15 meters apart. Private property was excluded from survey. Areas where the ground surface was obscured by concrete or asphalt were subject to opportunistic pedestrian survey to view exposed patches of ground or were subject to “windshield” inspection, meaning inspection of the built environment from a vehicle to identify buildings, structures, and objects over 50 years of age. To account for potential changes in Project design, Æ surveyed areas beyond the APE in the vicinity of Well 6. Jernigan and Kowalski photographed the area using an Olympus TG-860 digital camera and recorded observations on Survey Field Record form. All photographs, field notes, and resource records are on file at Æ’s Fresno office.

Buried Site Sensitivity Assessment

Æ conducted a geologic review of the APE to identify the potential for buried cultural resources. Æ consulted geological maps, historical maps, geologic/sediment databases, geoarchaeological studies, and soil surveys documenting areas within the APE. These sources provided information regarding the natural watercourses in the area as well as data about local soils and sediments, parent rock formations, and historical vegetation. This information was used to estimate the age of the sediments surrounding the APE, consider the hydrologic and geologic forces that created and placed these sediments, and assess the probability of encountering buried cultural resources during Project activities.

Findings and Results

Native American Outreach

In its June 13, 2018 response to Æ’s request, the NAHC stated that a search of the Sacred Lands File did not indicate the presence of resources in the immediate Project APE (see Appendix C of Appendix C); however, the NAHC cautioned that the absence of specific site information in the Sacred Lands File does not indicate the absence of tribal cultural resources in the Project area. The NAHC suggested contacting other sources who might have specific knowledge regarding Native American use of the Project area and provided contact information for 12 Native American representatives, including:

- Chairperson Elizabeth Kipp, Big Sandy Rancheria of Western Mono Indians
- Chairperson Carol Bill, Cold Springs Rancheria
- Chairperson Robert Ledger Sr., Dumna Wo-Wah Tribal Government
- Chairperson, Dunlap Band of Mono Indians

- Stan Alec, Choinumni Farm Tribe
- Chairperson Ron Goode, North Fork Mono Tribe
- Chairperson Rueben Barrios Sr., Santa Rosa Indian Community of the Santa Rosa Rancheria
- Chairperson Leanne Walker-Grant, Table Mountain Rancheria of California
- Cultural Resources Director Bob Pennell, Table Mountain Rancheria of California
- Chairperson David Alvarez, Traditional Choinumni Tribe
- Rick Osborne, Traditional Choinumni Tribe
- Chairperson Kenneth Woodrow, Wuksache Indian Tribe/Eshom Valley Band

On June 29, 2018, AEC sent a letter describing the Project to each of the individuals above and followed-up with a phone call on August 9, 2018. Bob Pennell, Table Mountain Rancheria's Cultural Resources Director, responded with a letter on August 14, 2018, declining the tribe's participation at this time, but he would appreciate being notified of any identified cultural resources. Chief Robert Ledger Sr. of the Dumna Wo-Wah Tribal Government replied via telephone that the Tribal Council is considering potential impacts of the Project, but no response has been received to date. No additional responses from tribal representatives have been received.

Records Search

On June 11, 2018 the SSJVIC responded to AEC's records search request (Records Search File No. 18-250). The SSJVIC responded that there have been no previous cultural resource studies in the APE, while eight cultural resource studies have been completed within a 0.5-mile radius of the APE. The search identified one built environment resource in the APE, the Hanford & Summit Lake Railway of the San Joaquin Division of the Southern Pacific Railroad (P-10-003930/CAFRE3109H). This railway intersects the Project's APE in two places at Manning Avenue and southwest of 12th Street (Appendix B). In addition, one historical built environment resource, the James Irrigation District (P-10-006632), was identified within 0.5 mile of the APE. The SSJVIC's detailed list of the reports and resources that fall within the Project APE and surrounding 0.5-mile radius are provided in Appendix B of Appendix C.

Pedestrian Survey

On June 14, 2018, AEC Staff Archaeologists Kathleen Jernigan and Eric Kowalski conducted a survey of the Project APE. They conducted an intensive pedestrian survey of 5.29 acres, including 3.29 acres of the APE and an additional 2 acres surrounding Well #6 to accommodate potential changes in Project design. A 0.38-acre fenced area at Well #6 was inaccessible due to a locked gate. Approximately 0.73 acre of the APE was surveyed "opportunistically" to view patches of exposed ground not covered by

asphalt or sidewalk, and Jernigan and Kowalski inspected the remainder of the APE from a vehicle to identify built environment resources over 50 years old.

Ground visibility within unpaved portions of the APE was excellent (90 percent or greater). Grasses and weeds were the primary factors limiting surface visibility in these areas. Waterline replacement corridors are in unpaved alleyways, which provided excellent ground visibility. The proposed location for the Well 6 treatment facility also had excellent ground visibility. Portions of the proposed sewer and water pipeline corridors for this facility intersected asphalt-paved roadways and were subject to opportunistic visual inspection from a vehicle. Water line installation corridors along Manning Avenue were opportunistically inspected on foot or from a vehicle. Ground visibility in these corridors was generally poor (0–10 percent) because most of the ground surface was paved with asphalt or concrete.

Regulations

The Project is subject to the California Environmental Quality Act (CEQA), which holds municipal and state agencies accountable for impacts to the cultural environment. If a project has the potential to cause substantial adverse change in the characteristics of an important cultural resource, known as a “historical resource” under CEQA—either through demolition, destruction, relocation, alteration, or other means—then the project is judged to have a significant impact on the environment (CEQA Guidelines, Section 15064.5[b]). Section 15064.5(a) of the CEQA Guidelines (as amended) defines a historical resource as one that: (1) is listed or determined eligible for listing in the California Register of Historical Resources (California Public Resources Code [PRC] Section 5024.1; Title 14, California Code of Regulations [CCR], Section 4852); (2) is included in a local register of historical resources (pursuant to Section 5020.1[k]) of the PRC) or identified as significant in a historical resources survey per the California Register eligibility criteria (PRC 5024.1[c]); or (3) is considered eligible by a lead agency under PRC 5020.1(j) or 5024.1. The definition subsumes a variety of resources, including prehistoric and historical archaeological sites, as well as built-environment resources, such as buildings, structures, and objects (CEQA Guidelines Section 15064.5[a][3] and Section 15064.5[c]). Given that the Project will involve ground-disturbing activities, it has the potential to impact historical resources, if present, within the Project area.

In addition, because the proposed Project will be funded through the State Water Resources Control Board Safe Drinking Water State Revolving Fund, a joint federal-state program, it is federal undertaking per Title 36, Code of Federal Regulations, Section 800.16(y) subject to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (Title 54, U.S. Code, Section 306108). As such, the lead federal agency must consider whether a project will have an adverse effect on historic properties (i.e., resources that are eligible for inclusion on the National Register of Historic Places) within the Project Area of Potential Effects (APE).

Human Remains

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

Paleontological Resources

Paleontological resources are the fossilized remains of plants and animals and associated deposits. The Society of Vertebrate Paleontology has identified vertebrate fossils, their taphonomic and associated environmental indicators, and fossiliferous deposits as significant nonrenewable paleontological resources. Botanical and invertebrate fossils and assemblages may also be considered significant resources.

CEQA requires that a determination be made as to whether a project would directly or indirectly destroy a unique paleontological resource or site or unique geological feature (CEQA Appendix G(v)(c)). If an impact is significant, CEQA requires feasible measures to minimize the impact (CCR Title 14(3) §15126.4 (a)(1)). California Public Resources Code §5097.5 (see above) also applies to paleontological resources.

RESPONSES

a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

Less than Significant Impact with Mitigation. As described in the Cultural Resources Report, the records search, background historical research, Native American outreach and a pedestrian survey revealed that no significant cultural resources occur on the Project site or in the Project area.

Unidentified cultural resources could be uncovered during proposed Project construction which could result in a potentially significant impact; however, implementation of Mitigation Measure CUL-1 would ensure that significant impacts remain *less than significant with mitigation incorporation*.

Mitigation Measure CUL-1: In the event that archaeological remains or paleontological resources are encountered at any time during development or ground-moving activities within the entire Project area, all work in the vicinity of the find shall be halted until a qualified archaeologist can assess the discovery and take appropriate actions as necessary.

- b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Less than Significant Impact with Mitigation. The possibility exists that subsurface construction activities may encounter undiscovered archaeological resources. This would be a potentially significant impact. Implementation of Mitigation Measure CUL-1 would require inadvertently discovery practices to be implemented should previously undiscovered archeological resources be located. As such, impacts to undiscovered archeological resources would be *less than significant with mitigation incorporation*.

- c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less than Significant Impact with Mitigation. There are no unique geological features or known fossil-bearing sediments in the vicinity of the proposed Project site. However, there remains the possibility for previously unknown, buried paleontological resources or unique geological sites to be uncovered during subsurface construction activities. Implementation of Mitigation Measure CUL-1 would require inadvertently discovery practices to be implemented should previously undiscovered paleontological resources be located. As such, impacts to undiscovered paleontological resources would be *less than significant with mitigation incorporation*.

- d. Disturb any human remains, including those interred outside of formal cemeteries?

Less than Significant Impact. Although unlikely given the highly disturbed nature of the site and the records search did not indicate the presence of such resources, subsurface construction activities associated with the proposed Project could potentially disturb previously undiscovered human burial sites. Accordingly, this is a potentially significant impact. The California Health and Safety Code Section 7050.5 states that if human remains are discovered on-site, no further disturbance shall occur until the Fresno County Coroner has made a determination of origin and disposition. If the Coroner determines that the remains are not subject to his or her authority and if the Coroner recognizes the

human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the NAHC. The NAHC shall identify the person or persons it believes to be the “most likely descendant” (MLD) of the deceased Native American. The MLD may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resource Code Section 5097.98.

Although considered unlikely subsurface construction activities could cause a potentially significant impact to previously undiscovered human burial sites, however compliance with regulations would reduce this impact to *less than significant*.

Mitigation Measures: None are required.

VI. GEOLOGY AND SOILS

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Expose people or structures to 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.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii. Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv. Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Be located on expansive soil, as defined in Table 18-1-B of the most recently	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

adopted Uniform Building Code
creating substantial risks to life or
property?

- e. Have soils incapable of adequately
supporting the use of septic tanks or
alternative waste water disposal systems
where sewers are not available for the
disposal of waste water?

☐ ☐ ☐ ☒

SETTING

San Joaquin is located in the west center of the Great Valley of California, a nearly flat northwest-southeast trending basin approximately 450 miles long by 50 miles wide. The basin is bordered by Mesozoic platonic, volcanic, and metamorphic rocks of the Sierra Nevada mountains on the east and by the Mesozoic and Cenozoic metamorphic and sedimentary rocks of the Coast Ranges on the west.

There are no known active faults that run through the City. The nearest active fault, the Coalinga Fault, is approximately 40 miles west of the City. The San Andreas Fault is located 50 miles to the west, and the Owens Valley Fault is located approximately 100 miles to the east. The Clovis Fault is northwest-trending fault about five miles east of the City of Clovis. It has been determined that the greatest potential for a significant earthquake would be from the San Andreas Fault.¹¹

Uniform Building Code

The California Code of Regulations (CCR) Title 24 is assigned to the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. The California Building Code incorporates by reference the Uniform Building Code with necessary California amendments. The Uniform Building Code is a widely adopted model building code in the United States published by the International Conference of Building Officials. About one-third of the text within the California Building Code has been tailored for California earthquake conditions.

RESPONSES

- a-i. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving 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

¹¹ City of San Joaquin 2040 Community Plan. Background Report. June 11. Page 181.

other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Less Than Significant Impact. The proposed Project site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone; thus, the risk of surface fault ruptures within the City is low. Any impacts would be *Less Than Significant*.

Mitigation Measures: None are required.

a (ii-iv). Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking, liquefaction or landslides?

Less than Significant Impact. The 2007 Uniform Building Code (UBC) indicates that the City is located within Seismic Risk Zone 3, although it is relatively close to Zone 4 located to the west. UBC states that buildings constructed in Zone 4 are subject to higher standards than other zone designation buildings. Places located on alluvial deposits, like the City, tend to experience more intense ground shaking than those located on solid rock. However, because the City is far from any active faults, it is relatively unlikely that ground shaking in the City would be more than minimal.¹²

The Fresno County Multi-Hazard Mitigation Plan (2008) states that locations where the water table is less than 30 feet below the surface are prone to liquefaction. This happens in the San Joaquin Valley; however, the soils in the San Joaquin area are often too coarse or too high in clay content to liquefy. Again, the distance of the City from the nearest active fault reduces its probability of soil liquefaction.¹³

Due to the relatively flat topography of the proposed Project area, impacts associated with landslides are not anticipated. Impacts would be *less than significant*.

Mitigation Measures: None are required.

b. Result in substantial soil erosion or the loss of topsoil?

Less than Significant Impact. The proposed Project site has a generally flat topography and does not include any Project features that would result in soil erosion or loss of topsoil. Therefore, the impact is *less than significant*.

¹² City of San Joaquin 2040 Community Plan. Background Report. June 11. Page 183.

¹³ Ibid.

Mitigation Measures: None are required.

- 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?

Less than Significant Impact. The proposed Project site has a generally flat topography which precludes the area from risk of landslides. The City of San Joaquin is in an area of deep subsidence. Subsidence has been studied by both the U.S. Geological Survey and the Department of Water Resources. These groups found that between 1950 and 1970, 5,200 square miles in the Valley had subsided more than one foot and certain areas had subsided up to eight feet. According to the Fresno County Multi-Hazard Mitigation Plan, subsidence has stabilized in the County.¹⁴ City building officials will also be contacted prior to construction to provide information applicable to the geology of the site.

The impact is *less than significant*.

Mitigation Measures: None are required.

- d. Be located on expansive soil, as defined in Table 18-1-B of the most recently adopted Uniform Building Code creating substantial risks to life or property?

Less than Significant Impact. Soils are usually classified into three expansive soil classes with low, moderate and high potential for expansion. According to Figure 7-1 of the Fresno County General Plan, the City does not contain moderately-high or high expansive soil potential.¹⁵ The impact is *less than significant*.

Mitigation Measures: None are required.

- e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. The proposed Project would not contribute to use of septic tanks or alternative wastewater disposal systems. Therefore, there would be no *impact*.

Mitigation Measures: None are required.

¹⁴ City of San Joaquin 2040 Community Plan. Background Report. June 11. Page 185.

¹⁵ City of San Joaquin 2040 Community Plan. Background Report. June 11. Page 185.

VII. GREENHOUSE GAS EMISSIONS

Would the project:

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
--------------------------------------	---	------------------------------------	--------------

☐
☐
☒
☐

b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

☐
☐
☒
☐

SETTING

Various gases in the earth's atmosphere play an important role in moderating the earth's surface temperature. Solar radiation enters earth's atmosphere from space and a portion of the radiation is absorbed by the earth's surface. The earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. GHGs are transparent to solar radiation, but are effective in absorbing infrared radiation. Consequently, radiation that would otherwise escape back into space is retained, resulting in a warming of the earth's atmosphere. This phenomenon is known as the greenhouse effect. Scientific research to date indicates that some of the observed climate change is a result of increased GHG emissions associated with human activity. Among the GHGs contributing to the greenhouse effect are water vapor, carbon dioxide (CO₂), methane (CH₄), ozone, Nitrous Oxide (NO_x), and chlorofluorocarbons. Human-caused emissions of these GHGs in excess of natural ambient concentrations are considered responsible for enhancing the greenhouse effect. GHG emissions contributing to global climate change are attributable, in large part, to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation. Global climate change is, indeed, a global issue. GHGs are global pollutants, unlike criteria pollutants and toxic air contaminants (which are pollutants of regional and/or local concern). Global climate change, if it occurs, could potentially affect water resources in California. Rising temperatures could be anticipated to result in sea-level rise (as polar ice caps melt) and possibly change the timing and amount of precipitation, which could alter water quality. According to some research, climate change could result in more extreme weather patterns; both heavier precipitation that could lead to flooding, as well as more extended drought periods. There is

uncertainty regarding the timing, magnitude, and nature of the potential changes to water resources as a result of climate change; however, several trends are evident.

Snowpack and snowmelt may also be affected by climate change. Much of California's precipitation falls as snow in the Sierra Nevada and southern Cascades, and snowpack represents approximately 35 percent of the state's useable annual water supply. The snowmelt typically occurs from April through July; it provides natural water flow to streams and reservoirs after the annual rainy season has ended. As air temperatures increase due to climate change, the water stored in California's snowpack could be affected by increasing temperatures resulting in: (1) decreased snowfall, and (2) earlier snowmelt.

US EPA

The USEPA Mandatory Reporting Rule (40 CFR Part 98), which became effective December 29, 2009, requires that all facilities that emit more than 25,000 metric tons CO₂-equivalent per year beginning in 2010, report their emissions on an annual basis. On May 13, 2010, the USEPA issued a final rule that established an approach to addressing GHG emissions from stationary sources under the CAA permitting programs. The final rule set thresholds for GHG emissions that define when permits under the New Source Review Prevention of Significant Deterioration and title V Operating Permit programs are required for new and existing industrial facilities.

In addition, the Supreme Court decision in *Massachusetts v. EPA* (Supreme Court Case 05-1120) found that the USEPA has the authority to list GHGs as pollutants and to regulate emissions of GHGs under the CAA. On April 17, 2009, the USEPA found that CO₂, CH₄, NO_x, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride may contribute to air pollution and may endanger public health and welfare. This finding may result in the USEPA regulating GHG emissions; however, to date the USEPA has not proposed regulations based on this finding.

Executive Order S-3-05

California is taking action to reduce GHG emissions. In June 2005, Governor Schwarzenegger signed Executive Order S-3-05 to address climate change and GHG emissions in California. This order sets the following goals for statewide GHG emissions:

- Reduce to 2000 levels by 2010
- Reduce to 1990 levels by 2020
- Reduce to 80 percent below 1990 levels by 2050

Assembly Bill 32

In 2006, California passed AB 32, the California Global Warming Solutions Act of 2006 (Act). The Act requires ARB to design and implement emission limits, regulations, and other feasible cost-effective measures to reduce statewide GHG emissions to 1990 levels by 2020. Senate Bill 97 was signed into law in August 2007. The Senate Bill required the Office of Planning and Research (OPR) to prepare, develop, and transmit to the Resource Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions by July 1, 2009. On April 13, 2009, the OPR submitted to the Secretary for Natural Resources its recommended amendments to the State CEQA Guidelines for addressing GHG emissions. On July 3, 2009, the Natural Resources Agency commenced the Administrative Procedure Act rulemaking process for certifying and adopting the amendments. Following a 55-day public comment period and 2 public hearings, and in response to comments, the Natural Resources Agency proposed revisions to the text of the proposed Guidelines amendments. The Natural Resources Agency transmitted the adopted amendments and the entire rulemaking file to the Office of Administrative Law on December 31, 2009. On February 16, 2010, the Office of Administrative Law approved the amendments, and filed them with the Secretary of State for inclusion in the CCR. The Amendments became effective on March 18, 2010.

The AB 32 Scoping Plan contains the main strategies California will use to reduce GHG emissions that cause climate change. The scoping plan has a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 cost of implementation fee regulation to fund the program. The first regulation adopted by the ARB pursuant to AB 32 was the regulation requiring mandatory reporting of GHG emissions. The regulation requires large industrial sources emitting more than 25,000 metric tons of CO₂ per year to report and verify their GHG emissions from combustion of both fossil fuels and biomass-derived fuels. The California Cap and Trade program is being developed and the ARB adopted regulations on January 1, 2011. Finally, Governor Schwarzenegger directed the ARB, pursuant to Executive Order S-21-09, to adopt a regulation by July 31, 2010, requiring the state's load serving entities to meet a 33 percent renewable energy target by 2020.

In addition, the proposed Project is being evaluated pursuant to CEQA.

RESPONSES

- a., b. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less than Significant Impact. The proposed Project involves upgrades to the City's community water system to bring the water below MCL's for manganese. As shown in Table 3, the Project is estimated to produce 105.57 tons per year of CO₂ (combined construction and operational totals), which is less than 1% of the reporting threshold set by the USEPA. Therefore, the proposed Project would not generate significant greenhouse gas emissions, conflict with an applicable plan, policy or regulation adopted for the purpose of reducing greenhouse gas emissions, or result in significant global climate change impacts. Impacts would be *less than significant*.

Mitigation Measures: None are required.

VIII. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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 for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. For a project within the vicinity of a private airstrip, would the project result in	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a safety hazard for people residing or working in the project area?

- g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? ☐ ☐ ☒ ☐
- h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands ☐ ☐ ☐ ☒

SETTING

The proposed Project site is located in the southern portion of the City and includes installation of a new water well (Well #6), a 71,000 gallon tank for backwash storage / sludge settling, and associated underground pipelines. The nearest sensitive receptors to the proposed Project site are residential apartments located approximately 150 west of Well #6 and residences along the majority of the pipeline alignments.

US EPA

The primary federal agencies with responsibility for hazardous materials management include the EPA, U.S. Department of Labor Occupational Safety and Health Administration (OSHA), and the U.S. Department of Transportation (DOT). The Environmental Protection Agency (EPA) was created to protect human health and to safeguard the natural environment – air, water and land – and works closely with other federal agencies, and state and local governments to develop and enforce regulations under existing environmental laws. Where national standards are not met, EPA can issue sanctions and take other steps to assist the states in reaching the desired levels of environmental quality. EPA also works with industries and all levels of government in a wide variety of voluntary pollution prevention programs and energy conservation efforts.

State of California

The California Department of Industrial Relations, Division of Occupational Safety and Health is the administering agency designed to protect worker health and general facility safety. The California

Department of Forestry and Fire Protection has designated the area that includes the proposed Project site as a Local Responsibility Area, defined as an area where the local fire jurisdiction is responsible for emergency fire response.

In addition, the proposed Project is being evaluated pursuant to CEQA.

RESPONSES

- a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than Significant Impact. While grading and construction activities may involve the limited transport, storage, use or disposal of hazardous materials, such as the fueling/servicing of construction equipment onsite, the activities would be short-term or one-time in nature and would be subject to federal, state, and local health and safety regulations.

Long-term operation of the proposed Project would involve transport, storage, use or disposal of hazardous materials. Water treatment chemicals would be utilized at the water treatment site, including sodium hypochlorite. Small quantities of petroleum products, thinners, and paints would also likely be used during construction. Sodium hypochlorite is a caustic material which can cause burns in high concentrations.

There are a number of federal, state and local requirements and regulations that are designed to minimize risks from accidental releases of hazardous materials and the proposed Project will be in compliance with all applicable requirements and regulations. Hazardous material storage and use areas at the well site will be built and operated in compliance with the minimum requirements of the Uniform Fire Code and the California Fire Code. Some of the requirements are secondary containment for liquids, fire water sprinklers over inside storage/use areas, and non-combustible building construction. Additionally, the Project will be constructed in compliance with the California Building Code, which requires design features to resist forces generated by a major earthquake with limited architectural or structural damage and to provide adequate fire protection that precludes accidental releases of hazardous chemicals due to fire.

With implementation of the proposed Project, there are no reasonably foreseeable upset and accident conditions that would create a significant hazard to the public due to the release of hazardous materials. Impacts are considered *less than significant*.

Mitigation Measures: None are required.

- 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?

Less than Significant Impact. See Impact VIII (a) above. Any impacts would be *less than significant*.

Mitigation Measures: None are required.

- c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less than Significant Impact. San Joaquin Elementary School is approximately 1,500 feet south of Well #6 and pipelines will be installed in surrounding streets. However, as described in Impact VIII (a) above any impacts would be *less than significant*.

Mitigation Measures: None are required.

- 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?

No Impact. The proposed Project site is not located on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.¹⁶ As such, there is *no impact*.

Mitigation Measures: None are required.

- 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 for people residing or working in the project area?

Less Than Significant Impact. The nearest international airport to the City is the Fresno Yosemite International Airport, approximately 40 miles east of the City. There are no public airports within a five mile radius of the City and the proposed Project is not located within any airport safety zone. There is a

¹⁶ California Department of Toxic Substance Control. EnviroStor. http://www.envirostor.dtsc.ca.gov/public/mapfull.asp?global_id=&x=-119&y=37&z=18&ms=640,480&mt=m&findaddress=True&city=san%20joaquin%20california&zip=&county=&federal_superfund=true&state_response=true&voluntary_cleanup=true&school_cleanup=true&ca_site=true&tiered_permit=true&evaluation=true&military_evaluation=true&school_investigation=true&operating=true&post_closure=true&non_operating=true. Accessed March 2017.

private air tractor service approximately 1.7 miles to the west of the proposed Project site; however, the construction and operation of the Project will not result in a safety hazard for the people residing or working in the Project area.

The Project will have a *less than significant impact* to airport operations.

Mitigation Measures: None are required.

- f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Less Than Significant Impact. See response to Impact VIII (e). Any impacts would be *less than significant*.

Mitigation Measures: None are required.

- g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The proposed Project consists of pipeline installation that will occur within existing roadways and alleys. The pipeline installation will be temporary in nature and will not cause any road closures that could interfere with any adopted emergency response or evacuation plan. Emergency vehicle access will be maintained at all times. As such, any impacts will be *less than significant*.

Mitigation Measures: None are required.

- h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

No Impact. As the proposed Project site is an urbanized area, there are no wildland areas adjacent in proximity to the proposed Project site. There is *no impact*.

Mitigation Measures: None are required.

IX. HYDROLOGY AND WATER QUALITY

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IX. HYDROLOGY AND WATER QUALITY

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
provide substantial additional sources of polluted runoff?				
f. Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j. Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

Like most of California, the San Joaquin Valley experiences 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. According to the Western Regional Climate Center, annual precipitation in the vicinity of the Project sites is about 12 inches, about 85% of which falls between the months of October and March. Nearly all precipitation falls in the form of rain.

The City is located in the Tulare Lakes Hydrologic Region within the southern half of the San Joaquin Valley Basin, in the Kings River Subbasin.¹⁷ The City of San Joaquin utilizes pumped water from the Subbasin for its entire water supply. The City does not purchase water from other sources or purveyors. The groundwater supply serves all users within the City, including residential, commercial, industrial and irrigation uses. Surrounding agricultural users outside the City also utilize groundwater for irrigation purposes.¹⁸

RESPONSES

a. Violate any water quality standards or waste discharge requirements?

Less than Significant Impact. The purpose of the Project is to improve water quality to meet existing standards and requirements. The proposed Project includes improvements to the existing community water system to reduce the manganese levels to under MCL's. As a result, any impacts would be *less than significant*.

Mitigation Measures: None are required.

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Less Than Significant Impact. According to the City's General Plan Background Report, the City of San Joaquin obtains all of its domestic water supply from the groundwater underneath the City, which is then treated prior to distribution. Well #6 is being constructed due to the unreliability of Well #4. The Project is intended to treat excessive manganese levels and will not significantly expand current capacity of the existing system. Additionally, the proposed Project will not significantly interfere with groundwater recharge as it will introduce minimal amounts of impermeable surfaces. As such, any impacts to groundwater supplies will be *less than significant*.

Mitigation Measures: None are required.

¹⁷ City of San Joaquin 2040 Community Plan. Background Report. June 11. Page 120.

¹⁸ City of San Joaquin 2040 Community Plan. Background Report. June 11. Page 90.

- c., d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Less than Significant Impact. The proposed improvements to the existing community water system will introduce minimal non-permeable surfaces. The new well / tank will conservatively introduce approximately 0.3 acres of impermeable area to the site, which will not substantially increase the rate or amount of surface runoff which would then result in on or off-site flooding. The pipelines will be installed within the existing road rights-of-way and will not alter any existing drainage patterns. There are no waterways in the immediate vicinity of the proposed Project. Any impacts would be *less than significant*.

Mitigation Measures: None are required.

- e. 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?

No Impact. Implementation of the proposed Project will not require expansion of the City's existing stormwater system, nor will it result in additional sources of polluted runoff. Drainage from the site will be directed to the existing ponding basin to the west. There is *no impact*.

Mitigation Measures: None are required.

- f. Otherwise substantially degrade water quality?

Less than Significant Impact. See Impact IX (a), (c) and (d). The Project would not otherwise degrade water quality and therefore the impact is *less than significant*.

Mitigation Measures: None are required.

- g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No Impact. The proposed Project site is not within a 100-year flood zone (as identified by FEMA Flood Insurance Rate Map 06019C2550H, current 2/18/2009). In addition, there is no housing associated with the Project. Therefore, there is *no impact*.

Mitigation Measures: None are required.

h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

No Impact. As stated in Impact IX(g), the proposed Project site is not within a 100-year flood zone (as identified by FEMA Flood Insurance Rate Map 06019C2550H, current 2/18/2009). Therefore, there is *no impact*.

Mitigation Measures: None are required.

i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Less than Significant Impact. There are a number of dams on both San Joaquin and Kings Rivers that could cause flooding in the event of dam failure. The extent of the flooding which could occur would depend on whether one or more dams failed simultaneously, where they are located, the time of the year, and several other factors. The City of San Joaquin is within the flood inundation area of the Pine Flat Dam, approximately 50 miles to the northeast, the Friant Dam, approximately 37 miles to the northeast, and the Little Panoche Dam, approximately 36 miles to the northwest.¹⁹ Due to the extended distance, the City would have adequate time to prepare for such flooding in order to protect City residents and facilities. As such, impacts related to exposure of people or structures to a risk of loss, injury, or death involving flooding as a result of the failure of a levee or dam would be *less than significant*.

Mitigation Measures: None are required.

j. Inundation by seiche, tsunami, or mudflow?

No Impact. There are no inland water bodies that could be potentially susceptible to a seiche in the Project vicinity. This precludes the possibility of a seiche inundating the Project site. The Project site is more than 100 miles from the Pacific Ocean, a condition that precludes the possibility of inundation by tsunami. There are no steep slopes that would be susceptible to a mudflow in the Project vicinity, nor

¹⁹ City of San Joaquin 2040 Community Plan. Background Report. June 11. Page 191.

are there any volcanically active features that could produce a mudflow in the City of San Joaquin. This precludes the possibility of a mudflow inundating the Project site. *No impacts* would occur.

Mitigation Measures: None are required.

X. LAND USE AND PLANNING

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the General Plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The proposed Project sites consist of developed and disturbed land in a mostly urban setting. The proposed new well (Well #6) and associated infrastructure is located in a fallow agricultural field bordered by residential development to the west and south, a public park to the southeast, and agricultural land cover to the north and east (see Figure 3 – Well #6 Treatment Site). The pipelines will be constructed within existing roadways and alleys.

RESPONSES

a. Physically divide an established community?

No Impact. The proposed Project is located throughout the City. The pipeline will be installed within the existing right-of-way of roadways and the well / tank will be constructed on vacant land at the northern edge of the City. The construction and operation of the Project would not cause any land use changes in the surrounding vicinity nor would it divide an established community. *No impacts* would occur as a result of Project implementation.

Mitigation Measures: None are required.

- b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the General Plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The proposed Project involves improvements to the existing community water system and does not conflict with any land use plans, policies or regulations. There are *no impacts*.

Mitigation Measures: None are required.

- c. Conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. The proposed Project site is not included in any adopted habitat conservation plans or natural community conservation plans. Therefore, the proposed Project would not conflict with any such plans and *no impacts* would result.

Mitigation Measures: None are required.

XI. MINERAL RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

Fresno County has been a leading producer of minerals because of the abundance and wide variety of mineral resources that are present in the County. Extracted resources include aggregate products (sand and gravel), fossil fuels (oil and coal), metals (chromite, copper, gold, mercury, and tungsten), and other minerals used in construction or industrial applications (asbestos, high-grade clay, diatomite, granite, gypsum, and limestone). Aggregate and petroleum are considered the County's most significant extractive mineral resources. Oil fields are within the vicinity of the City of San Joaquin.²⁰

RESPONSES

- 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?

No Impact. The proposed Project will take place within existing roadway rights-of-way, and on a vacant field at the northern edge of the City. The proposed Project includes improvements to the existing water community system and will not result in a loss of availability of a known mineral resource. Therefore, there is *no impact*.

²⁰ Fresno County General Plan Background Report. Adopted 2000. Page 7-66. Accessed April 2017.
<http://www.co.fresno.ca.us/viewdocument.aspx?id=5696>

Mitigation Measures: None are required.

- 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?

No Impact. As stated in the analysis for Impact XI(a), the proposed Project will occur in the roadway right-of-way and on vacant / unused land. Therefore, there is *no impact*.

Mitigation Measures: None are required.

XII. NOISE

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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 expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The proposed Project site is located throughout the City of San Joaquin. See Figure 2 – Site Aerial. The sites are surrounded by residential, commercial and industrial uses, public facilities, active agriculture, and vacant land.

Federal Railway Administration

The Federal Railway Administration (FRA) and the Federal Transit Administration (FTA) have published guidance relative to vibration impacts. The FRA has determined that ground vibrations from construction activities do not often reach the levels that can damage structures, but they can be within the audible and perceptible ranges in buildings very close to the site²¹. The FTA has identified the human annoyance response to vibration levels as 80 RMS²².

Fresno County

Measuring and reporting noise levels involves accounting for variations in sensitivity to noise during the daytime versus nighttime hours. Noise descriptors used for analysis need to factor in human sensitivity to nighttime noise when background noise levels are generally lower than in the daytime and outside noise intrusions are more noticeable. Common descriptors include the Community Noise Equivalent Level (CNEL) and the Day-Night Average Level (Ldn). Both reflect noise exposure over an average day with weighting to reflect the increased sensitivity to noise during the evening and night. The two descriptors are roughly equivalent. The CNEL descriptor is used in relation to major continuous noise sources, such as aircraft or traffic, and is the reference level for the Noise Element under State planning law.

RESPONSES

- a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less than Significant Impact. The nearest sensitive receptors to the proposed Project would be the residences located approximately 150 west of Well #6 and residences along the pipeline routes. The proposed pipeline will not generate any noise once it is in operation.

²¹ U.S. Federal Railroad Administration. High Speed Ground Transportation Noise and Vibration Impact Assessment. Final Report No. DOT/FRA/ORD-12/15. September 2012. Page 10-11.

²² U.S. Federal Transit Administration. Transit Noise and Vibration Impact Assessment. Final Report No. FTA-VA-90-1003 prepared by Harris Miller Miller & Hanson Inc., May 2006. Page 7-5. http://www.rtd-fastracks.com/media/uploads/nm/14_Section_38_NoiseandVibration_Part3.pdf. Accessed March 2017.

Once Well #6 is constructed, noise levels generated during normal operation would not exceed applicable noise standards established in the Fresno County Ordinance Code. Noise would be generated from the pump, but will be enclosed.

Neither the City of San Joaquin Municipal Code nor the Fresno County Ordinance Code identifies a short-term, construction-noise-level threshold. The distinction between short-term construction noise impacts and long-term operational noise impacts is a typical one in both CEQA documents and local noise ordinances, which generally recognize the reality that short-term noise from construction is inevitable and cannot be mitigated beyond a certain level. Thus, local agencies frequently tolerate short-term noise at levels that they would not accept for permanent noise sources. A more severe approach would be impractical and might preclude the kind of construction activities that are to be expected from time to time in urban environments. Most residents of urban areas recognize this reality and expect to hear construction activities on occasion. As the construction period will be brief and periodic, and construction hours would be limited to those established in the City's Municipal Code, any impacts would be *less than significant*.

Mitigation Measures: None are required.

b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant Impact. Typical outdoor sources of perceptible ground borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. Construction vibrations can be transient, random, or continuous. Construction associated with the proposed Project is earthmoving activities associated installing pipelines and installing equipment.

The approximate threshold of vibration perception is 65 VdB, while 85 VdB is the vibration acceptable only if there are an infrequent number of events per day.²³ Table 5 describes the typical construction equipment vibration levels.

Table 5
Typical Construction Vibration Levels

Equipment	VdB at 25 ft
Small Bulldozer	58
Jackhammer	79

²³ Transit Noise and Vibration Impact Assessment. Final Report No. FTA-VA-90-1003 prepared for the U.S. Federal Transit Administration by Harris Miller Miller & Hanson Inc., May 2006. Page 7-5. http://www.rtd-fastracks.com/media/uploads/nm/14_Section_38_NoiseandVibration_Part3.pdf. Accessed March 2017.

Vibration from construction activities will be temporary and not exceed the Federal Transit Authority threshold for the nearest residence which is located approximately 150 feet west of the Project site. The impact will be *less than significant*.

Mitigation Measures: None are required.

c., d. A substantial temporary or permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less than Significant Impact. See Impact XII (a). There will be no substantial temporary or permanent increase in ambient noise levels and therefore the impact is *less than significant*.

Mitigation Measures: None are required.

e., f. For a project within the vicinity of a public or private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The proposed Project is not located in the vicinity of an airport. Therefore, there would be *no impact*.

Mitigation Measures: None are required.

XIII. POPULATION AND HOUSING

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Induce substantial 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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The City of San Joaquin's primary industry is agriculture, but there is sufficient labor force in the area to support many other types of industries, including manufacturing. The 2009 population estimate for the City of San Joaquin is 4,071. The population reported in the 2000 Census was 3,270, which represents a 25 percent increase in population between 2000 and 2009.²⁴

RESPONSES

- a. Induce substantial 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)?

No Impact. The proposed Project includes the construction and operation of a new well and associated improvements to lower manganese levels to below the MCL and will not significantly expand the

²⁴ City of San Joaquin 2040 Community Plan. Background Report. June 11. Page 35.

current capacity of the existing community water system. The Project will not require new permanent employees. As such, the proposed Project would not directly or indirectly induce population growth. There is *no impact*.

Mitigation Measures: None are required.

b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

No Impact. The proposed well / tank will be constructed on vacant land and the pipelines will be constructed within existing roadways and alleys. The Project will not result in the displacement of housing or people, or cause replacement housing to be constructed elsewhere. *No impact* would occur.

Mitigation Measures: None are required.

c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. The proposed Project will not displace any people and therefore there is *no impact*.

Mitigation Measures: None are required.

XIV. PUBLIC SERVICES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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- 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:

Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

Law enforcement services within the City are provided by the Fresno County Sheriff's Office under contract to the City. The Sheriff maintains its Area 1 Patrol Station within the City. The Fresno County Fire Protection District provides firefighting, emergency medical service and rescue services in San Joaquin. The City does not have its own fire station – the nearest station, District Station 95, is located in Tranquillity, approximately four miles to the northwest of the City.

The Golden Plains Unified School District provides public school services within the City. San Joaquin Elementary School is the only public school facility within the City limits, approximately 1,500 feet south of proposed Well #6 and accommodates children in kindergarten through grade eight. High school grades nine through 12 are offered at Tranquillity High School.

RESPONSES

- 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:

Fire protection?

No Impact. The proposed Project would continue to be served by the Fresno County Fire Protection District. The proposed Project would not directly or indirectly induce population growth; therefore, no additional fire personnel or equipment is needed to support the Project. There is *no impact*.

Police Protection?

No Impact. The proposed Project will continue to be served by the Fresno County Sheriff's Department. No additional police personnel or equipment is needed to support the Project. There is *no impact*.

Schools, Parks, Other Public Facilities?

No Impact. The proposed Project would not increase the number of residents in the City, as the Project does not include residential units. Because the demand for schools, parks, and other public facilities is driven by population, the proposed Project would not increase demand for those services. As such, the proposed Project would result in *no impacts*.

Mitigation Measures: None are required.

XV. RECREATION

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

The City currently has three areas of open space within the City. The first is a 1.2-acre park which includes a young children's play area, a basketball court, a skate park, and a covered barbeque pit and picnic area. The second is the 8.6-acre elementary school playground, composed primarily of four baseball diamonds, as well as four basketball courts and a kindergarten play area. The third is an area on the northeast edge of the City comprised of a 0.15 acre play structure and grass hillside with benches next to a 3.5-acre.²⁵

RESPONSES

- 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?

No Impact. The proposed Project does not include the construction of residential uses and would not directly or indirectly induce population growth. Therefore, the proposed Project would not cause physical deterioration of existing recreational facilities from increased usage or result in the need for new or expanded recreational facilities. The Project would have *no impact* to existing parks.

Mitigation Measures: None are required.

²⁵ City of San Joaquin 2040 Community Plan. Background Report. June 11. Page 171.

- 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 proposed Project does not include the construction of residential uses and would not directly induce population growth. Therefore, the Project would not cause physical deterioration of existing recreational facilities from increased usage or result in the need for new or expanded recreational facilities. There is *no impact*.

Mitigation Measures: None are required.

XVI. TRANSPORTATION/ TRAFFIC

Would the project:

- a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?
- b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?
- c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?
- d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- e. Result in inadequate emergency access?

Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

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SETTING

The City is approximately six miles northwest of State Route 145 and 15 miles east of Interstate 5 (see Figure 1 – Location Map). Two main thoroughfares cut across the City. Colorado Avenue bisects the City from northwest to southeast and Manning Avenue crosses the City from west to east. The downtown is designed in a traditional grid pattern, but the rest of the City is laid out in a mixture of loops and cul-de-sacs. Railroad Street is considered a local street and S. Colusa is considered a major collector.²⁶

The nearest international airport to the City is the Fresno Yosemite International Airport, approximately 40 miles east of the City.

RESPONSES

- a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

No Impact. The proposed Project would not cause a substantial increase in traffic, reduce the existing level of service, or create any additional congestion at any intersections. The proposed Project would require periodic service or maintenance, approximately two trips per day (maximum). As such, level of service standards would not be exceeded and the proposed Project would not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system. There is *no impact*.

Mitigation Measures: None are required.

²⁶ City of San Joaquin 2040 Community Plan. Background Report. June 11. Page 62.

- b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

No Impact. As shown in Response a., the proposed Project will have *no impact* on any existing level of service or other travel demand measures. The proposed Project will not conflict with any congestion management programs, as none are applicable to the Project.

Mitigation Measures: None are required.

- c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?

No Impact. The nearest international airport to the City is the Fresno Yosemite International Airport, approximately 40 miles east of the City. There are no public airports within a five-mile radius of the City and the proposed Project is not located within any airport safety zone. There is a private air tractor service approximately 1.7 miles to the west of the proposed Project site; however, there are no characteristics of the proposed Project that would have any impact on air traffic patterns at the private airport. As such, there is *no impact*.

Mitigation Measures: None are required.

- d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. No roadway design features are associated with this proposed Project that would result in an increase in hazards due to a design feature or be an incompatible use. See also Impact XVI (a). There is *no impact*.

Mitigation Measures: None are required.

XVII. TRIBAL CULTURAL RESOURCES

Would the project:

a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

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

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

	Less than Significant		
Potentially Significant Impact	With Mitigation Incorporation	Less than Significant Impact	No Impact

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RESPONSES

a). Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape

that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

- i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or
- ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less Than Significant Impact. In accordance with Public Resources Code Section 21080.3.1 - Assembly Bill (AB) 52, potentially affected Tribes were formally notified of this Project and were given the opportunity to request consultation on the Project.

On May 31, 2018, Applied Earthworks, Inc. (Æ) contacted the Native American Heritage Commission (NAHC) in Sacramento, California on behalf of the City of San Joaquin. Æ provided a brief description of the Project and a map showing its location and requested that the NAHC perform a search of the Sacred Lands File to determine if any Native American resources have been recorded in the immediate study area. Æ also requested a current list of local Native American tribes and representatives to contact for additional information.

In its June 13, 2018 response to Æ's request, the NAHC stated that a search of the Sacred Lands File did not indicate the presence of resources in the immediate Project APE (see Appendix C of Appendix C); however, the NAHC cautioned that the absence of specific site information in the Sacred Lands File does not indicate the absence of tribal cultural resources in the Project area. The NAHC suggested contacting other sources who might have specific knowledge regarding Native American use of the Project area and provided contact information for 12 Native American representatives, including:

- Chairperson Elizabeth Kipp, Big Sandy Rancheria of Western Mono Indians
- Chairperson Carol Bill, Cold Springs Rancheria
- Chairperson Robert Ledger Sr., Dumna Wo-Wah Tribal Government
- Chairperson, Dunlap Band of Mono Indians
- Stan Alec, Choinumni Farm Tribe
- Chairperson Ron Goode, North Fork Mono Tribe
- Chairperson Rueben Barrios Sr., Santa Rosa Indian Community of the Santa Rosa Rancheria

- Chairperson Leanne Walker-Grant, Table Mountain Rancheria of California
- Cultural Resources Director Bob Pennell, Table Mountain Rancheria of California
- Chairperson David Alvarez, Traditional Choinumni Tribe
- Rick Osborne, Traditional Choinumni Tribe
- Chairperson Kenneth Woodrow, Wuksache Indian Tribe/Eshom Valley Band

On June 29, 2018, Æ sent a letter describing the Project to each of the individuals above and followed-up with a phone call on August 9, 2018. Bob Pennell, Table Mountain Rancheria's Cultural Resources Director, responded with a letter on August 14, 2018, declining the tribe's participation at this time, but he would appreciate being notified of any identified cultural resources. Chief Robert Ledger Sr. of the Dumna Wo-Wah Tribal Government replied via telephone that the Tribal Council is considering potential impacts of the Project, but no response has been received to date. No additional responses from tribal representatives have been received.

Therefore, the City has complied with the provisions of Public Resources Code Section 21080.3.2. Any impacts to tribal resources would be *less than significant*.

Mitigation Measures: None are required.

XVIII. UTILITIES AND SERVICE SYSTEMS

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Comply with federal, state, and local	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

statutes and regulations related to solid waste?

SETTING

The City of San Joaquin has responsibility for providing water and wastewater services for the community. The proposed Project would not involve any construction or changes to stormwater drainage, solid waste management, or wastewater treatment.

RESPONSES

a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Less Than Significant Impact. The proposed Project includes improvements to the City's existing community water system and would not exceed any wastewater treatment requirements set by the Central Valley Regional Water Quality Control Board. *Less Than Significant Impacts* related to these utilities and service systems would occur.

Mitigation Measures: None are required.

b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant Impact. The project itself is the construction of a new well, pipelines and water treatment system to bring the water quality up to the U.S. EPA established standards. This project will not result in the need to construct additional facilities beyond the proposed project. There will be a *less than significant impact*.

Mitigation Measures: None are required.

c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. Implementation of the proposed Project will not require expansion of the City's existing stormwater system, nor will it result in additional sources of polluted runoff. Drainage from the site will be directed to the existing ponding basin to the west. There is *no impact*.

Mitigation Measures: None are required.

- d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Less Than Significant Impact. According to the City's General Plan Background Report, the City of San Joaquin obtains all of its domestic water supply from the groundwater underneath the City, which is then treated prior to distribution. Well #6 is being constructed due to the unreliability of Well #4. The Project is intended to treat excessive manganese levels and will not significantly expand current capacity of the existing system. Additionally, the proposed Project will not significantly interfere with groundwater recharge as it will introduce minimal amounts of impermeable surfaces. As such, any impacts to water supplies will be *less than significant*.

Mitigation Measures: None are required.

Mitigation Measures: None are required.

- e. 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. The proposed Project includes improvements to the existing community water system. There is no wastewater discharge associated with the Project. Any impacts would be *less than significant*.

Mitigation Measures: None are required.

- f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less than Significant Impact. Proposed Project construction and operation will generate minimal amounts of solid waste. Any impacts will be *less than significant*.

Mitigation Measures: None are required.

- g. Comply with federal, state, and local statutes and regulations related to solid waste?

No Impact. The proposed Project will comply with all federal, state and local statutes and regulations related to solid waste. There is *no impact*.

Mitigation Measures: None are required.

XIX. MANDATORY FINDINGS OF SIGNIFICANCE

Would the project:

- a. Does the project have the potential to 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, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?
- b. Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?
- c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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RESPONSES

- a. Does the project have the potential to 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, 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. The analyses of environmental issues contained in this Initial Study indicate that the proposed Project is not expected to have substantial impact on the environment or on any resources identified in the Initial Study. Mitigation measures have been incorporated in the Project design to reduce all potentially significant impacts to *less than significant*.

- 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. Due to the nature of the Project and consistency with environmental policies, incremental contributions to impacts are considered less than cumulatively considerable. The proposed Project would not contribute substantially to adverse cumulative conditions, or create any substantial indirect impacts (i.e., increase in population could lead to an increase need for housing, increase in traffic, air pollutants, etc.). The impact is *less than significant*.

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

Less than Significant Impact With Mitigation. The analyses of environmental issues contained in this Initial Study indicate that the Project is not expected to have substantial impact on human beings, either directly or indirectly. Mitigation measures have been incorporated in the Project design to reduce all potentially significant impacts to *less than significant*.

Chapter 4

MITIGATION MONITORING & REPORTING PROGRAM

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 San Joaquin Phase 2 Water System Improvements Project located in the southern portion of the City of San Joaquin. The MMRP lists mitigation measures recommended in the IS/MND for the proposed Project and identifies monitoring and reporting requirements as well as conditions recommended by responsible agencies who commented on the project.

The first column of the Table identifies the mitigation measure. The second column, entitled “Party Responsible for Implementing Mitigation,” names the party responsible for carrying out the required action. The third column, “Implementation Timing,” identifies the time the mitigation measure should be initiated. The fourth column, “Party Responsible for Monitoring,” names the party ultimately responsible for ensuring that the mitigation measure is implemented. The last column will be used by the City to ensure that individual mitigation measures have been monitored.

Mitigation Measure	Party responsible for Implementing Mitigation	Implementation Timing	Party responsible for Monitoring	Verification (name/date)
Biology				
Mitigation Measure BIO-1: <ol style="list-style-type: none"> 1. To the extent practicable, construction shall be scheduled to avoid the Swainson's hawk nesting season, which extends from March through August. 2. If it is not possible to schedule work between September and February, a qualified biologist shall conduct a survey for active Swainson's hawk nests within 0.25 miles of the Project site no more than 14 days prior to the start of construction. If an active nest is found within 0.25 miles, and the qualified biologist determines that Project activities would disrupt nesting, a construction-free buffer or limited operating period shall be implemented in consultation with the CDFW. 	City of San Joaquin	Prior to and during construction	City of San Joaquin	
Mitigation Measure BIO-2: <ol style="list-style-type: none"> 1. To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from February through August. 2. If it is not possible to schedule construction between September and January, preconstruction surveys for nesting birds shall be conducted by a qualified biologist to ensure that no active nests will be disturbed during Project implementation. A pre-construction survey shall be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the qualified biologist shall inspect all potential nest substrates in and immediately adjacent to the impact areas for 				

Mitigation Measure	Party responsible for Implementing Mitigation	Implementation Timing	Party responsible for Monitoring	Verification (name/date)
<p>nests. If an active nest is found close enough to the construction area to be disturbed by these activities, the qualified biologist shall determine the extent of a construction-free buffer to be established around the nest. If work cannot proceed without disturbing the nesting birds, work may need to be halted or redirected to other areas until nesting and fledging are completed or the nest has otherwise failed for non-construction related reasons.</p>				
Cultural Resources				
<p>Mitigation Measure CUL-1:</p> <p>In the event that archaeological remains are encountered at any time during development or ground-moving activities within the entire Project area, all work in the vicinity of the find should be halted until a qualified archaeologist can assess the discovery and take appropriate actions as necessary.</p>	City of San Joaquin	Prior to and during construction	City of San Joaquin	

Chapter 5

PREPARERS

LIST OF PREPARERS

Crawford & Bowen Planning, Inc.

- Travis Crawford, AICP, Principal Environmental Planner
- Emily Bowen, LEED AP, Principal Environmental Planner

AM Consulting Engineers

- Alfonso Manrique, PE
- Paul Sereno, EIT

Colibri Ecological Consulting, LLC.

- Jeff Davis

Applied EarthWorks, Inc.

- Mary Baloian

Appendices

Appendix A

CalEEMod Output Files

San Joaquin Well - San Joaquin Valley Unified APCD Air District, Annual

San Joaquin Well
San Joaquin Valley Unified APCD Air District, Annual**1.0 Project Characteristics**

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	3.00	1000sqft	0.07	3,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.7	Precipitation Freq (Days)	45
Climate Zone	3			Operational Year	2019
Utility Company					
CO2 Intensity (lb/MW hr)	0	CH4 Intensity (lb/MW hr)	0	N2O Intensity (lb/MW hr)	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

San Joaquin Well - San Joaquin Valley Unified APCD Air District, Annual

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					
2019	0.0786	0.5721	0.4553	7.0000e-004	2.9800e-003	0.0351	0.0381	9.6000e-004	0.0325	0.0334	0.0000	62.7281	62.7281	0.0183	0.0000	63.1861
Maximum	0.0786	0.5721	0.4553	7.0000e-004	2.9800e-003	0.0351	0.0381	9.6000e-004	0.0325	0.0334	0.0000	62.7281	62.7281	0.0183	0.0000	63.1861

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					
2019	0.0786	0.5721	0.4553	7.0000e-004	2.9800e-003	0.0351	0.0381	9.6000e-004	0.0325	0.0334	0.0000	62.7281	62.7281	0.0183	0.0000	63.1860
Maximum	0.0786	0.5721	0.4553	7.0000e-004	2.9800e-003	0.0351	0.0381	9.6000e-004	0.0325	0.0334	0.0000	62.7281	62.7281	0.0183	0.0000	63.1860

[illegible]

San Joaquin Well - San Joaquin Valley Unified APCD Air District, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2019	3-31-2019	0.3401	0.3401
2	4-1-2019	6-30-2019	0.3065	0.3065
		Highest	0.3401	0.3401

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0138	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005
Energy	3.4000e-004	3.0700e-003	2.5800e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.3411	3.3411	6.0000e-005	6.0000e-005	3.3610
Mobile	8.2100e-003	0.0859	0.0942	3.9000e-004	0.0233	5.3000e-004	0.0238	6.2600e-003	5.0000e-004	6.7700e-003	0.0000	36.1506	36.1506	2.2100e-003	0.0000	36.2058
Waste						0.0000	0.0000		0.0000	0.0000	0.7551	0.0000	0.7551	0.0446	0.0000	1.8708
Water						0.0000	0.0000		0.0000	0.0000	0.2201	0.0000	0.2201	0.0226	5.3000e-004	0.9443
Total	0.0224	0.0890	0.0968	4.1000e-004	0.0233	7.6000e-004	0.0240	6.2600e-003	7.3000e-004	7.0000e-003	0.9752	39.4918	40.4670	0.0695	5.9000e-004	42.3819

San Joaquin Well - San Joaquin Valley Unified APCD Air District, Annual

2.2 Overall Operational**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0138	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005
Energy	3.4000e-004	3.0700e-003	2.5800e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.3411	3.3411	6.0000e-005	6.0000e-005	3.3610
Mobile	8.2100e-003	0.0859	0.0942	3.9000e-004	0.0233	5.3000e-004	0.0238	6.2600e-003	5.0000e-004	6.7700e-003	0.0000	36.1506	36.1506	2.2100e-003	0.0000	36.2058
Waste						0.0000	0.0000		0.0000	0.0000	0.7551	0.0000	0.7551	0.0446	0.0000	1.8708
Water						0.0000	0.0000		0.0000	0.0000	0.2201	0.0000	0.2201	0.0226	5.3000e-004	0.9443
Total	0.0224	0.0890	0.0968	4.1000e-004	0.0233	7.6000e-004	0.0240	6.2600e-003	7.3000e-004	7.0000e-003	0.9752	39.4918	40.4670	0.0695	5.9000e-004	42.3819

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

San Joaquin Well - San Joaquin Valley Unified APCD Air District, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/14/2019	5	10	
2	Site Preparation	Site Preparation	1/15/2019	1/15/2019	5	1	
3	Grading	Grading	1/16/2019	1/17/2019	5	2	
4	Building Construction	Building Construction	1/18/2019	6/6/2019	5	100	
5	Paving	Paving	6/7/2019	6/13/2019	5	5	
6	Architectural Coating	Architectural Coating	6/14/2019	6/20/2019	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 4,500; Non-Residential Outdoor: 1,500; Striped Parking Area: 0
(Architectural Coating – sqft)

OffRoad Equipment

San Joaquin Well - San Joaquin Valley Unified APCD Air District, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	1.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

San Joaquin Well - San Joaquin Valley Unified APCD Air District, Annual

3.1 Mitigation Measures Construction**3.2 Demolition - 2019****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	4.7700e-003	0.0430	0.0385	6.0000e-005		2.6900e-003	2.6900e-003		2.5600e-003	2.5600e-003	0.0000	5.2601	5.2601	1.0000e-003	0.0000	5.2852
Total	4.7700e-003	0.0430	0.0385	6.0000e-005		2.6900e-003	2.6900e-003		2.5600e-003	2.5600e-003	0.0000	5.2601	5.2601	1.0000e-003	0.0000	5.2852

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3.2 Demolition - 2019**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	2.4000e-004	2.3800e-003	1.0000e-005	6.2000e-004	0.0000	6.3000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5703	0.5703	2.0000e-005	0.0000	0.5708
Total	3.2000e-004	2.4000e-004	2.3800e-003	1.0000e-005	6.2000e-004	0.0000	6.3000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5703	0.5703	2.0000e-005	0.0000	0.5708

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	4.7700e-003	0.0430	0.0385	6.0000e-005		2.6900e-003	2.6900e-003		2.5600e-003	2.5600e-003	0.0000	5.2601	5.2601	1.0000e-003	0.0000	5.2852
Total	4.7700e-003	0.0430	0.0385	6.0000e-005		2.6900e-003	2.6900e-003		2.5600e-003	2.5600e-003	0.0000	5.2601	5.2601	1.0000e-003	0.0000	5.2852

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3.2 Demolition - 2019**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	2.4000e-004	2.3800e-003	1.0000e-005	6.2000e-004	0.0000	6.3000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5703	0.5703	2.0000e-005	0.0000	0.5708
Total	3.2000e-004	2.4000e-004	2.3800e-003	1.0000e-005	6.2000e-004	0.0000	6.3000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5703	0.5703	2.0000e-005	0.0000	0.5708

3.3 Site Preparation - 2019**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					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6000e-004	4.4600e-003	2.0700e-003	0.0000		1.8000e-004	1.8000e-004		1.7000e-004	1.7000e-004	0.0000	0.4378	0.4378	1.4000e-004	0.0000	0.4413
Total	3.6000e-004	4.4600e-003	2.0700e-003	0.0000	2.7000e-004	1.8000e-004	4.5000e-004	3.0000e-005	1.7000e-004	2.0000e-004	0.0000	0.4378	0.4378	1.4000e-004	0.0000	0.4413

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3.3 Site Preparation - 2019**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	1.0000e-005	1.2000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0285	0.0285	0.0000	0.0000	0.0285
Total	2.0000e-005	1.0000e-005	1.2000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0285	0.0285	0.0000	0.0000	0.0285

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					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6000e-004	4.4600e-003	2.0700e-003	0.0000		1.8000e-004	1.8000e-004		1.7000e-004	1.7000e-004	0.0000	0.4378	0.4378	1.4000e-004	0.0000	0.4413
Total	3.6000e-004	4.4600e-003	2.0700e-003	0.0000	2.7000e-004	1.8000e-004	4.5000e-004	3.0000e-005	1.7000e-004	2.0000e-004	0.0000	0.4378	0.4378	1.4000e-004	0.0000	0.4413

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3.3 Site Preparation - 2019**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-005	1.0000e-005	1.2000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0285	0.0285	0.0000	0.0000	0.0285
Total	2.0000e-005	1.0000e-005	1.2000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0285	0.0285	0.0000	0.0000	0.0285

3.4 Grading - 2019**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					7.5000e-004	0.0000	7.5000e-004	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5000e-004	8.6000e-003	7.6900e-003	1.0000e-005		5.4000e-004	5.4000e-004		5.1000e-004	5.1000e-004	0.0000	1.0520	1.0520	2.0000e-004	0.0000	1.0570
Total	9.5000e-004	8.6000e-003	7.6900e-003	1.0000e-005	7.5000e-004	5.4000e-004	1.2900e-003	4.1000e-004	5.1000e-004	9.2000e-004	0.0000	1.0520	1.0520	2.0000e-004	0.0000	1.0570

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3.4 Grading - 2019**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	5.0000e-005	4.8000e-004	0.0000	1.2000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1141	0.1141	0.0000	0.0000	0.1142
Total	6.0000e-005	5.0000e-005	4.8000e-004	0.0000	1.2000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1141	0.1141	0.0000	0.0000	0.1142

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					7.5000e-004	0.0000	7.5000e-004	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5000e-004	8.6000e-003	7.6900e-003	1.0000e-005		5.4000e-004	5.4000e-004		5.1000e-004	5.1000e-004	0.0000	1.0520	1.0520	2.0000e-004	0.0000	1.0570
Total	9.5000e-004	8.6000e-003	7.6900e-003	1.0000e-005	7.5000e-004	5.4000e-004	1.2900e-003	4.1000e-004	5.1000e-004	9.2000e-004	0.0000	1.0520	1.0520	2.0000e-004	0.0000	1.0570

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3.4 Grading - 2019**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	5.0000e-005	4.8000e-004	0.0000	1.2000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1141	0.1141	0.0000	0.0000	0.1142
Total	6.0000e-005	5.0000e-005	4.8000e-004	0.0000	1.2000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1141	0.1141	0.0000	0.0000	0.1142

3.5 Building Construction - 2019**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	0.0479	0.4910	0.3772	5.7000e-004		0.0303	0.0303		0.0279	0.0279	0.0000	51.1502	51.1502	0.0162	0.0000	51.5548
Total	0.0479	0.4910	0.3772	5.7000e-004		0.0303	0.0303		0.0279	0.0279	0.0000	51.1502	51.1502	0.0162	0.0000	51.5548

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3.5 Building Construction - 2019**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	2.4000e-004	2.3800e-003	1.0000e-005	6.2000e-004	0.0000	6.3000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5703	0.5703	2.0000e-005	0.0000	0.5708
Total	3.2000e-004	2.4000e-004	2.3800e-003	1.0000e-005	6.2000e-004	0.0000	6.3000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5703	0.5703	2.0000e-005	0.0000	0.5708

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	0.0479	0.4910	0.3772	5.7000e-004		0.0303	0.0303		0.0279	0.0279	0.0000	51.1502	51.1502	0.0162	0.0000	51.5548
Total	0.0479	0.4910	0.3772	5.7000e-004		0.0303	0.0303		0.0279	0.0279	0.0000	51.1502	51.1502	0.0162	0.0000	51.5548

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3.5 Building Construction - 2019**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	2.4000e-004	2.3800e-003	1.0000e-005	6.2000e-004	0.0000	6.3000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5703	0.5703	2.0000e-005	0.0000	0.5708
Total	3.2000e-004	2.4000e-004	2.3800e-003	1.0000e-005	6.2000e-004	0.0000	6.3000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5703	0.5703	2.0000e-005	0.0000	0.5708

3.6 Paving - 2019**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	2.0700e-003	0.0196	0.0179	3.0000e-005		1.1100e-003	1.1100e-003		1.0300e-003	1.0300e-003	0.0000	2.3931	2.3931	6.8000e-004	0.0000	2.4102
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	2.0700e-003	0.0196	0.0179	3.0000e-005		1.1100e-003	1.1100e-003		1.0300e-003	1.0300e-003	0.0000	2.3931	2.3931	6.8000e-004	0.0000	2.4102

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3.6 Paving - 2019**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.2000e-004	2.1400e-003	1.0000e-005	5.6000e-004	0.0000	5.6000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.5133	0.5133	2.0000e-005	0.0000	0.5137
Total	2.9000e-004	2.2000e-004	2.1400e-003	1.0000e-005	5.6000e-004	0.0000	5.6000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.5133	0.5133	2.0000e-005	0.0000	0.5137

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	2.0700e-003	0.0196	0.0179	3.0000e-005		1.1100e-003	1.1100e-003		1.0300e-003	1.0300e-003	0.0000	2.3931	2.3931	6.8000e-004	0.0000	2.4102
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	2.0700e-003	0.0196	0.0179	3.0000e-005		1.1100e-003	1.1100e-003		1.0300e-003	1.0300e-003	0.0000	2.3931	2.3931	6.8000e-004	0.0000	2.4102

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3.6 Paving - 2019**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.2000e-004	2.1400e-003	1.0000e-005	5.6000e-004	0.0000	5.6000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.5133	0.5133	2.0000e-005	0.0000	0.5137
Total	2.9000e-004	2.2000e-004	2.1400e-003	1.0000e-005	5.6000e-004	0.0000	5.6000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.5133	0.5133	2.0000e-005	0.0000	0.5137

3.7 Architectural Coating - 2019**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0209					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7000e-004	4.5900e-003	4.6000e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	0.6383	0.6383	5.0000e-005	0.0000	0.6397
Total	0.0215	4.5900e-003	4.6000e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	0.6383	0.6383	5.0000e-005	0.0000	0.6397

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3.7 Architectural Coating - 2019**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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0209					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7000e-004	4.5900e-003	4.6000e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	0.6383	0.6383	5.0000e-005	0.0000	0.6397
Total	0.0215	4.5900e-003	4.6000e-003	1.0000e-005		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	0.6383	0.6383	5.0000e-005	0.0000	0.6397

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3.7 Architectural Coating - 2019**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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.2100e-003	0.0859	0.0942	3.9000e-004	0.0233	5.3000e-004	0.0238	6.2600e-003	5.0000e-004	6.7700e-003	0.0000	36.1506	36.1506	2.2100e-003	0.0000	36.2058
Unmitigated	8.2100e-003	0.0859	0.0942	3.9000e-004	0.0233	5.3000e-004	0.0238	6.2600e-003	5.0000e-004	6.7700e-003	0.0000	36.1506	36.1506	2.2100e-003	0.0000	36.2058

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	20.91	3.96	2.04	61,015	61,015
Total	20.91	3.96	2.04	61,015	61,015

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.492402	0.034496	0.167383	0.136948	0.023406	0.006040	0.021602	0.106741	0.001802	0.001770	0.005495	0.001006	0.000911

5.0 Energy Detail

Historical Energy Use: N

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5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	3.4000e-004	3.0700e-003	2.5800e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.3411	3.3411	6.0000e-005	6.0000e-005	3.3610
NaturalGas Unmitigated	3.4000e-004	3.0700e-003	2.5800e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.3411	3.3411	6.0000e-005	6.0000e-005	3.3610

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	62610	3.4000e-004	3.0700e-003	2.5800e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.3411	3.3411	6.0000e-005	6.0000e-005	3.3610
Total		3.4000e-004	3.0700e-003	2.5800e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.3411	3.3411	6.0000e-005	6.0000e-005	3.3610

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5.2 Energy by Land Use - NaturalGas**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	62610	3.4000e-004	3.0700e-003	2.5800e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.3411	3.3411	6.0000e-005	6.0000e-005	3.3610
Total		3.4000e-004	3.0700e-003	2.5800e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.3411	3.3411	6.0000e-005	6.0000e-005	3.3610

5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	26460	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

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5.3 Energy by Land Use - Electricity**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	26460	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail**6.1 Mitigation Measures Area**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0138	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005
Unmitigated	0.0138	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005

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6.2 Area by SubCategory**Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.0900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0117					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005
Total	0.0138	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.0900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0117					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005
Total	0.0138	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	6.0000e-005

7.0 Water Detail

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7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.2201	0.0226	5.3000e-004	0.9443
Unmitigated	0.2201	0.0226	5.3000e-004	0.9443

7.2 Water by Land Use**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0.69375 / 0	0.2201	0.0226	5.3000e-004	0.9443
Total		0.2201	0.0226	5.3000e-004	0.9443

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7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0.69375 / 0	0.2201	0.0226	5.3000e-004	0.9443
Total		0.2201	0.0226	5.3000e-004	0.9443

8.0 Waste Detail**8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.7551	0.0446	0.0000	1.8708
Unmitigated	0.7551	0.0446	0.0000	1.8708

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8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	3.72	0.7551	0.0446	0.0000	1.8708
Total		0.7551	0.0446	0.0000	1.8708

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	3.72	0.7551	0.0446	0.0000	1.8708
Total		0.7551	0.0446	0.0000	1.8708

9.0 Operational Offroad

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

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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

Appendix B

Biological Evaluation Report

Biological Resource Evaluation

San Joaquin Manganese Removal Phase II Project

Fresno County, California



PREPARED FOR:

The City of San Joaquin
21900 Colorado Avenue
San Joaquin, CA 93660

PREPARED BY:

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July 2018

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Executive Summary

The City of San Joaquin (City) proposes to improve its water infrastructure. The proposed project will involve installing a new well (Well 6), 2300 linear feet of 10-inch pipeline between the new well and an existing well (Well 4), and approximately 700 feet of 12-inch pipeline to connect the new well to the existing water distribution system. The project will also involve constructing a new Greensand Plus Pressure Filter System at Well 6 and installing about 400 linear feet of 6-inch sewer pipe between Well 6 and the existing sewer system. The sewer pipe will be needed to dispose of manganese sludge generated from the treatment system at Well 6. The purpose of this project is to (1) remove harmful levels of manganese from the City's water supply and (2) increase the City's water supply capacity to meet maximum daily demands and peak hour demands.

The City will obtain financing for the project from various sources including the State Water Resources Control Board and the United States Department of Housing and Urban Development. Consequently, the project must not only meet environmental documentation and review requirements under the California Environmental Quality Act (CEQA) but federal requirements under the National Environmental Policy Act (NEPA) as well as "CEQA-Plus" requirements specific to State Water Resources Control Board funding from the Drinking Water State Revolving Fund.

To evaluate whether the project may affect biological resources under CEQA, NEPA, and CEQA-Plus purview, we (1) obtained official lists from the United States Fish and Wildlife Service and the California Department of Fish and Wildlife of special-status species and designated and proposed critical habitat, (2) reviewed other relevant background information such as aerial images and topographic maps, and (3) conducted a field reconnaissance survey of the project site.

This biological resource evaluation summarizes (1) existing biological conditions on the project site, (2) the potential for special-status species and regulated habitats to occur on or near the project site, (3) the potential impacts of the proposed project on biological resources and regulated habitats, and (4) measures to reduce those potential impacts to a less-than-significant level under CEQA, NEPA, and CEQA-Plus. We concluded the project will have no effect on regulated habitats but could affect one special-status species, the state-listed as threatened Swainson's hawk (*Buteo swainsoni*), and other nesting migratory birds, but these effects can be reduced to less-than-significant levels with mitigation.

Abbreviations

Abbreviation	Definition
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
FE	Federally listed as Endangered
FESA	Federal Endangered Species Act
FP	Fully Protected
FT	Federally listed as Threatened
GPM	Gallons Per Minute
MCL	Maximum Contaminant Level
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
SE	State-listed as Endangered
SSSC	State Species of Special Concern
ST	State-listed as Threatened
SWRCB	State Water Resources Control Board
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 Introduction

1.1 Background

The City of San Joaquin (City) proposes to improve its water infrastructure by installing a new well, treatment system, and associated water pipelines to reduce manganese concentration in the water supply and increase the City's water supply capacity. The City will obtain financing for this water infrastructure improvements project (Project) from multiple sources, including the State Water Resources Control Board and the United States Department of Housing and Urban Development. Because the Project will be funded by state and federal funding sources, the project must meet not only state requirements under the California Environmental Quality Act (CEQA) but federal requirements under the National Environmental Policy Act (NEPA) as well as "CEQA-Plus" requirements specific to State Water Resources Control Board funding from the Drinking Water State Revolving Fund.

The purpose of this biological resource evaluation is to assess whether the Project will affect state- or federally protected resources pursuant to CEQA, NEPA, and CEQA-Plus guidelines. Such resources include species of plants or animals listed or proposed for listing under the Federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA), as well as those covered under the Migratory Bird Treaty Act (MBTA), the California Native Plant Protection Act, and various other sections of the California Fish and Game Code. Biological resources considered here also include designated or proposed critical habitat recognized under the FESA. This biological resource evaluation also addresses Project-related impacts to regulated habitats, which are those under the jurisdiction of the United States Army Corps of Engineers (USACE) or California Department of Fish and Wildlife (CDFW), as well as those addressed under the Wild and Scenic Rivers Act, Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and Executive Order 11988 pertaining to floodplain management.

1.2 Project Description

This Project will involve installing a new well (Well 6), a 71,000-gallon tank for backwash storage and sludge settling and associated filtration equipment, approximately 2300 linear feet of 10-inch diameter pipeline to convey raw ground water from Well 4 to Well 6, approximately 700 feet of 12-inch pipeline to connect Well 6 to the existing water distribution system, and approximately 400 feet of 6-inch sewer pipe to connect the new well filtration system to the existing sewer system to dispose of manganese sludge. In addition, approximately 1620 feet of new 6-inch water main will be installed and approximately 8200 feet of existing 6-inch water main will be replaced. These infrastructure improvements will help the City reliably meet the maximum daily demand of 1500 Gallons Per Minute (GPM) and the peak hour demand of 3339 GPM.

1.3 Project Location

The Project is within the city limits of San Joaquin about 12 miles southwest of Kerman in western Fresno County, California (Figure 1). Well 6 will be installed in a vacant dirt field at the eastern terminus of 6th Street, adjacent to the San Joaquin Park Sports Complex, and all other infrastructure will be installed within existing roadways and other developed or disturbed land cover (Figure 2).



Figure 1. Site vicinity map.



Figure 2. Water infrastructure improvements project site map.

1.4 Purpose and Need of Proposed Project

The purpose of the Project is to remove manganese from groundwater to a concentration below the Maximum Contaminate Level (MCL) of 50 µg/L and increase the city's water supply capacity to meet long-term maximum daily demands and peak hour demands. The Project is needed to meet statewide drinking water standards established by the State Water Resources Control Board Division of Drinking Water.

1.5 Consultation History

Lists of all species listed or proposed for listing as threatened or endangered and all designated or proposed critical habitat under the FESA that could occur near the Project site were obtained by Colibri Field Scientist Ruby Rebensdorf from the United States Fish and Wildlife Service (USFWS) website (<https://ecos.fws.gov/ipac/>) on 11 June 2018 (Appendix A).

1.6 Regulatory Framework

The relevant federal and state regulatory requirements and policies that guide the impact analysis of the Project are summarized below.

1.6.1 Federal Requirements

Federal Endangered Species Act. The USFWS and the National Oceanographic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) enforce the provisions stipulated in the Federal Endangered Species Act of 1973 (FESA, 16 USC Section 1531 et seq.). Threatened and endangered species on the federal list (50 Code of Federal Regulations [CFR] 17.11 and 17.12) are protected from take unless a Section 10 permit is granted to an entity other than a federal agency or a Biological Opinion with incidental take provisions is rendered to a federal lead agency via a Section 7 consultation. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. Pursuant to the requirements of the FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present on the project site and determine whether the proposed project may affect such species. Under the FESA, habitat loss is considered to be an impact to a species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species that is listed or proposed for listing under the FESA or result in the destruction or adverse modification of critical habitat proposed or designated for such species (16 USC §1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered significant and would require mitigation.

Migratory Bird Treaty Act. The federal Migratory Bird Treaty Act (MBTA) (16 United States Code [USC] §703, Supp. I, 1989) prohibits killing, possessing, trading, or other forms of take of

migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. “Take” is defined as the pursuing, hunting, shooting, capturing, collecting, or killing of birds, their nests, eggs, or young (16 USC §703 and §715n). This act encompasses whole birds, parts of birds, and bird nests and eggs. The MBTA specifically protects migratory bird nests from possession, sale, purchase, barter transport, import, and export, and take. For nests, the definition of take per 50 CFR 10.12 is to collect. The MBTA does not include a definition of an “active nest.” However, the “Migratory Bird Permit Memorandum” issued by the USFWS in 2003 clarifies the MBTA in that regard and states that the removal of nests, without eggs or birds, is legal under the MBTA, provided no possession (which is interpreted as holding the nest with the intent of retaining it) occurs during the destruction (USFWS 2003).

United States Army Corps of Engineers Jurisdiction. Areas meeting the regulatory definition of “waters of the United States” (jurisdictional waters) are subject to the jurisdiction of the United States Army Corps of Engineers (USACE) under provisions of Section 404 of the Clean Water Act (1972) and Section 10 of the Rivers and Harbors Act (1899). These waters may include all waters used, or potentially used, for interstate commerce, including all waters subject to the ebb and flow of the tide, all interstate waters, all other waters (intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of waters otherwise defined as waters of the United States, tributaries of waters otherwise defined as waters of the United States, the territorial seas, and wetlands adjacent to waters of the United States (33 CFR part 328.3). Ditches and drainage canals where water flows intermittently or ephemerally are not regulated as waters of the United States. Wetlands on non-agricultural lands are identified using the *Corps of Engineers Wetlands Delineation Manual* and related Regional Supplement (USACE 1987 and 2008). Construction activities, including direct removal, filling, hydrologic disruption, or other means in jurisdictional waters are regulated by the USACE. The placement of dredged or fill material into such waters must comply with permit requirements of the USACE. No USACE permit will be effective in the absence of state water quality certification pursuant to Section 401 of the Clean Water Act. The State Water Resources Control Board is the state agency (together with the Regional Water Quality Control Boards) charged with implementing water quality certification in California.

Wild and Scenic Rivers Act. The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with significant natural, cultural, and recreational values in a free-flowing condition. The Act safeguards the special character of these rivers, while also recognizing the potential for their appropriate use and development.

Magnuson-Stevens Fishery Conservation and Management Act. The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (Public law 94-265; Statutes at Large 90 Stat. 331; 16 U.S.C. ch. 38 § 1801 et seq.) establishes a management system for national marine and estuarine fishery resources. This legislation requires that all federal agencies consult the NMFS regarding all actions or proposed actions permitted, funded, or undertaken that may adversely affect “essential fish habitat (EFH).” EFH is defined as “waters and substrate necessary

to fish for spawning, breeding, feeding, or growth to maturity.” The Magnuson-Stevens Act states that migratory routes to and from anadromous fish spawning grounds are considered EFH. The phrase “adversely affect” refers to any impact that reduces the quality or quantity of EFH. Federal activities that occur outside of EFH, but which may have an impact on EFH must also be considered. The Act applies to salmon species, groundfish species, highly migratory species such as tuna, and coastal pelagic species such as anchovies.

Executive Order 11988: Floodplain Management. Executive Order 11988 (42 Federal Register 26951, 3 CFR, 1977 Comp., p. 117) requires federal agencies to avoid to the extent possible the long-term and short-term adverse impacts associated with occupying and modifying flood plains and to avoid direct and indirect support of developing floodplains wherever there is a practicable alternative.

1.6.2 State Requirements

California Endangered Species Act. The California Endangered Species Act (CESA) of 1970 (Fish and Game Code Section 2050 et seq., and CCR Title 14, Subsection 670.2, 670.51) prohibits the take of species listed under CESA (14 CCR Subsection 670.2, 670.5). Take is defined as hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture, or kill. Under CESA, state agencies are required to consult with the California Department of Fish and Wildlife [CDFW, formerly California Department of Fish and Game (CDFG)] when preparing CEQA documents. Consultation ensures that proposed projects or actions do not have a negative effect on state-listed species. During consultation, CDFW determines whether take would occur and identifies “reasonable and prudent alternatives” for the project and conservation of special-status species. CDFW can authorize take of state-listed species under Sections 2080.1 and 2081(b) of Fish and Game Code in those cases where it is demonstrated that the impacts are minimized and mitigated. Take authorized under section 2081(b) must be minimized and fully mitigated. A CESA permit must be obtained if a project will result in take of listed species, either during construction or over the life of the project. Under CESA, CDFW is responsible for maintaining a list of threatened and endangered species designated under state law (Fish and Game Code 2070). CDFW also maintains lists of species of special concern, which serve as “watch lists.” Pursuant to the requirements of CESA, a state or local agency reviewing a proposed project within its jurisdiction must determine whether the proposed project will have a potentially significant impact upon such species. Project-related impacts to species on the CESA list would be considered significant and would require mitigation. Impacts to species of concern or fully protected species would be considered significant under certain circumstances.

California Environmental Quality Act. The California Environmental Quality Act (CEQA) of 1970 (Subsections 21000–21178) requires that CDFW be consulted during the CEQA review process regarding impacts of proposed projects on special-status species. Special-status species are defined under CEQA Guidelines subsection 15380(b) and (d) as those listed under FESA and CESA and species that are not currently protected by statute or regulation but would be considered rare, threatened, or endangered under these criteria or by the scientific community. Therefore,

species considered rare or endangered are addressed in this biological resource evaluation regardless of whether they are afforded protection through any other statute or regulation. The California Native Plant Society (CNPS) inventories the native flora of California and ranks species according to rarity (CNPS 2017). Plants with Rare Plant Ranks 1A, 1B, 2A, or 2B are considered special-status species under CEQA.

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380(d) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if it can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the FESA and the section of the California Fish and Game Code dealing with rare and endangered plants and animals. Section 15380(d) allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the USFWS or CDFW (i.e., candidate species) would occur. Thus, CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agency has an opportunity to designate the species as protected, if warranted.

California Native Plant Protection Act. The California Native Plant Protection Act of 1977 (California Fish and Game Code Section 1900–1913) requires all state agencies to use their authority to carry out programs to conserve endangered and otherwise rare species of native plants. Provisions of the act prohibit the taking of listed plants from the wild and require the project proponent to notify CDFW at least 10 days in advance of any change in land use, which allows CDFW to salvage listed plants that would otherwise be destroyed.

Nesting birds. California Fish and Game Code Subsections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds, their nests, and eggs. California Fish and Game Code Section 3511 lists birds that are “Fully Protected” as those that may not be taken or possessed except under specific permit.

California Department of Fish and Wildlife Jurisdiction. The CDFW has regulatory jurisdiction over lakes and streams in California. Activities that divert or obstruct the natural flow of a stream; substantially change its bed, channel, or bank; or use any materials (including vegetation) from the streambed, may require that the project applicant enter into a Streambed Alteration Agreement with the CDFW in accordance with California Fish and Game Code Section 1602.

2.0 Methods

2.1 Desktop Review

As a framework for the evaluation and reconnaissance survey, we obtained an official USFWS species list for the Project (USFWS 2018, Appendix A). In addition, we searched the California Natural Diversity Data Base (CNDDDB, CDFW 2018) and the California Native Plant Society's Inventory of Rare and Endangered Plants (CNPS 2018) for records of special-status plant and animal species in the Project area. Regional lists of special-status species were compiled using USFWS, CNDDDB, and CNPS database searches confined to the San Joaquin 7.5-minute United States Geological Survey (USGS) topographic quad, which encompasses the Project site, and the eight surrounding quads (Tranquility, Jamesan, Kerman, Helm, Five Points, Westside, Tres Pinos Farms, and Cantua Creek). Local lists of special-status species were compiled using CNDDDB records from within 5 miles of the Project site. Species for which the Project site does not provide suitable habitat were eliminated from further consideration. We also reviewed aerial imagery from Google Earth and other sources, USGS topographic maps, and relevant literature.

2.2 Reconnaissance Survey

Colibri scientists Howard Clark and Ryan Slezak conducted a field reconnaissance survey of the Project site on 23 May 2018. The Project site and a 50-foot buffer surrounding the Project site were walked and thoroughly inspected to evaluate and document the potential for the site to support federally or state-protected resources. The survey area also included a 0.5-mile buffer around the Project site to evaluate the potential occurrence of nesting special-status raptors (Figure 5). All plants except those under cultivation in agricultural fields or planted in residential or commercial areas and all animals (vertebrate wildlife species) observed within the survey area were identified and documented. The survey area was evaluated for the presence of regulated habitats, including lakes, streams, and other waters using methods described in the *Wetlands Delineation Manual* and regional supplement (USACE 1987, 2008).

2.3 Effects Analysis and Significance Criteria

2.3.1 Effects Analysis

Factors considered in evaluating the effects of the Project on special-status species included the (1) presence of designated or proposed critical habitat in the survey area, (2) potential for the survey area to support special-status species, (3) dependence of any such species on specific habitat components that would be removed or modified, (4) the degree of impact to habitat, (5) abundance and distribution of habitat in the region, (6) distribution and population levels of the species, (7) cumulative effects of the Project and any future activities in the area, and (8) the potential to mitigate any adverse effects.

Factors considered in evaluating the effects of the Project on migratory birds included the potential for the Project to result in (1) mortality of migratory birds or (2) loss of migratory bird nests containing viable eggs or nestlings.

Factors considered in evaluating the effects of the Project on regulated habitats included the (1) presence of features comprising or potentially comprising waters of the United States, Wild and Scenic Rivers, essential fish habitat (EFH), floodplains, and lakes or streams within the survey area, and (2) potential for the Project to impact such habitats.

2.3.2 Significance Criteria

CEQA defines “significant effect on the environment” as “a substantial, or potentially substantial, adverse change in the environment.” (Pub. Res. Code, §21068). Under CEQA Guidelines Section 15065, a project's effects on biological resources are deemed significant where the project would do the following:

- 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

In addition to the Section 15065 criteria, Appendix G within the CEQA Guidelines includes six additional impacts to consider when analyzing the effects of a project. Under Appendix G, which also satisfy significance criteria identified under NEPA, a project's effects on biological resources are deemed significant where the project would do the following:

- 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 CDFW, or on any species listed under the FESA or identified as a candidate for listing by the USFWS.
- 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 CDFW or USFWS.
- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (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.

These criteria were used to determine whether the potential effects of the Project on biological resources qualify as significant.



Figure 3. Reconnaissance survey area map.

3.0 Results

3.1 Desktop Review

The official species list for the Project site (USFWS 2018, Table 1, Appendix A) includes eight species listed as threatened or endangered under the FESA. Those species include the threatened vernal pool fairy shrimp (*Branchinecta lynchi*), the threatened Delta smelt (*Hypomesus transpacificus*), the threatened California red-legged frog (*Rana draytonii*), the endangered blunt-nosed leopard lizard (*Gambelia sila*), the threatened giant garter snake (*Thamnophis gigas*), the endangered Fresno kangaroo rat (*Dipodomys nitratoide exilis*), the endangered giant kangaroo rat (*Dipodomys ingens*), and the endangered San Joaquin kit fox (*Vulpes macrotis mutica*). As identified in the official species list (USFWS 2018b, Appendix A), the Project site does not occur in designated or proposed critical habitat.

Searching the CNDDDB (CDFW 2018) for records of special-status species from within the San Joaquin 7.5-minute USGS topographic quad and the eight surrounding quads produced 138 records of 37 species (Table 1, Appendix B). Of those species, eight are known from within 5 miles of the Project site (Table 1, Figure 4). The non-federally-listed special-status species known from within 5 miles of the Project site include Munz's tidy tips (*Layia munzii* – California Rare Plant Rank 1B.2), burrowing owl (*Athene cunicularia* – State Species of Special Concern(SSSC)), mountain plover (*Charadrius montanus* - SSSC), Swainson's hawk (*Buteo swainsoni* – State-listed as Threatened), and American badger (*Taxidea taxus* - SSSC). Of those non-federally listed species, only Swainson's hawk could occur near the Project site (Table 1).

Searching the CNPS inventory of rare and endangered plants of California yielded 15 species with a California Rare Plant Rank (CRPR) (CNPS 2018, Appendix C), 12 of which have of a rank of 1B (Table 1). The only species not also identified in the CNDDDB search was Sanford's arrowhead (*Sagittaria sanfordii* – CRPR 1B.2, Table 1).

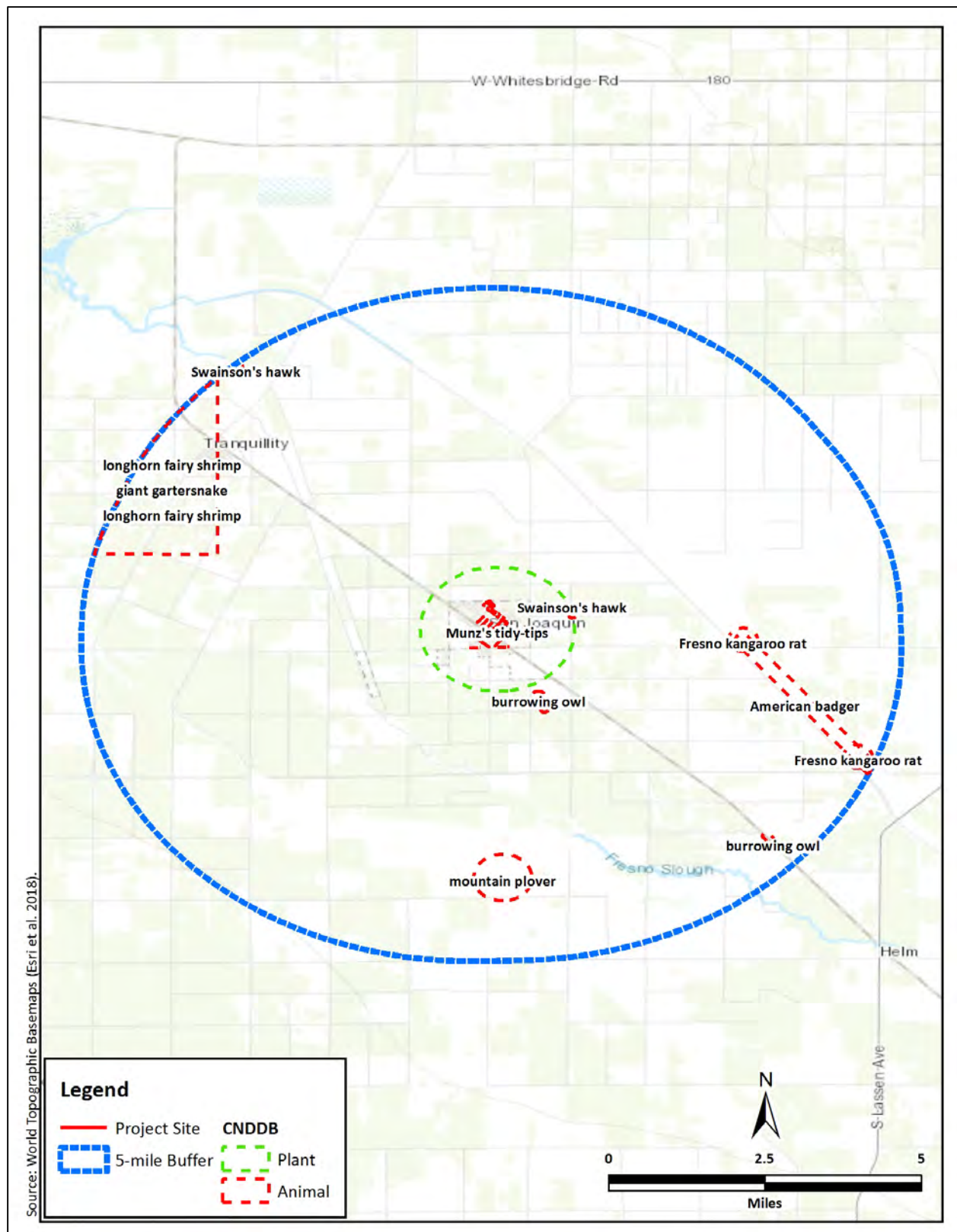


Figure 4. CNDDDB occurrence map.

Table 1. Special-status species, their listing status, habitat requirements, and potential to occur on or near the Project site.

Species	Status ¹	Habitat	Potential to Occur ²
Federally and State-Listed Endangered or Threatened Species			
Longhorn fairy shrimp (<i>Branchinecta longiantenna</i>)	FE	Vernal pools; including depressions in sandstone outcroppings and claypan pools.	None. Habitat lacking; no vernal pools in the survey area.
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	FT	Vernal pools; some artificial depressions, stock ponds, vernal swales, ephemeral drainages, and seasonal wetlands.	None. Habitat lacking; no vernal pools in the survey area.
Delta smelt (<i>Hypomesus transpacificus</i>)	FT, SE	River channels, tidally influenced sloughs.	None. Habitat lacking; no connectivity with habitat.
California red-legged frog (<i>Rana draytonii</i>)	FT, SSSC	Creeks, ponds, and marshes for breeding; burrows for upland refuge.	None. Habitat lacking; no records from within 5 miles.
Blunt-nosed leopard lizard (<i>Gambelia sila</i>)	FE, SE, FP	Grassland and upland scrub with burrows for refuge.	None. Habitat lacking; no suitable land cover types.
Giant gartersnake (<i>Thamnophis gigas</i>)	FT, ST	Marshes, sloughs, drainage canals, irrigation ditches, and slow-moving creeks.	None. Habitat lacking; no suitable land cover types.
Swainson's hawk (<i>Buteo swainsoni</i>)	ST	Large trees for nesting with adjacent grasslands, alfalfa fields, or grain fields for foraging.	Low. Potential nest trees in the survey area, but foraging habitat is limited.
Fresno kangaroo rat (<i>Dipodomys nitratoideus exilis</i>)	FE, SE	Sandy, alkaline, saline, and clay-based soils in upland scrub and grassland.	None. Habitat lacking; no suitable land cover types.
Giant kangaroo rat (<i>Dipodomys ingens</i>)	FE	Sandy loam, alkaline, saline, and clay-based soils in upland scrub and grassland.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.

Species	Status ¹	Habitat	Potential to Occur ²
Nelson's antelope squirrel (<i>Ammospermophilus nelsoni</i>)	ST	Alkali desert scrub, grassland with sparse vegetation on loamy or sandy soil.	None. Habitat lacking; no suitable land cover types; no records from within five miles.
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	FE, ST	Grassland and upland scrub.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
State Species of Special Concern			
Western spadefoot (<i>Spea hammondi</i>)	SSSC	Open areas with sandy gravelly soils; rain pools for breeding.	None. Habitat lacking; no records from within 5 miles.
Coast horned lizard (<i>Phrynosoma blainvillii</i>)	SSSC	Open, generally sandy areas, washes, and flood plains in a variety of habitats.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
San Joaquin coachwhip (<i>Masticophis flagellum ruddocki</i>)	SSSC	Open, dry, treeless areas in valley grassland and saltbush scrub.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
Two-striped gartersnake (<i>Thamnophis hammondi</i>)	SSSC	Near water for foraging, often in rocky areas, oak woodland, chaparral, brushland, and coniferous forest.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
Northern western pond turtle (<i>Actinemys marmorata</i>)	SSSC	Ponds, rivers, marshes, streams, and irrigation ditches, usually with aquatic vegetation. Basking sites and suitable upland areas for egg laying.	None. Habitat lacking; no records from within 5 miles.
Mountain plover (<i>Charadrius montanus</i>)	SSSC	Semi-arid plains, grasslands, sandy desert, plowed fields.	None. Habitat lacking.
Burrowing owl (<i>Athene cunicularia</i>)	SSSC	Grassland and upland scrub with friable soil; some agricultural or other developed and disturbed areas with	None. No suitable burrows or burrow surrogates in the survey area.

Species	Status ¹	Habitat	Potential to Occur ²
		ground squirrel burrows.	
Tricolored blackbird (<i>Agelaius tricolor</i>)	SSSC	Wetlands when available, agricultural fields, cultivated feedlots, irrigated pastures.	None. Although agricultural foraging habitat is present in the survey area, no potential nesting habitat was found; no records from within 5 miles.
Western mastiff bat (<i>Eumops perotis californicus</i>)	SSSC	Prefers open, arid areas with high cliffs; open forests, woodlands, and grasslands for foraging.	None. Habitat lacking; no records from within 5 miles.
Western red bat (<i>Lasiurus blossevillii</i>)	SSSC	Riparian woodland, desert riparian corridors for roosting in trees.	None. Habitat lacking; no records from within 5 miles.
American badger (<i>Taxidea taxus</i>)	SSSC	Variable. Open, dry grassland and coniferous forests, farms, meadows, marshes, desert.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
Otherwise Rare or Imperiled Species			
Crotch bumble bee (<i>Bombus crotchii</i>)	CNDDDB	Open grassland and scrub habitats. Food plant genera include <i>Antirrhinum</i> , <i>Phacelia</i> , <i>Clarkia</i> , <i>Dendromecon</i> , <i>Eschscholzia</i> , and <i>Eriogonum</i> .	None. Habitat lacking; no records from within 5 miles.
White-faced ibis (<i>Plegadis chihi</i>)	CNDDDB	Freshwater marshes (sometimes saltwater), irrigated areas, flooded pastures, damp meadows with standing water.	None. No nesting habitat in survey area; no records from within 5 miles.
Merlin (<i>Falco columbarius</i>)	CNDDDB	Grassland, open forests with conifers or deciduous trees for	None. Habitat lacking; no suitable land cover types;

Species	Status ¹	Habitat	Potential to Occur ²
		nesting, sometimes near water.	no records from within 5 miles.
San Joaquin pocket mouse (<i>Perognathus inornatus</i>)	CNDDDB	Arid annual grassland, savannah, and desert-scrub with sandy washes.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
Yuma myotis (<i>Myotis yumanensis</i>)	CNDDDB	Variety of areas from juniper and riparian woodlands to desert areas near open water for foraging.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
California Rare Plants			
Brittlescale (<i>Atriplex depressa</i>)	1B.2	Vernal pools, grasslands, or upland scrub with alkaline or clay soils.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
California alkali grass (<i>Puccinellia simplex</i>)	1B.2	Scrub, meadows, seeps, grassland, and vernal pools.	None. Habitat lacking; no records from within 5 miles.
Golden goodmania (<i>Goodmania luteola</i>)	4.2	Mojave Desert scrub, meadows and seeps, playas, valley and foothill grassland, alkaline or clay soil.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
Heartscale (<i>Atriplex cordulata</i> var. <i>cordulata</i>)	1B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland (sandy), saline or alkaline soil.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
Hoover's eriastrum (<i>Eriastrum hooveri</i>)	4.2	Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland, sometimes gravelly soil.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
Indian Valley bush-mallow (<i>Malacothamnus aboriginum</i>)	1B.2	Chaparral, cismontane woodland, rocky, granitic soil, often in burned areas.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
Lesser saltscale (<i>Atriplex minuscula</i>)	1B.1	Chenopod scrub, playa, and grassland	None. Habitat lacking; no suitable land cover types;

Species	Status ¹	Habitat	Potential to Occur ²
		communities with sandy, alkaline soil.	no records from within 5 miles.
Lost Hills crownscale (<i>Atriplex coronata</i> var. <i>vallicola</i>)	1B.2	Chenopod scrub, valley and foothill grassland with alkaline soil, and vernal pools.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
Munz's tidy tips (<i>Layia munzii</i>)	1B.2	Chenopod scrub, valley and foothill grassland (alkaline clay).	None. Habitat lacking; no suitable land cover types.
Palmate-bracted bird's-beak (<i>Chloropyron palmatum</i>)	1B.1	Chenopod scrub, valley and foothill grassland with alkaline soil.	None. Habitat lacking; no records from within 5 miles.
Recurved larkspur (<i>Delphinium recurvatum</i>)	1B.2	Chenopod scrub, cismontane woodland, valley and foothill grassland with alkaline soil.	None. Habitat lacking; no records from within 5 miles.
Sanford's arrowhead (<i>Sagittaria sanfordii</i>)	1B.2	Freshwater marsh-wetlands.	None. Habitat lacking; no records from within 5 miles.
San Joaquin bluecurls (<i>Trichostema ovatum</i>)	4.2	Chenopod scrub, valley and foothill grassland.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
San Joaquin woollythreads (<i>Monolopia congdonii</i>)	1B.2	Chenopod scrub, valley and foothill grassland (sandy).	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.
Subtle orache (<i>Atriplex subtilis</i>)	1B.2	Valley and foothill grassland.	None. Habitat lacking; no suitable land cover types; no records from within 5 miles.

CDFW (2018), CNPS (2018), USFWS (2018b).

Status¹	Potential to Occur²
CNDDDB = Recognized by the CNDDDB, other state or federal agencies, or conservation groups as rare or imperiled.	None: Species or sign not observed; conditions unsuitable for occurrence.
FE = Federally listed Endangered	Low: Neither species nor sign observed; conditions marginal for occurrence.
FT = Federally listed Threatened	
FP = Fully Protected	
SE = State-listed Endangered	
SR = State-designated Rare	
ST = State-listed Threatened	
SSSC = State Species of Special Concern	

CNPS California Rare Plant Rank¹:	Threat Ranks:
1A – plants presumed extirpated in California and either rare or extinct elsewhere.	0.1 – seriously threatened in California (> 80% of occurrences).
1B – plants rare, threatened, or endangered in California and elsewhere.	0.2 – moderately threatened in California (20-80% of occurrences).
4 – plants have limited distribution in California.	0.3 – not very threatened in California (<20% of occurrences).

3.2 Reconnaissance Survey

3.2.1 Land Use and Habitats

The Project site is in a residential and industrial setting surrounded by agricultural land (Figures 5, 6, and 7). The proposed new well (Well 6) and associated infrastructure is in a fallow agricultural field (Figure 5) bordered by residential development to the west and south, a public park to the southeast, and agricultural land cover to the north and east. A storm-water basin is within 50 feet of the new well site and proposed water pipeline alignment (Figure 6). The remainder of the Project site is within existing roads in residential and commercial areas (Figure 7).



Figure 5. Photograph showing a fallow field at the proposed site of Well 6, with a public park visible in the background.



Figure 6. Photograph showing a storm-water basin within 50 feet of the Project site.



Figure 7. Photograph showing the planned water pipeline alignment near Well 4, surrounded by residential development.

3.2.2 Plant and Animal Species Observed

In all, 18 plant species (3 native and 15 nonnative) were found during the survey (Table 2). One reptile species, 13 bird species, and one mammal species were also detected (Table 2).

Table 2. Plant and animal species observed during the reconnaissance survey.

Common Name	Scientific Name	Status
Plants		
Family Amaranthaceae		
Rough pigweed	<i>Amaranthus retroflexus</i>	Nonnative
Family Asteraceae		
Common sow thistle	<i>Sonchus oleraceus</i>	Nonnative
Common sunflower	<i>Helianthus annuus</i>	Native

Prickly lettuce	<i>Lactuca serriola</i>	Nonnative
Family Brassicaceae		
Black mustard	<i>Brassica nigra</i>	Nonnative
Swine-cress	<i>Lepidium coronopus</i>	Nonnative
Family Chenopodiaceae		
Russian thistle	<i>Salsola tragus</i>	Nonnative
Family Convolvulaceae		
Field bindweed	<i>Convolvulus arvensis</i>	Nonnative
Family Euphorbiaceae		
Turkey-mullein	<i>Croton setiger</i>	Native
Family Geraniaceae		
Redstem stork's bill	<i>Erodium cicutarium</i>	Nonnative
Family Malvaceae		
Alkali mallow	<i>Malva leprosa</i>	Native
Cheeseweed	<i>Malva parviflora</i>	Nonnative
Family Poaceae		
Bermuda grass	<i>Cynodon dactylon</i>	Nonnative
Foxtail	<i>Hordeum leporinum</i>	Nonnative
Ripgut brome	<i>Bromus diandrus</i>	Nonnative
Wild oat	<i>Avena fatua</i>	Nonnative
Family Polygonaceae		
Curly dock	<i>Rumex crispus</i>	Nonnative
Family Zygophyllaceae		
Puncture vine	<i>Tribulus terrestris</i>	Nonnative
Reptiles		
Family Iguanidae		
San Joaquin fence lizard	<i>Sceloporus occidentalis biseriatus</i>	None
Birds		
Family Columbidae		
Rock pigeon	<i>Columba livia</i>	None
Family Charadriidae		
Killdeer	<i>Charadrius vociferus</i>	MBTA
Family Ardeidae		
Great egret	<i>Ardea alba</i>	MBTA

Black-crowned night-heron	<i>Nycticorax nycticorax</i>	MBTA
Family Tyrannidae		
Western kingbird	<i>Tyrannus verticalis</i>	MBTA
Family Corvidae		
American crow	<i>Corvus brachyrhynchos</i>	MBTA
Family Hirundinidae		
Barn swallow	<i>Hirundo rustica</i>	MBTA
Family Mimidae		
Northern mockingbird	<i>Mimus polyglottos</i>	MBTA
Family Sturnidae		
European starling	<i>Sturnus vulgaris</i>	None
Family Passeridae		
House sparrow	<i>Passer domesticus</i>	None
Family Fringillidae		
House finch	<i>Haemorhous mexicanus</i>	MBTA
Family Icteridae		
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	MBTA
Great-tailed grackle	<i>Quiscalus mexicanus</i>	MBTA
Mammals		
Family Geomyidae		
Botta's pocket gopher	<i>Thomomys bottae</i>	None

MTBA: Covered under the Migratory Bird Treaty Act.

3.2.3 Special-Status Species

One special-status species, Swainson's hawk, could occur near the Project site. Swainson's hawk uses open areas such as grasslands and some agricultural fields for foraging and medium to large trees near open areas for nesting. Agricultural fields suitable for foraging and medium to large trees for nesting were within 0.5 miles of the Project site.

3.2.4 Nesting Birds and the Migratory Bird Treaty Act

Migratory birds could nest on or near the Project site. Such species include, but are not limited to, mourning dove (*Zenaida macroura*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk, western kingbird (*Tyrannus verticalis*), American crow (*Corvus brachyrhynchos*), California scrub-jay (*Aphelocoma californica*), and house finch (*Carpodacus mexicanus*).

3.2.5 Regulated Habitats

One potentially regulated habitat, an isolated storm-water basin, was within 50 feet of the Project site. No impacts to this feature are anticipated.

The nearest river, the San Joaquin River, is about 11 miles northwest of the Project site. According to the Wild and Scenic Rivers Act, the San Joaquin River does not retain a wild and scenic classification (USFWS 2018a).

No marine or estuarine fishery resources or migratory routes to and from anadromous fish spawning grounds were present in the survey area. In addition, no EFH, defined by the Magnuson-Stevens Act as those resources necessary for fish spawning, breeding, feeding, or growth to maturity, were present in the survey area.

The Project site is not within a flood plain (Federal Emergency Management Agency 2018). The nearest flood plain limit is about 1.2 miles north of the Project site, associated with the Fresno Slough, a backwater wetland feature that is hydrologically connected to the San Joaquin River.

4.0 Environmental Impacts

4.1 Effects Determinations

4.1.1 Critical Habitat

We conclude the Project will have **no effect** on critical habitat as no critical habitat has been designated or proposed in the survey area.

4.1.2 Special-Status Species

We conclude the Project **may affect but is not likely to adversely affect** the state-listed as threatened Swainson's hawk. The Project is not expected to affect any other special-status species due to the lack of habitat for those species in the survey area.

4.1.3 Migratory Birds

We conclude the Project **may affect but is not likely to adversely affect** nesting migratory birds.

4.1.4 Regulated Habitats

Although one potentially regulated habitat feature, a storm-water basin, was present in the survey area, we conclude the Project will have **no effect** on regulated habitats as no impacts are anticipated.

4.2 Significance Determinations

This Project will not: (1) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS as no riparian habitat or other sensitive natural community was present in the survey area (criterion b); (2) have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means (criterion c) as no impacts to wetlands will occur; (3) conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (criterion e) as no trees or biologically sensitive areas will be impacted; or (4) conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan (criterion f) as no such plan has been adopted. Thus, these significance criteria are not analyzed further.

The remaining statutorily defined criteria provided the framework for criteria BIO1 and BIO2 below. These criteria are used to assess the impacts to biological resources stemming from the Project and provide the basis for determinations of significance:

- Criterion BIO1: 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 CDFW or USFWS.
- Criterion BIO2: 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.

4.2.1 Direct and Indirect Impacts

4.2.1.1 Potential Impact #1: Have a Substantial Effect on any Special-Status Species (Criterion BIO1)

The Project has the potential to substantially impact the state-listed as threatened Swainson's hawk, which could nest near the Project site. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Loss of fertile eggs or nestlings, or any activities resulting in nest abandonment, would constitute a significant impact. We recommend that Mitigation Measure B1 (below) be included in the conditions of approval to reduce the potential impact to a less-than-significant level.

Mitigation Measure B1. Protect nesting Swainson's hawks.

1. To the extent practicable, construction shall be scheduled to avoid the Swainson's hawk nesting season, which extends from March through August.
2. If it is not possible to schedule work between September and February, a qualified biologist shall conduct a survey for active Swainson's hawk nests within 0.25 miles of the Project site no more than 14 days prior to the start of construction. If an active nest is found within 0.25 miles, and the qualified biologist determines that Project activities would disrupt nesting, a construction-free buffer or limited operating period shall be implemented in consultation with the CDFW.

4.2.1.2 Potential Impact #2: Interfere Substantially with Native Wildlife Movements, Corridors, or Nursery Sites (Criterion BIO2)

The Project has the potential to impede the use of nursery sites for native birds protected under the Migratory Bird Treaty Act and California Fish and Game Code. Migratory birds are expected to nest on and near the Project site. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise

lead to nest abandonment. Disturbance that causes nest abandonment or loss of reproductive effort is considered take by the CDFW. Loss of fertile eggs or nestlings, or any activities resulting in nest abandonment, could constitute a significant impact if the species is particularly rare in the region. Construction activities such as trenching and grading that disturb a rare nesting bird on the site or immediately adjacent to the construction zone could constitute a significant impact. We recommend that the mitigation measure B2 (below) be included in the conditions of approval to reduce the potential impact to a less-than-significant level.

Mitigation Measure B2. Protect nesting birds.

1. To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from February through August.
2. If it is not possible to schedule construction between September and January, pre-construction surveys for nesting birds shall be conducted by a qualified biologist to ensure that no active nests will be disturbed during Project implementation. A pre-construction survey shall be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the qualified biologist shall inspect all potential nest substrates in and immediately adjacent to the impact areas for nests. If an active nest is found close enough to the construction area to be disturbed by these activities, the qualified biologist shall determine the extent of a construction-free buffer to be established around the nest. If work cannot proceed without disturbing the nesting birds, work may need to be halted or redirected to other areas until nesting and fledging are completed or the nest has otherwise failed for non-construction related reasons.

4.2.2 Cumulative Impacts

Mitigation Measures B1 and B2 would reduce any contribution to cumulative impacts on biological resources to a less-than-significant level.

4.2.3 Unavoidable Significant Adverse Impacts

No unavoidable significant adverse impacts on biological resources would occur from implementing the Project.

5.0 Literature Cited

- California Department of Fish and Wildlife (CDFW). 2018. State and Federally Listed Endangered, Threatened, and Rare Plants of California. Biogeographic data branch, California Natural Diversity Data Base. <https://www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data>, accessed 07 June 2018.
- California Native Plant Society, Rare Plant Program (CNPS). 2018. Inventory of Rare and Endangered Plants (online edition, v8-03). California Native Plant Society, Sacramento, CA. <http://www.rareplants.cnps.org>. Accessed 07 June 2018.
- Federal Emergency Management Agency. 2018. Map Number FM06047C0200G, Merced County, California. National Flood Insurance Program. Map revised December 2, 2008. <https://msc.fema.gov/portal/>. Accessed 12 June 2018.
- United States Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual. Wetland Research Program Technical Report Y-87-1.
- United States Army Corps of Engineers (USACE). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). ERDC/EL TR-08-28. http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/trel08-28.pdf. Accessed 12 June 2018.
- United States Fish and Wildlife Service. 2018a. National Wild and Scenic Rivers System. <https://www.rivers.gov/rivers/kings.php>. Accessed 12 June 2018.
- United States Fish and Wildlife Service. 2018b. IPaC Information for Planning and Conservation. <https://ecos.fws.gov/ipac/>. Accessed 08 June 2018.

Appendix A. Official list of threatened and endangered species and critical habitats.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish And Wildlife Office

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

Phone: (916) 414-6600 Fax: (916) 414-6713



In Reply Refer To:

June 11, 2018

Consultation Code: 08ESMF00-2018-SLI-2367

Event Code: 08ESMF00-2018-E-06811

Project Name: San Joaquin Manganese Removal Phase II

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2018-SLI-2367

Event Code: 08ESMF00-2018-E-06811

Project Name: San Joaquin Manganese Removal Phase II

Project Type: WATER QUALITY MODIFICATION

Project Description: The City of San Joaquin proposes to improve its water infrastructure by installing a new well, treatment system, and associated water lines to reduce manganese concentration in the water supply and to increase the city's water supply capacity. It will involve installing a new well (Well 6). This system will include 2,300 linear feet of 10-inch pipeline between Well 4 and the proposed Well 6. The City also proposes to construct two new Greensand Plus Pressure Filter Systems at Well 5 and Well 6. Approximately 1,500 feet of 4-inch sewer pipe will be needed to connect to the existing sewer system for the disposal of manganese sludge from the treatment systems at Wells 5 and 6.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/36.59911473361548N120.19308816846731W>



Counties: Fresno, CA

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [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.

Mammals

NAME	STATUS
Fresno Kangaroo Rat <i>Dipodomys nitratooides exilis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5150 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/37/office/11420.pdf	Endangered
Giant Kangaroo Rat <i>Dipodomys ingens</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6051	Endangered
San Joaquin Kit Fox <i>Vulpes macrotis mutica</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

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

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

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

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix B. CNDDDB occurrence records.



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad> IS < > Tranquillity (3612063)> OR < Jamesan (3612062)> OR < Kerman (3612061)> OR < Cantua Creek (3612053)> OR < San Joaquin (3612052)> OR < Helm (3612051)> OR < Tres Picos Farms (3612043)> OR < Westside (3612042)> OR < Five Points (3612041))

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Agelaius tricolor</i> tricolored blackbird	G2G3 S1S2	None Candidate Endangered	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	160 235	951 S:8	0	0	0	0	0	8	7	1	8	0	0
<i>Ammospermophilus nelsoni</i> Nelson's antelope squirrel	G2 S2S3	None Threatened	BLM_S-Sensitive IUCN_EN-Endangered	176 340	262 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Athene cunicularia</i> burrowing owl	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	150 337	1971 S:15	0	4	7	2	0	2	4	11	15	0	0
<i>Atriplex cordulata</i> var. <i>cordulata</i> heartscale	G3T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	50 200	66 S:4	0	2	0	0	1	1	3	1	3	0	1
<i>Atriplex coronata</i> var. <i>vallicola</i> Lost Hills crownscale	G4T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	160 190	78 S:3	0	1	0	0	0	2	2	1	3	0	0
<i>Atriplex depressa</i> brittlescale	G2 S2	None None	Rare Plant Rank - 1B.2	160 190	61 S:6	0	4	0	0	0	2	4	2	6	0	0
<i>Atriplex minuscula</i> lesser saltscale	G2 S2	None None	Rare Plant Rank - 1B.1	163 200	37 S:6	0	4	0	0	0	2	5	1	6	0	0
<i>Atriplex subtilis</i> subtle orache	G1 S1	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	185 190	24 S:3	0	0	0	0	1	2	3	0	2	1	0
<i>Bombus crotchii</i> Crotch bumble bee	G3G4 S1S2	None None		220 220	234 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Branchinecta longiantenna</i> longhorn fairy shrimp	G1 S1S2	Endangered None	IUCN_EN-Endangered	165 165	20 S:2	2	0	0	0	0	0	0	2	2	0	0



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Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Branchinecta lynchi</i> vernal pool fairy shrimp	G3 S3	Threatened None	IUCN_VU-Vulnerable	165 165	766 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Buteo swainsoni</i> Swainson's hawk	G5 S3	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	160 500	2460 S:12	0	3	2	1	0	6	5	7	12	0	0
<i>Charadrius montanus</i> mountain plover	G3 S2S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	140 175	90 S:3	0	1	1	0	0	1	1	2	3	0	0
<i>Chloropyron palmatum</i> palmate-bracted salty bird's-beak	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	160 195	25 S:4	0	1	1	0	2	0	3	1	2	0	2
<i>Coastal and Valley Freshwater Marsh</i> Coastal and Valley Freshwater Marsh	G3 S2.1	None None		155 155	60 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Delphinium recurvatum</i> recurved larkspur	G2? S2?	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	180 195	100 S:4	0	0	1	0	3	0	3	1	1	0	3
<i>Dipodomys nitratoides exilis</i> Fresno kangaroo rat	G3TH SH	Endangered Endangered	IUCN_VU-Vulnerable	160 200	12 S:6	0	0	2	0	2	2	6	0	4	2	0
<i>Emys marmorata</i> western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	155 160	1344 S:4	1	3	0	0	0	0	0	4	4	0	0
<i>Eriastrum hooveri</i> Hoover's eriastrum	G3 S3	Delisted None	Rare Plant Rank - 4.2 SB_RSABG-Rancho Santa Ana Botanic Garden	160 200	47 S:7	0	1	2	0	4	0	7	0	3	0	4
<i>Eumops perotis californicus</i> western mastiff bat	G5T4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern WBWG_H-High Priority	160 175	294 S:2	0	0	0	0	0	2	1	1	2	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Falco columbarius</i> merlin	G5 S3S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	165 165	36 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Gambelia sila</i> blunt-nosed leopard lizard	G1 S1	Endangered Endangered	CDFW_FP-Fully Protected IUCN_EN-Endangered	160 1,302	323 S:3	0	0	0	0	0	3	3	0	3	0	0
<i>Lasiurus blossevillei</i> western red bat	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern WBWG_H-High Priority	160 160	126 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Layia munzii</i> Munz's tidy-tips	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	160 210	59 S:4	0	0	1	0	0	3	3	1	4	0	0
<i>Malacothamnus aboriginum</i> Indian Valley bush-mallow	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden	500 500	63 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Masticophis flagellum ruddocki</i> San Joaquin coachwhip	G5T2T3 S2?	None None	CDFW_SSC-Species of Special Concern	160 180	93 S:2	0	2	0	0	0	0	0	2	2	0	0
<i>Monolopia congdonii</i> San Joaquin woollythreads	G2 S2	Endangered None	Rare Plant Rank - 1B.2 SB_UCBBG-UC Berkeley Botanical Garden	190 500	100 S:4	0	0	0	0	4	0	4	0	0	4	0
<i>Myotis yumanensis</i> Yuma myotis	G5 S4	None None	BLM_S-Sensitive IUCN_LC-Least Concern WBWG_LM-Low-Medium Priority	160 160	263 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Northern Claypan Vernal Pool</i> Northern Claypan Vernal Pool	G1 S1.1	None None		175 175	21 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Perognathus inornatus</i> San Joaquin Pocket Mouse	G2G3 S2S3	None None	BLM_S-Sensitive IUCN_LC-Least Concern		123 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Phrynosoma blainvillii</i> coast horned lizard	G3G4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	165 170	774 S:2	1	1	0	0	0	0	0	2	2	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Plegadis chihi</i> white-faced ibis	G5 S3S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	150 150	20 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Puccinellia simplex</i> California alkali grass	G3 S2	None None	Rare Plant Rank - 1B.2	180 220	71 S:5	0	0	0	0	3	2	4	1	2	1	2
<i>Sagittaria sanfordii</i> Sanford's arrowhead	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	185 185	126 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Spea hammondi</i> western spadefoot	G3 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	160 185	463 S:4	1	1	2	0	0	0	0	4	4	0	0
<i>Taxidea taxus</i> American badger	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	160 180	559 S:2	1	1	0	0	0	0	1	1	2	0	0
<i>Thamnophis gigas</i> giant gartersnake	G2 S2	Threatened Threatened	IUCN_VU-Vulnerable	160 195	366 S:5	1	0	1	0	1	2	2	3	4	1	0
<i>Thamnophis hammondi</i> two-striped gartersnake	G4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	160 160	175 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Valley Sink Scrub</i> Valley Sink Scrub	G1 S1.1	None None		160 160	29 S:1	1	0	0	0	0	0	1	0	1	0	0
<i>Vulpes macrotis mutica</i> San Joaquin kit fox	G4T2 S2	Endangered Threatened		175 190	1017 S:2	0	0	0	0	0	2	2	0	2	0	0

Appendix C. CNPS plant list.

Plant List

Inventory of Rare and Endangered Plants

15 matches found. *Click on scientific name for details*

Search Criteria

Found in Quads 3612063, 3612062, 3612061, 3612053, 3612052, 3612051, 3612043 3612042 and 3612041;

 [Modify Search Criteria](#)  [Export to Excel](#)  [Modify Columns](#)  [Modify Sort](#)  [Display Photos](#)

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G3T2
Atriplex coronata var. vallicola	Lost Hills crownscale	Chenopodiaceae	annual herb	Apr-Sep	1B.2	S2	G4T2
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Atriplex minuscula	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	1B.1	S2	G2
Atriplex subtilis	subtle orache	Chenopodiaceae	annual herb	Jun,Aug,Sep(Oct)	1B.2	S1	G1
Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	1B.1	S1	G1
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	1B.2	S2?	G2?
Eriastrum hooveri	Hoover's eriastrum	Polemoniaceae	annual herb	Mar-Jul	4.2	S3	G3
Goodmania luteola	golden goodmania	Polygonaceae	annual herb	Apr-Aug	4.2	S3	G3
Layia munzii	Munz's tidy-tips	Asteraceae	annual herb	Mar-Apr	1B.2	S2	G2
Malacothamnus aboriginum	Indian Valley bush-mallow	Malvaceae	perennial deciduous shrub	Apr-Oct	1B.2	S3	G3
Monolopia congdonii	San Joaquin woollythreads	Asteraceae	annual herb	Feb-May	1B.2	S2	G2
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	1B.2	S2	G3
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	1B.2	S3	G3
Trichostema ovatum	San Joaquin bluecurls	Lamiaceae	annual herb	Jul-Oct	4.2	S4	G4

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Questions and Comments

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Appendix C

Cultural Resources Inventory

Historic Properties Inventory and Evaluation for City of San Joaquin Wells 4 and 6 Manganese Treatment and Distribution Pipeline Project, Fresno County, California

Jessica Jones, Randy Baloian, and Diana Dyste

Prepared By



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September 2018
draft

USGS San Joaquin, CA 7.5' topographic quadrangle

4.02-acre APE (6.02 acres surveyed; 5.29 intensive survey; 0.73 acres opportunistic survey)

Keywords: Hanford & Summit Lake Railway, Southern Pacific Railroad (P-10-003930/CA-FRE-3109H); San Joaquin Valley

MANAGEMENT SUMMARY

Applied EarthWorks, Inc. (Æ) performed a historic properties inventory and evaluation for the City of San Joaquin Wells 4 and 6 Manganese Treatment and Distribution Pipeline Project (Project) in Fresno County, California. The Project would improve the existing City of San Joaquin (City) water infrastructure through the installation of a new water supply well (Well 6), a consolidated treatment system to remove elevated manganese concentrations for Wells 4 and 6, and improvements to the City's aging water distribution system. The Project will be funded by the State Water Resources Control Board Clean Water State Revolving Fund, a joint federal-state program. The Project thus requires compliance with Section 106 of the National Historic Preservation Act and the California Environmental Quality Act.

To meet federal and state standards, Æ conducted a cultural resource study under contract to Crawford & Bowen Planning, Inc. to determine whether cultural resources are present within the Area of Potential Effects (APE). The investigation included a records search at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS) to identify previously recorded cultural resources and prior studies in the 4.02-acre APE and in a 0.5-mile radius of the APE; a search of the Native American Heritage Commission's (NAHC) Sacred Lands File for known sacred resources in the APE and request for contact information for individuals and tribal representatives who may have information about the Project area; a buried site sensitivity assessment; an archaeological and built-environment pedestrian survey of the APE; and the recordation and evaluation of a segment of the Hanford & Summit Lake Railway of the Southern Pacific Railroad.

The SSJVIC records search revealed eight previous cultural studies and one historical built environment resource (James Irrigation District) within a 0.5-mile radius of the APE. There is one historical built environment resource—the Southern Pacific Railroad (CA-FRE-3109H)—within the APE. The SSJVIC has no record of prior cultural studies conducted within the APE; however, Æ recently completed an inventory of 4.0 acres within the City of San Joaquin for the Wells 3 and 5 Manganese Treatment Project. No cultural resources were identified as a result of that inventory. A search of the NAHC's Sacred Lands File and outreach to local tribal representatives did not result in the identification of sacred or special sites within the APE. There has been no information provided by tribal representatives to date. The buried site analysis revealed that the sedimentology and soils have moderate to high potential for harboring well-preserved archaeological deposits; however, the extent of modern development and disturbance across the APE results in a low probability of encountering archaeological deposits in primary context.

Æ identified and documented a segment of the Hanford & Summit Lake Railway of the Southern Pacific Railroad (CA-FRE-3109H) within the APE. Æ evaluated the significance of the recorded segment and recommended it ineligible for listing in the National Register of Historic Places and California Register of Historical Resources. No additional cultural resources were identified during this inventory. Thus, no historic properties will be effected by the proposed Project.

Consistent with state and federal statutes, Æ advises that in the event archaeological remains are encountered during Project development or ground-moving activities within any portion of the Project APE, all work in the vicinity of the find should be halted until a qualified archaeologist can identify the discovery and assess its significance. In addition, if human remains are uncovered during construction, the Fresno County Coroner is to be notified immediately to arrange their proper treatment and disposition. If the remains are identified by the County Coroner—on the basis of archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the County Coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent, who will be afforded the opportunity to recommend treatment of the human remains following protocols in California Public Resources Code 5097.98.

A copy of this report and the associated cultural resource records will be transmitted to the SSJVIC for inclusion in the CHRIS. Field notes and photographs are on file at Æ's office in Fresno, California.

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1

INTRODUCTION

Applied EarthWorks, Inc. (Æ) performed a historic properties inventory and evaluation for the City of San Joaquin Wells 4 and 6 Manganese Treatment and Distribution Pipeline Project (Project) in Fresno County, California (Figure 1-1). The proposed Project will help the City of San Joaquin (City) address inadequacies in its existing water supply, treatment, and distribution system by installing: (1) a new water supply well (Well 6), (2) a centralized treatment system to reduce manganese levels in the drinking water to acceptable levels, and (3) replacing valves, hydrants, and lines to its aging distribution system. Because the Project is funded by the State Water Resources Control Board (SWRCB) Clean Water State Revolving Fund, a joint federal-state program, the City must comply with both California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act (NHPA). Both the NHPA (36 Code of Federal Regulations [CFR] 800.1[a]) and CEQA (Public Resources Code [PRC] 21000[g]) mandate that government agencies consider the impacts of their actions on the environment, which includes cultural resources.

1.1 PROJECT DESCRIPTION

As outlined in the City of San Joaquin Water Supply, Treatment, Storage, and Distribution Improvement Preliminary Engineering Report (Gouveia Engineering 2017), the current Project consists of Water Supply Alternative B, Water Treatment Alternative II, and distribution system improvements. Alternative B is the construction of Well 6 to replace existing Well 4, which was constructed in 1978 and has undergone recurrent maintenance to replace failed casings, correct sand intrusion, and reduce bacteria levels. The well was rehabilitated in 2016 after being taken offline in 2010 due to SWRCB Division of Drinking Water (DDW) threshold violations (Gouveia Engineering 2017:10). However, repairs to Well 4 are not expected to endure over time. Following the DDW's 2010 recommendation, Alternative B, or installation of Well 6, has been proposed. The new Well 6 would pump from the San Joaquin Groundwater Basin—Kings Subbasin. As a newly established well, it would require manganese treatment (Gouveia Engineering 2017:22). Construction of Well 6 would include drilling a test well, drilling the production well, equipping the production well (pump, motor, controls, etc.), treatment, site improvements, and connecting the well to the existing water system. After Well 6 is in operation, Well 4 would be used as a backup water source as needed (Gouveia Engineering 2017:25).

Water Treatment Alternative II is the construction of a consolidated system for treating groundwater produced by Wells 4 and 6. Development of the treatment system includes installation of a pressure filter system near Well 6 to treat water produced by Wells 4 and 6. Transportation of water from Well 4 to Well 6 for treatment would occur via the installation of a new 2,700-foot-long 10-inch pipeline connecting Wells 4 and 6. A 71,000-gallon tank will be installed southeast of Well 6 to facilitate backwash water storage and sludge settling. A new 400-foot-long, 6-inch-diameter sewer pipeline would be installed to allow sludge to move between the tank and existing sewer collection system to dispose of manganese. An additional 700-foot-long, 12-inch-diameter water pipeline would connect Well 6 to the existing water system (Gouveia Engineering 2017:35).

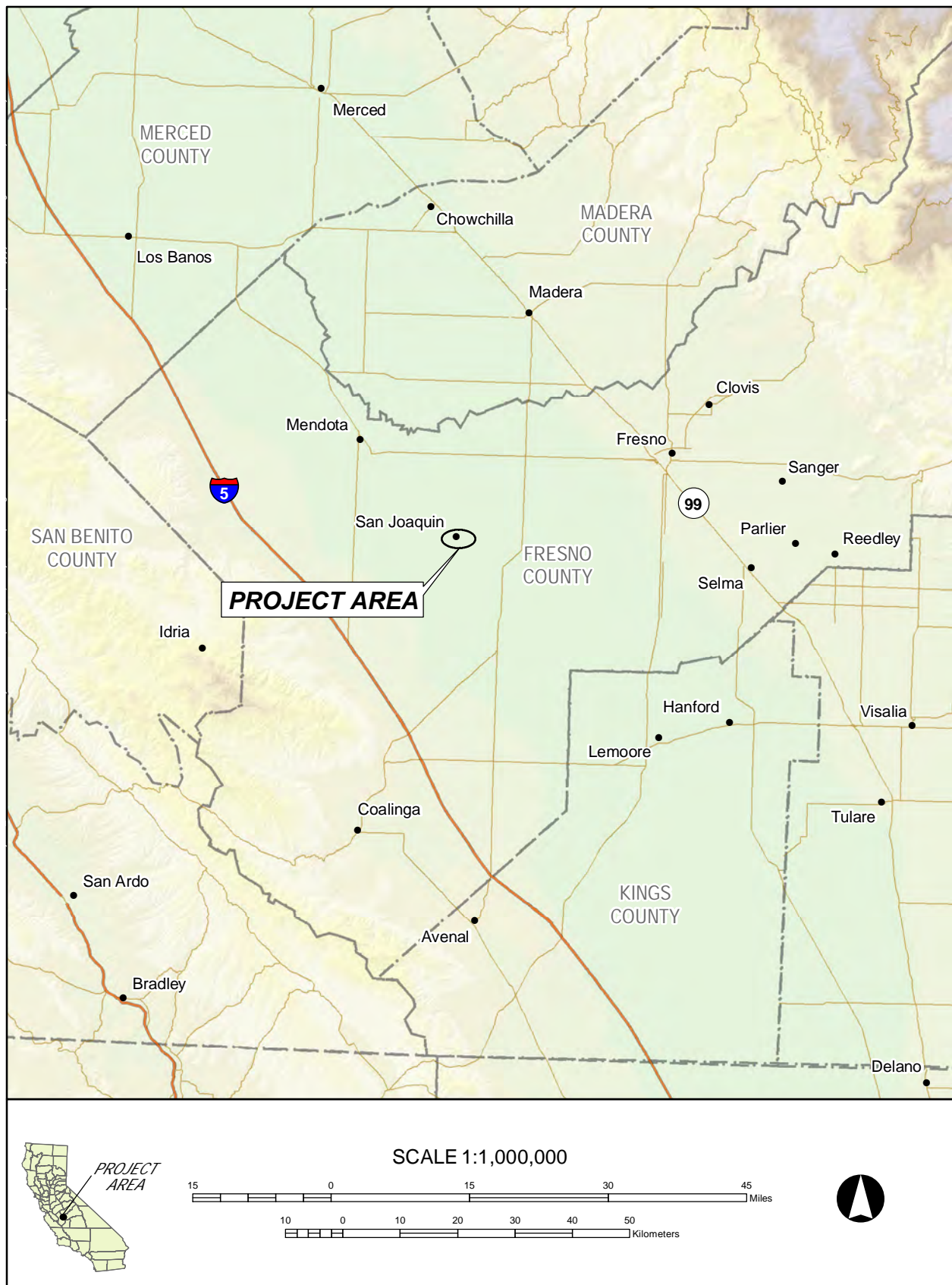


Figure 1-1 Project vicinity in Fresno County, California.

Improvements to the aging distribution system include the installation of a 6-inch-diameter pipeline along Manning Avenue to complete the connection of replacement pipelines between Railroad Avenue and Colorado Avenue and along various alleys between West Colorado Avenue and Nevada Avenue, Idaho Avenue, and Railroad Street, and from Manning Street to Pine Avenue between Oregon Avenue and Idaho Avenue (Gouveia Engineering 2017:47).

The Project area described above appears in Sections 23 and 24 of Township 15 South, Range 16 East, Mount Diablo Base Line and Meridian, as depicted on the U.S. Geological Survey (USGS) San Joaquin 7.5-minute topographic quadrangle (Figure 1-2).

1.2 TERMINOLOGY

For the purposes of this report, a cultural resource is defined as a prehistoric or historical archaeological site, or a historical building, structure, or object. Consistent with 36 CFR 60.3, the term “historical” applies to archaeological artifacts and features as well as buildings, structures, or objects that are 50 years old or older. The importance or significance of a cultural resource depends on whether it qualifies at the federal level for inclusion in the National Register of Historic Places (NRHP) or at the state or local level for inclusion in the California Register of Historical Resources (CRHR). Cultural resources determined eligible for the NRHP are termed “historic properties,” while those eligible for the CRHR are called “historical resources” (36 CFR 800.16[1]; CCR 15064.5[a]). Under both statutes, the determination of eligibility to the NRHP or CRHR is based in part on the consideration of significance criteria as defined in 36 CFR 60.4 and 14 CCR 15064.5(a)(3). Significance criteria are discussed in further detail in Section 3.6.

To assist the City with its compliance efforts, and under subcontract to Crawford & Bowen Planning, Inc., Æ conducted a historic properties inventory for the Project to determine whether cultural resources are present within the Project’s Area of Potential Effects (APE). The APE is the three-dimensional geographic area within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, should they exist. The SWRCB has defined the Project APE to include 4.02 acres that encompass all areas proposed for installation of Project components (Figure 1-3). These include eight 16-foot-wide corridors for waterline replacements; three 16-foot-wide corridors for new waterline installation, two 16-foot-wide corridors for sewage/backwash piping, and the locations of proposed treatment and pump facilities for Well 6. The new well will be drilled to a depth similar to the existing wells (approximately 500 feet). The vertical APE for the other project elements is not expected to exceed more than 5 feet in depth.

1.3 PROFESSIONAL QUALIFICATIONS

Æ Senior Archaeologist Diana T. Dyste (M.A.), a Registered Professional Archaeologist (RPA 39362477), served as project manager, providing technical and administrative oversight for all aspects of the Project. Ms. Dyste meets the Secretary of the Interior’s Standards for Professional Qualifications in Archaeology and Ethnography. Staff Archaeologists Kathleen Jernigan and Eric Kowalski (B.A.) performed the archaeological pedestrian survey. Staff Archaeologist and GIS Technician Jessica Jones (B.A.) served as primary author of the report, including the preparation of maps and graphics. Æ Historian Randy Baloian prepared the NRHP evaluation of

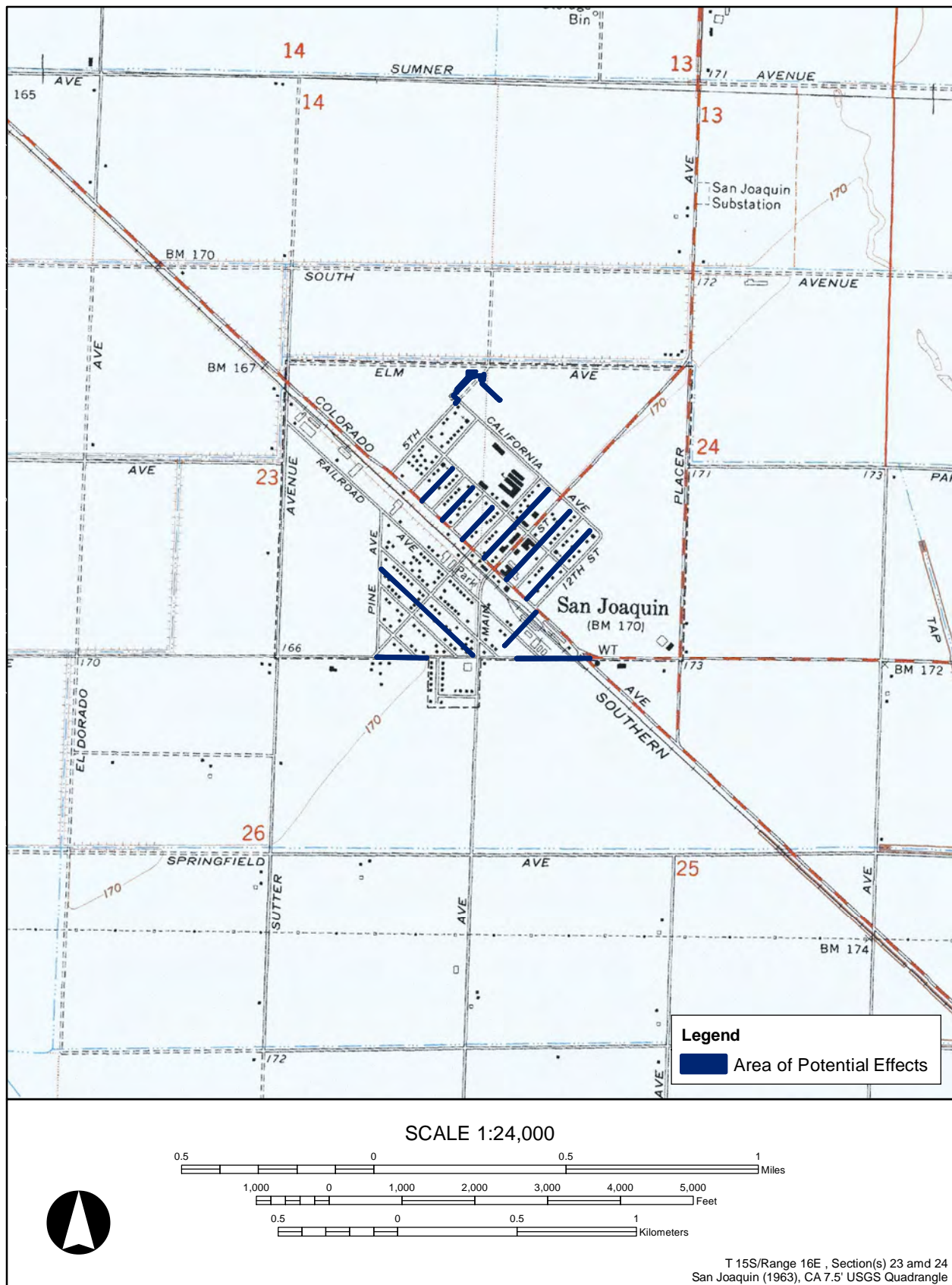


Figure 1-2 Project location on the USGS San Joaquin, CA 7.5-minute topographic quadrangle.



Figure 1-3 Aerial view of the APE.

the segment of the Hanford & Summit Lake Railway of the Southern Pacific Railroad (CA-FRE-3109H) within the APE. Résumés for key personnel are provided in Appendix A.

1.4 REPORT STRUCTURE

This technical report that has been prepared according to the California Office of Historic Preservation (1990) standards outlined in *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* and fulfills the requirements for a NHPA Section 106 compliant report as outlined by the SWRCB in *Overview of Section 106 of the National Historic Preservation Act Reporting Process for Drinking Water and Clean Water State Revolving Fund Applicants*, received from the DDW in August 2018. Findings of Æ’s inventory of the Project area are presented herein, including (1) a records search at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS); (2) a search of the Native American Heritage Commission’s (NAHC) Sacred Lands File and nongovernmental outreach to local Native American individuals and tribal representatives; (3) an archaeological and built environment pedestrian survey of the APE; (4) a buried site sensitivity study, and (4) an evaluation of a segment of the Hanford & Summit Lake Railway (HSLR) of the Southern Pacific Railroad.

The report is organized following the ARMR guidelines. Chapter 1 includes a Project description and identifies key personnel, while Chapter 2 presents the natural, prehistoric, historical, and ethnohistoric cultural background of the Project area. The methods and findings of archival studies, Native American outreach, buried site assessment, and pedestrian survey are described in Chapters 3 and 4. Evaluation of one built environment property, a railroad segment, is provided in Chapter 5, and Chapter 6 summarizes the Project findings and offers management recommendations. Chapter 7 is a bibliography of references cited throughout the report. Appended to the report are: résumés of key personnel (Appendix A), the CHRIS records search results (Appendix B), Æ’s nongovernmental Native American outreach (Appendix C), and the Department of Parks and Recreation (DPR) 523 series record forms for the historic built environment property (Appendix D).

2 PROJECT SETTING

2.1 NATURAL ENVIRONMENT

The Project is in the San Joaquin Valley, the southern half of an elongated trough known as the Great Valley. The Great Valley is a 50-mile-wide lowland that extends approximately 500 miles south from the Cascade Range to the Tehachapi Mountains. The Great Valley is divided by two prominent hydrologic features, the Sacramento and San Joaquin rivers, which drain into San Francisco Bay. Between the Mesozoic and Cenozoic eras, the Great Valley served as a shallow marine embayment containing numerous lakes, primarily within the San Joaquin Valley (Norris and Webb 1990:412). As a result, the upper levels of the Great Valley floor are composed of alluvium and flood material. Below these strata are layers of marine and nonmarine rocks, including claystone, sandstone, shale, basalt, andesite, and serpentine. Waters began to diminish about 10 million years ago, eventually dwindling to the drainages, tributaries, and small lakes that have characterized much of the Holocene Epoch (Hill 1984:28).

The San Joaquin Valley is bounded by the Sacramento–San Joaquin Delta to the north, the Sierra Nevada to the east, the Coast Ranges to the west, and the Tehachapi Mountains to the south. The San Joaquin Valley comprises two distinct hydrologic subbasins: the San Joaquin and the Tulare. The San Joaquin Subbasin is drained by the San Joaquin River. Before historic drainage projects and modern reclamation, seasonal flooding produced extensive wetlands. Lakes, marshes, and sloughs once covered more than 5,000 square kilometers in the San Joaquin Valley (Moratto 1984:168). The largest of these was ancient Tulare Lake, which occupied a structural basin formed by downwarping and spanned as much as 45 kilometers across from shore to shore (Davis et al. 1959). Along with Buena Vista Lake and Kern Lake farther to the south, Tulare Lake was also partially contained by geological features peculiar to the southern end of the valley. Alluvial fans extending from the Kings River on the east and Los Gatos Creek on the west coalesced long ago into a ridge separating the extreme southern end of the San Joaquin Valley from the north end (Rosenthal et al. 2007). The lands to the south were arid, and runoff often was not able to maintain a discharge through the alluvium. The resulting natural dam formed by these alluvial fans directed all drainages into the basins of Tulare, Buena Vista, and Kern lakes, contributing to the impoundment of these wetlands (Gifford and Schenck 1926:7; Rosenthal et al. 2007). At times of flood, Buena Vista and Tulare lakes formerly spilled into a single basin and, combined with waters from the Kern, Kaweah, and Kings rivers, flowed into the San Joaquin River system (Oakeshott 1978; Wedel 1941). The size of the Kern and Tulare lakes fluctuated greatly in response to paleoclimatic changes; however, as a result of historic drainage projects, both are now dry most of the time (Arguelles and Moratto 1983).

The Fresno Slough has historically served as the northern flood outlet of Tulare Lake and the Kings River. The Fresno Slough was also a flooded backwater swamp of the San Joaquin River. Prior to agricultural development and control of the natural waterways, the area between Tulare Lake and the San Joaquin River was a vast swampland. A historical account written by George

Derby, who circa 1850 aspired to travel up the slough that connected the San Joaquin River to Tulare Lake reported:

the ground between the lake and the San Joaquin entirely cut up by small sloughs which had overflowed in every direction making the country a perfect swamp, which I found it a matter of great difficulty to cross [Yogi 1996:11].

Agriculture also spurred the replacement of native plants and animals with domesticated species. Common native plants today include white, blue, and live oaks (*Quercus* sp.) as well as walnut (*Juglans* sp.), cottonwood (*Populus fremontii*), willow (*Salix* sp.), and tule (*Schoenoplectus* sp.). Also prominent is bulrush (*Scirpus* sp.), cattail (*Typha* sp.), and various grasses, flowers, and saltbrush. The previously swampy valley floor once provided a lush habitat for a variety of animals including mule deer (*Odocoileus hemionus*), tule elk (*Cervus* sp.), pronghorn (*Antilocapra americana*), grizzly bears (*Ursus arctos horribilis*), black bears (*Ursus americanus*), and mountain lions (*Puma concolor*) (Preston 1981:245–247). Mammals commonly noted today are the gray wolf (*Canis lupus*), valley coyote (*Canis latrans*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), kit fox (*Vulpes macrotis*), and rabbits (Leporidae). Birds in the area include American osprey (*Panidon* sp.), redwing blackbird (*Agelaius phoeniceus*), marsh hawk (*Circus cyaneus*), willow and Nuttall woodpeckers (Picidae), western meadowlark (*Sturnella neglecta*), and quail (Phasianidae). The lakes, rivers, and streams throughout the vicinity provide habitat for anadromous and freshwater fish, including Chinook salmon (*Oncorhynchus tshawytscha*), white sturgeon (*Acipenser transmontanus*), Sacramento perch (*Archoplites interruptus*), rainbow trout (*Oncorhynchus mykiss*), thick-tailed chub (*Gila crassicauda*), and Sacramento sucker (*Catostomidae* sp.) (Preston 1981:249).

2.2 PREHISTORIC SETTING

Relatively few research-oriented archaeological investigations have been conducted in the Central Valley south of the Stockton area, and thus synthesized information on prehistoric events in the area is sparse (Moratto 1984:189, 191–193, 512, 573; Rosenthal et al. 2007). Research in the Project vicinity is rarer still, although a handful of excavations in support of cultural resource management efforts have been performed (Baloian 2007; Baloian et al. 2011; Becker 2003a, 2003b; Dougherty et al. 1993; Lloyd et al. 2014). Although these studies are few in number, the results nonetheless provide valuable information for understanding early human habitation of this region. A summary of available information is presented below.

A cultural sequence for the Central Valley was first proposed in the 1930s, after archaeologists from Sacramento Junior College and the University of California, Berkeley excavated numerous sites in the Delta and lower Sacramento Valley, many of which were mound sites (Heizer 1936; Heizer and Fenenga 1938; Heizer and Krieger 1935–1936; Lillard and Purves 1936; Riddell and Riddell 1940; Wedel 1935). Through an intersite comparison of stratigraphically distinct cultural assemblages, a tri-period chronological sequence—Early Horizon, Middle Horizon, and Late Horizon—was developed for the Delta region, defined primarily in terms of mortuary patterns and ornamental artifacts (Lillard et al. 1939; Moratto 1984:181–183).

Efforts to date this widely used Delta sequence were problematic due to the broad geographic and cultural range to which it was applied. Initial dates of 2500 B.C. for the Early Horizon,

1500 B.C. for the Middle Horizon, and A.D. 500 for the Late Horizon were developed mid-century (Heizer 1949) and have remained relatively unchanged. However, growing criticism and frustration with the limitations of the sequence (Bickel 1974; Gerow 1954), spurred by the development of more sophisticated dating techniques, prompted Ragir (1972), Bennyhoff (1972, as cited in Elsasser 1978), Fredrickson (1974), and others to modify the sequence and develop variations for specific localities in central California (see Moratto 1984). As Moratto (1984:215) summarizes, the prehistory of the mid Central Valley is better understood now in terms of the broad cultural “patterns” proposed by Fredrickson (1974) “which represent fundamental economic, technologic, and often social continuities over large areas and long intervals of time.”

Studies conducted in the 1960s along the eastern side of the Diablo Range, west of the Project area, resulted in the identification of a cultural sequence similar to that of the Delta region. Excavations conducted for the construction of several reservoirs, including San Luis (Olsen and Payen 1969; Riddell and Olsen 1965; Treganza 1960), Los Banos (Pritchard 1967, 1970), and Little Panoche (Olsen and Payen 1968), led to the development of four cultural complexes focused on the exploitation of the foothill-valley biotic zone (Table 2-1). Further refinement of the chronology is based on archaeological excavations of CA-MER-3, CA-FRE-128, and CA-MER-S-94 (Moratto 1984:189–193).

Table 2-1
Culture Phases in the Western San Joaquin Valley
(adapted from Moratto 1984:191–193)

Phase	Dates	Common Artifacts and Features
Positas Complex	ca. 3300–2600 B.C.	Shaped mortars, short cylindrical pestles, milling stones, perforated flat cobbles, spire-lopped <i>Olivella</i> beads
Pacheco B Complex	ca. 2600–1600 B.C.	Foliate bifaces, rectangular <i>Haliotis</i> ornaments, rectangular <i>Olivella</i> beads
Pacheco A Complex	ca. 1600 B.C.–A.D. 300	Multiple types of <i>Olivella</i> beads (often in interments), <i>Haliotis</i> disk beads and ornaments, perforated canine teeth, bone awls, whistles, grass saws, large stemmed and side-notched projectile points, milling stones, mortars, and pestles
Gonzaga Complex	A.D. 300–1000	Extended and flexed burials, bowl mortars and shaped pestles, squared and taper-stemmed projectile points, bone awls and grass saws, <i>Haliotis</i> ornaments, multiple types of <i>Olivella</i> wall beads
Undefined	A.D. 1000–1500	Archaeological sites in the region demonstrate an approximate 500-year hiatus in which there appears to be little to no evidence of cultural occupation during this time.
Panoche Complex	A.D. 1500–1850	Large circular structures; flexed burials; cremations; few milling stones; multiple types of mortars and pestles; bone awls, saws, whistles, and tubes; side-notched arrowheads; clamshell disk beads; <i>Haliotis</i> epidermis disk beads; <i>Olivella</i> wall beads

It is difficult to determine the ancestry of these early inhabitants. Olsen and Payen (1983) argue that Ohlone ancestors may have crossed the Diablo Range and established habitation on its eastern side near the pass. Others suggest that the artifact assemblages associated with occupation circa 1000 B.C.–A.D. 500 are more similar to those of the Valley Yokuts (Moratto

1984:193). The latest occupation, the Panoche Complex, is associated with the ethnohistoric Valley Yokuts who inhabited the region.

Archaeological evidence currently suggests that the initial occupants of the San Joaquin Valley settled mostly in lakeshore and streamside environments, including Tulare Lake and Lake Buena Vista south of the Project area, and used the foothills seasonally. Early “Paleoindian” sites, typified by fluted points, stemmed dart points, scrapers, and flaked stone crescents, indicate that occupation occurred possibly as early as 11,000 years ago (Fredrickson and Grossman 1977; Sampson 1991). Unfortunately, archaeological data for the Project area and adjacent areas is lacking; therefore, archaeological evidence has been derived from sites to the south, typically near ancient Tulare, Buena Vista, and Kern lakes, and to the north in Merced County.

The ancient shores of Tulare Lake, located south of the Project area, has yielded numerous early projectile point styles, including fluted Clovis-like specimens associated with human occupation dating to the Late Pleistocene-Early Holocene transitions 11,000 or more years ago (Riddell and Olsen 1969). Specifically, excavations at the Witt Site (CA-KIN-32) on the southwest shore, contains fluted projectile points as well as a procession of later types, suggesting continual occupation of the basin until historic contact (Fenenga 1993; Moratto 1984:81–82). The Tulare lakeshore has also yielded various scrapers, flaked stone crescents, Lake Mojave projectile points, and other stone artifacts typical of the Lake Mojave Period, which is presumed to have begun 9500 years before present (B.P.) and lasted to perhaps 7000–6500 B.P. (Hall 1993; Moratto 1984). Thus, the evidence, albeit scant, indicates that the area was frequented at an early date by bands of hunters preying on large herds of game animals. More recent analyses have revaluated these artifacts by examining the changing environmental conditions at the time and considering the mobility and adaptability of the inhabitants (Dillon 2002; Holliday and Miller 2014; Negrini et al. 2006).

In the foothills of the Sierra Nevada to the east of the Project area, investigations at CA-FRE-1671 produced data indicating a Yokuts presence in the San Joaquin Valley by A.D. 1300. Although the site has an earlier component dating between 700 B.C. and A.D. 300, an association with Yokuts is unclear (Price 1992). Earlier excavations at CA-FRE-64 indicate a Yokuts presence in the valley as early as A.D. 1100–1200 (Wallace et al. 1989).

Approximately 35 miles northwest of the Project area near the community of Dos Palos, excavations at CA-MER-323 (Dougherty et al. 1993) revealed a cemetery and intermittent habitation dating to the Pacheco A Complex (1600 B.C.–A.D. 300). The site appears to have been used by small mobile bands that relied on seeds and acorns as well as large game animals, such as elk and deer. Investigations at this site found a very high proportion of ground stone relative to flaked stone artifacts. *Olivella* shell beads were found exclusively in burial contexts, suggesting that these imported coastal beads served a special function within the local culture. The site’s constituents were dispersed broadly across an agricultural field, and only systematic testing provided a sufficient amount of data to accurately characterize the site (Dougherty et al. 1993). Two mound sites in the Project vicinity, CA-MER-53 and CA-FRE-42, once contained burials, ground and flaked stone artifacts, and *Olivella* and clay beads (Massey and Hewes 1939; McGeein 1950). Both have been either entirely or partially leveled for agricultural use; however, the brief descriptions on the site records suggest that they are similar to CA-MER-323.

North of Mendota and northwest of the Project, Æ identified a buried prehistoric site (CA-FRE-3529) dominated by vertebrate faunal remains, flaked and ground stone tools (i.e., handstones, obsidian biface fragments, patterned flake tools), and debitage. Other materials that were present but less frequent include freshwater shell and unmodified quartz crystals (Baloian et al. 2011). The site lies south of the San Joaquin River on the north bank of a remnant slough channel. Excavations yielded limited temporal material; however, the material recovered placed occupation within Pacheco A and B Phases (circa 2500–550 cal B.C.). This period is marked by a distinct adaptive pattern reflecting the emergence of logistically organized subsistence practices and increasing residential stability along river corridors of the Sacramento and San Joaquin valleys.

Along the Fresno Slough, near Helm, Æ discovered prehistoric archaeological sites and 22 prehistoric isolated artifacts along the slough and remnant water channels for a wetlands reserve study (Baloian 2007). The larger sites contained a rich artifact assemblage, suggesting seasonal occupation by inhabitants engaged in hunting, gathering, and food processing activities. Artifacts indicating ritual or ceremonial activities (e.g., crystals, charmstones) also were observed. Few temporally diagnostic artifacts were discovered to indicate the age of occupation; however, those observed suggest occupation along the slough between 500 and 8,000 years ago.

The impression gained from investigations in the Central Valley and neighboring foothills is one of highly mobile foragers who gradually adapted their technology, settlement patterns, and social structure in response to a changing natural environment. The shift in resource procurement from small animals and hard seeds toward acorns and larger game suggests intensified and more specialized use of local resources.

2.3 ETHNOGRAPHY

The Project is situated at the boundary between the Northern and Southern Valley Yokuts, although it is within the Northern Valley Yokuts ethnographic territory (Golla 2011:152; Wallace 1978a:462). At the time of first contact with the Spanish missionaries, the Yokuts people, which also includes southern valley and foothill groups, collectively inhabited the San Joaquin Valley as well as the eastern foothills of the Sierra Nevada from the Fresno River southward to the Kern River (Kroeber 1976). The Yokuts language belongs to the broader Penutian family, which subsumes a relatively diverse linguistic assemblage including Miwok, Costanoan, Maiduan, Takelma, Klamath-Modoc, Wintuan, and Utian groups (Silverstein 1978). Compared to other Penutian languages, however, Yokuts shows considerable internal linguistic homogeneity despite the vast number of dialects recorded for the language group, especially given the extent of its geographic distribution (Golla 2011:148). Dialects differ minimally and were mutually intelligible, at least among speakers of contiguous groups. This is largely because differences across dialects was lexical rather than phonological, and thus while vocabulary may have differed, sounds and speech patterns largely remained the same (Golla 2011:147–148). This relative lack of linguistic differentiation suggests that ancestors of the Yokuts entered California after the arrival and subsequent radiation of the more linguistically diverse Penutian groups such as the Miwok and Costanoan (Moratto 1984:554).

Native American inhabitants who may have occupied the nearby Project area, most likely belonging to the Nopchinchí or Pitkachi groups, would have depended on the rich and varied

array of food and material resources available along the banks of the San Joaquin River and nearby Fish Slough. In addition, these groups likely accessed resources via exchange with residents living near the Tulare Lake basin 40 miles southeast of the Project area, and the Fresno Slough to the east. Neighboring Northern Valley Yokuts groups included the Hoyima, Wakichi, and Hewchi, while neighboring Southern Valley Yokuts included the Apyachi (also Apichi), Nutunutu, Tachi, and Chunut (Golla 2011:149; Latta 1977:248; Wallace 1978b:448, 462). There are no known ethnohistoric villages recorded for the Northern Valley Yokuts near the Project area. The nearest recorded village was *Tape*, located at the great bend of the San Joaquin River. *Wewayo*, occupied by the Southern Valley Yokuts Apyachi tribe, was approximately 20 miles southeast of the Project area (Wallace 1978b:448). Numerous other villages were located to the east of Tulare Lake.

Native Americans living in the region relied on the plentiful supply of lacustrine, riparian, and land food resources, including clams, fish, raccoon, otter, waterfowl, elk, antelope, jackrabbits, small seeds, grass nuts, and tule seeds and roots. Wild seeds and acorns were harvested in the early summer and fall, respectively, and stored for use throughout the year. Burning was used to enhance the productivity of vegetable foods (Latta 1977). Differences in resource availability and abundance within the home range of each tribe formed the basis for exchange among the Yokuts. For instance, Kroeber (1976:523) pointed out that the rarity of oaks in the areas occupied by Southern Valley Yokuts perhaps explains “the permanent association and commingling of the majority of these tribes with their foothill neighbors.” Similarly, ecological differentiation underlay the economic reciprocity that existed among the tribes of the Tulare Lake basin. Lake-dwelling Yokuts possessed an abundant and perennial stock of fish and other lake resources but often lacked a sufficient supply of seeds and acorns. To the east where oaks and grasses are more plentiful, marsh- and channel-dwelling Yokuts, such as the Apyachi, enjoyed a predictable supply of acorns and seeds, but the availability of fish was limited to the windfall of salmon that was harvested during the spawning season (Wallace 1978a:450). The exchange of resources between lake- and channel-dwelling tribes was accomplished not only via trade but through the sharing of home ranges among adjacent groups (Kroeber 1976:484).

The Nopchinchí and Pitkachi, unlike Southern Valley Yokuts, had few permanent dwellings except those that were elevated above the highest flood levels. They resided in temporary oblong houses made of wooden or tule poles and covered with tule mats. Other common structures included sweathouses or ceremonial gathering coverings. Tules were used to manufacture a wide variety of items, including baskets, floor mats, sun shades, curtains, boats, baby cradles, and even women’s skirts (Latta 1977). Deer and rabbit skin was used to craft body coverings, and although males infrequently used natural plant dyes for tattooing, women often possessed tattoos consisting of lines, zig-zags, and dots down the chin and extending from the mouth corners.

At the broader interregional level, the villages of Tulare Lake profited from the east–west trade of goods that flowed between the Pacific Coast, Central Valley, Sierra Nevada, and Great Basin (Davis 1961). In particular, the village of *Bubal*, located on a dune causeway that provided access across the swamps of the southern lakeshore, served as a natural intermediary along the trade routes (Gifford and Schenck 1926). Latta (1977:141–143) states that to some extent the village of *Udjiu*, which marked the trailhead for the route west toward the coast, also served as a trading center. The Southern Valley Yokuts no doubt used their local staples (e.g., freshwater fish, acorns, and tule reeds) to barter for such goods as *Olivella* beads and other shell material

from the west as well as obsidian from the east. Along with locally produced soapstone bowls and ground stone implements, beads and pendants made from Pacific coast seashells are found at CA-FRE-49, the site of *Udjiu* (Latta 1977).

The basic unit of Northern Valley Yokuts society is believed to be the nuclear family, although scant ethnohistoric data exists to support this claim (Wallace 1978a:466). Nevertheless, given the common practice of totemic moiety system among neighboring tribes to the north and south, it is likely that residents of the area surrounding the Project would have been organized into two halves of society, and followed a system in which descendants identified within a patrilineal system (Wallace 1978a:466). The basic political unit was the tribe or tribelet, which encompassed a single village or several settlements. Population figures for villages tend to agree upon 200–300 individuals, while smaller hamlets consisted of 2–3 family units cohabiting (Wallace 1978a:466). The Northern Valley Yokuts were organized under a single headman who at times had an assistant that served the role of messenger or herald (Wallace 1978a:466).

The serial incursion of Spanish, Mexican, and finally northern European settlers irrevocably changed the lifeways of the Yokuts and ultimately led to the near-complete displacement of Native Americans from the valley. With the founding of Mission San Juan Bautista in 1797, Native Americans inhabiting the western portion of the San Joaquin Valley were forcibly recruited to serve at the mission. Latta (1999) writes that virtually all Yokuts living west of the San Joaquin River had been taken to the Spanish missions and that those remaining Indians who survived into the Mexican Period (1821–1846) perished in an 1833 epidemic. However, there are several Yokuts tribal groups that have survived into the present time and have developed language apprenticeship programs and early childhood education centers to serve tribal members, including the Wukchumne of the Tule-Kaweah near Porterville, Choynimni speakers of the Kings River tribes, Chukchansi at the Picayune and Table Mountain Rancherias near Fresno, and Yawelmani speakers of the Tule River Reservation (Golla 2011:154). Several Yokuts tribal groups are governed by elders councils and operate auxiliary departments that serve local tribal populations in areas of healthcare, education, and cultural resource management.

2.4 HISTORIC CONTEXT

2.4.1 Early Days on the West Side

In September 1806, Spanish officer Gabriel Moraga departed from Mission San Juan Bautista in pursuit of a band of horse thieves that had fled east into a largely unexplored portion of the valley beyond the coastal mountains (Cook 1960:247–254). The first leg of his historic journey no doubt took him through Pacheco Pass, by the present-day location of Los Banos, and across the San Joaquin River near Firebaugh on his way toward the northern parts of the Central Valley (Cook 1960:248–249). The pass and roadside communities that have become well known to motorists traveling along State Route 152 received their appellations well after Moraga's passing, but the Spanish explorer did name several of the valley's geographic features, including the Merced and Mariposa rivers as well as the San Joaquin and Kings rivers, which he had encountered during an earlier expedition. Along with their primary objective of tracking down the bandits, Moraga and his group of 25 men were in search of new mission sites. Father Pedro

Muñoz accompanied the detachment and served as its chronicler, identifying several Central Valley sites in this role.

Spain's plans for establishing a mission in the California interior never materialized, and by 1834 the successive Mexican regime appropriated the vast mission estates and redistributed them in the form of enormous land grants, or ranchos. In economic terms, the change was dramatic: control of real property shifted from the Franciscans to a group of ranch owners comprised mostly of retired military officers. The California economy, which had previously produced a range of agricultural products and some handmade goods under the mission system, now focused on cattle ranching. International trade, previously prohibited under the Spanish Crown, brought material wealth to the rancheros, who bartered hides for East Coast manufactured goods and luxury items (Hackel 1998; Monroy 1998; Simpson 1841–1842). There were, however, some common denominators between the two systems: Native American labor was the essential ingredient in most endeavors and, with the exception of Sutter's Fort in present-day Sacramento and Charles Weber's trading post in what would become Stockton, much of the province's economic activity remained on the coast.

Nevertheless, the Mexican authorities did award grants in the Central Valley. In September 1841, Governor Juan Alvarado conferred to Francisco Sobranes the San Jon (or Sanjon) de Santa Rita grant, which covered 11 square leagues or about 48,000 acres (Outcalt 1925:216; Radcliffe 1940:127). Situated mostly in Merced County, the property occupied the west side of the San Joaquin River from near the present-day San Luis National Wildlife Refuge south to Firebaugh in Fresno County. The rancho apparently was settled during the 1840s at a place called San Luis Camp, located on the west bank of Salt Slough in Merced County (Hoover et al. 1966:202; Radcliffe 1940:126). Euro-American settlers passing by this Mexican hamlet described it as a group of adobes with tule roofs. Although the Project lies south of the historic boundaries of the Sanjon grant, the rancho facilitated the development of western Fresno County during the latter part of the nineteenth century. The entire area of Fresno County that is more than 15 miles west of the Southern Pacific Railroad mainline is commonly known as the West Side (Clough 1986:111).

In 1853, after the end of the Mexican-American War and the accession of California to the Union, Sobranes, like many other rancho owners, began the long and costly process of confirming title of his property in the U.S. courts. In his analysis of the 1851 Land Act and property issues in the West, Jelinek (1999:236) states that the uncertainties caused by clouded rancho titles "hindered economic development in rural and urban California for decades." The case of the Santa Rita Rancho aptly illustrates Jelinek's general assessment. While Sobranes ultimately succeeded in patenting his property, it took the courts 9 years to do so. In most instances, rancho owners were forced to sell their property to cover the exorbitant legal fees to legitimize their grants, and this might have been the dilemma facing Sobranes. Moreover, Sobranes may have reasonably surmised that given an uncertain legal outcome to his claim, it was better to receive a fraction of the worth of his land than nothing at all. In 1853, the same year he filed with the U.S. courts, Sobranes sold 9 leagues (approximately 16,000 acres) to Manuel Castro for \$4,500, or about 10 cents per acre, keeping for himself the remaining 2 leagues (Pimentel 1987:35). Sometime in the early 1850s, Sobranes apparently also made an arrangement with Tom and John Hildreth, whereby the brothers could use those 2 leagues to

raise cattle (Pimentel 1987:35). The Hildreths built a ranch house and corral. In 1855, William Dunphy replaced Tom as John Hildreth's partner.

In the 1850s, much of California's population could be found in the Sierra Nevada foothills in search of gold or in the state's commercial centers—San Francisco and Sacramento—where the precious ore was traded for money, goods, or whatever else was required by a miner. At the time, few people lived in the Central Valley in general and even fewer on the valley's West Side in particular. Despite the dearth of inhabitants, the West Side appears to have been well traveled in the 1850s. About 1852, a ferry opened at the north end of the San Joaquin River's great bend; the station was later purchased by Andrew Firebaugh and eventually evolved into the community that still bears his name (Clough and Secrest 1984:253). The Stockton-Visalia freight road operated throughout the decade and passed through San Luis Camp, Firebaugh's Ferry, and the few other outposts west of the San Joaquin River (Milliken 1972:6). By 1856, a hotel, bar, store, and blacksmith shop had been constructed at Firebaugh's Ferry, and in the following year, Firebaugh completed a toll road across Pacheco Pass (Clough and Secrest 1984:253; Pimentel 1987:25). From 1858 to 1861, the Butterfield Stage Line incorporated the West Side road network into its San Francisco to St. Louis route (Hoover et al. 1966). When the river level was high enough, Firebaugh also served as a stop for steamboats traveling up the San Joaquin or on their way to Fresno City on the Fresno Slough (Clough and Secrest 1984:254).

2.4.2 The Railroad Comes to Fresno County (1872–1900)

In the spring of 1872, the Southern Pacific Railroad rolled into Fresno County, bridging the San Joaquin River at Sycamore, which had previously served as a dock for steamers and a ferry crossing. For a brief time, the train stop at Sycamore received tremendous quantities of freight, but its importance quickly evaporated with the founding of the Fresno station (Vandor 1919:313–314). Although Fresno lay at an unlikely site, several miles from both the San Joaquin and Kings rivers, the Fresno Canal and Irrigation Company had begun construction of a canal that would irrigate the farmlands around this new town. Two years later, county voters elected to move the government seat to Fresno.

It was from the Southern Pacific's mainline through the San Joaquin Valley that the railroad extended a spur line west from Goshen to Huron (south of the Project area) in 1877 (Vandor 1919:283). No known settlement existed at this location previously, and it appears that the railroad's intent was to improve the area's infrastructure in order to better market its land holdings there. Such practices were common as Congress issued government loans and substantial land grants throughout the West to railroad companies in order to facilitate the construction of the transcontinental railway. Up to this time, stockmen grazed their sheep and cattle on the wild grasses that once grew on the West Side, although by the next decade, dry farmers like W. P. Kerr and J. M. Wells had begun reaping substantial harvests (Clough and Secrest 1984:259). Edward Vogelsang built a grain warehouse in Huron in 1888, and ranchers such as the McSwain family constructed their homes in the town (Vandor 1919:997, 1099).

In 1888 the railroad lengthened the line, then known as the Goshen Division of the Southern Pacific, farther west to Pleasant Valley to access coal that was discovered in the nearby foothills in the mid-1870s (Clough and Secrest 1984:277–278; Thompson 1891:102). The ore was loaded onto the train at a point known as "Coaling Station A," which became shortened to the current

Coalinga. Ironically, even though the coal industry never materialized due to the poor quality of the deposits, the town eventually became best known as the hub of one of California's major oil-producing regions (Roper Wickstrom 1990). Although Coalinga lies about 50 miles southwest of the Project area, the number of travelers commuting through the Project area was notable during this period.

The Hanford & Summit Lake Railway Company built a line sometime around 1912 (Robertson 1998:126). The new 42-mile railroad began 10 miles north of the Project area in Ingle, passed through the Project area in the City of San Joaquin, and went on to Riverdale before terminating at Hardwick in Kings County. In 1917 the Southern Pacific Railroad acquired the Hanford & Summit Lake line. Similar to the San Pablo and Tulare Railroad from the previous century, some stops along this railroad, namely Tranquility and San Joaquin, eventually grew into small West Side communities. For a time during the early and mid-twentieth century, the Helm and Burrell stations were each surrounded by several (probably commercial) buildings but never matured into permanent towns. The Caldwell stop, which appears on the 1925 USGS San Joaquin topographic quadrangle, was a short-lived station with a grocery store (Clough 1986:136). The station and store are not present on the subsequent 1963 USGS San Joaquin topographic quadrangle.

3 METHODS

Various sources were consulted as part of the background studies prior to the pedestrian survey of the Project area. Æ synthesized records and literature housed at the SSJVIC as well as consulted archival and literary resources pertaining to the prehistory, ethnography, and history of the Project area and 0.5-mile surrounding vicinity. In addition, as part of general best practices in cultural resource management, Æ contacted the Native American Heritage Commission (NAHC) and conducted nongovernmental tribal outreach. Methods related to these searches are summarized below. The chapter concludes with a description of methods used during fieldwork and evaluation of a built environment property.

3.1 RECORDS SEARCH

Æ requested a records search of the CHRIS from the SSJVIC at California State University, Bakersfield on May 31, 2018. The records search encompassed the APE and land within the surrounding 0.5-mile radius. Sources consulted include archaeological site and survey base maps, historical USGS topographic maps, reports of previous investigations, and cultural resource records (DPR forms) as well as listings of the Historic Properties Directory of the Office of Historic Preservation, Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources (Appendix B). The objective of this records search was twofold: (1) to identify prior cultural resource investigations completed in or near the Project area, and (2) to identify prehistoric or historical cultural resources that were previously recorded within the Project area.

3.2 ARCHIVAL RESEARCH

The purpose of archival research for archaeological studies is to reveal the potential for historical deposits that may exist within the Project's APE. The investigation compiled information from several sources to accomplish this, including:

- Map Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno (<http://malt.lib.csufresno.edu/MALT/>);
- Various online resources for historical maps and documents; and
- An in-house library at Applied EarthWorks, Inc., which includes local histories.

3.3 NATIVE AMERICAN OUTREACH

On May 31, 2018, Æ sent an e-mail to the Native American Heritage Commission (NAHC) requesting a search of its Sacred Lands File and the contact information for local Native American representatives who may have an interest in sharing information about the Project area and surrounding area. The NAHC responded on June 13, 2018 with its findings and attached a list of Native American tribes and individuals culturally affiliated with the Project area.

To complete Æ's records search and identification of known cultural resources or tribal cultural resources in the Project area, Æ sent a letter describing the Project and asking tribal representatives for their input. The letters were sent to the individuals listed in Appendix C via the U.S. Postal Service and e-mail on June 29, 2018. Æ followed up via telephone on August 7 and 16, 2018. Sending letters and recording responses received are part of Æ's standard tribal outreach to complete an inventory report and are not intended to serve the purpose of satisfying NHPA Section 106 or Assembly Bill (AB) 52 government-to-government Native American tribal consultation. A record of all correspondence with the NAHC and tribal contacts is included in Appendix C.

3.4 PEDESTRIAN SURVEY

On June 14, 2018 Æ Staff Archaeologists Kathleen Jernigan and Eric Kowalski conducted an archaeological and built environment survey of the 4.02-acre APE. Unpaved areas in the APE were subject to intensive pedestrian survey using parallel and zig-zag transects spaced 5–15 meters apart. Private property was excluded from survey. Areas where the ground surface was obscured by concrete or asphalt were subject to opportunistic pedestrian survey to view exposed patches of ground or were subject to “windshield” inspection, meaning inspection of the built environment from a vehicle to identify buildings, structures, and objects over 50 years of age. To account for potential changes in Project design, Æ surveyed areas beyond the APE in the vicinity of Well 6. Jernigan and Kowalski photographed the area using an Olympus TG-860 digital camera and recorded observations on Survey Field Record form. All photographs, field notes, and resource records are on file at Æ's Fresno office.

3.5 BURIED SITE SENSITIVITY ASSESSMENT

Æ conducted a geologic review of the APE to identify the potential for buried cultural resources. Æ consulted geological maps, historical maps, geologic/sediment databases, geoarchaeological studies, and soil surveys documenting areas within the APE. These sources provided information regarding the natural watercourses in the area as well as data about local soils and sediments, parent rock formations, and historical vegetation. This information was used to estimate the age of the sediments surrounding the APE, consider the hydrologic and geologic forces that created and placed these sediments, and assess the probability of encountering buried cultural resources during Project activities.

3.6 CULTURAL RESOURCE IDENTIFICATION AND EVALUATION

Æ documented a segment of the historical Southern Pacific Railroad (CA-FRE-3109H) on the appropriate DPR 523 series forms. Specifically, Æ prepared a Linear Feature Record (523E) and location map (523J) to document the railway alignment within the Project APE. Æ photographed the railroad and plotted its location using a GPS unit. Æ surveyors inspected the railway alignment within the APE to identify any unique features such as culverts, bridges, signs, or switches that may be present. The completed DPR forms are provided in Appendix D of this report.

To determine if CA-FRE-3109H qualifies as a historic property, Æ reviewed a previous NRHP eligibility evaluation of the Southern Pacific Railroad Hanford & Summit Lake Railway

(CA-FRE-3109H) prepared by Asselin et al. (2015). Cultural resources eligible for the NRHP or CRHR require assessment of Project effects/impacts and may be subject to mitigation, whereas resources that are not eligible do not require such consideration.

In completing the 2015 evaluation, AECOM followed the process established by the National Park Service (NPS) for identifying, evaluating, and assessing effects to cultural resources. Practically speaking, determinations made within a federal regulatory context are almost always universally accepted for purposes of identifying, evaluating, and assessing impacts under CEQA. The first threshold in this process is to ascertain whether a site or built environment property within the Project APE is old enough to be considered a cultural resource and, accordingly, eligible for federal and/or state registers. Consistent with 36 CFR 60.4, to be eligible for the NRHP, an archaeological or built environment resource must be 50 years old or older. Except under exceptional circumstances (National Park Service [NPS] 2002:25–43), sites and properties less than 50 years old are dismissed from further consideration. If a cultural resource is found to meet this age criterion, the following sequential steps apply:

- Classifying the resource as a district, archaeological site, building, structure, or object;
- Determining the theme, context, and relevant thematic period of significance with which the resource is associated;
- Determining whether the resource is historically important under a set of significance criteria; and
- If significant, determining whether the resource retains integrity.

In California, cultural resources are usually classified according to *Instructions for Recording Historical Resources*, published by the California Office of Historic Preservation in 1995. This handbook contains listings of resource categories for historical and prehistoric sites as well as standing structures. For built environment resources, it is additionally helpful to define a property's economic dimensions (e.g., commercial vs. residential, urban vs. rural, agricultural vs. industrial). In this regard, *Historical Context and Archaeological Research Design for Agricultural Properties* (California Department of Transportation 2007) is a useful guide for categorizing rural resources.

The historic context establishes the framework within which decisions about significance are based (NPS 2002:9). The evaluation process essentially weighs the relative importance of events, people, and places against the larger backdrop of history. Within this process, the context provides the comparative standards and/or examples as well as the theme(s) necessary for this assessment. According to the NPS (2002:9), a theme is a pattern or trend that has influenced the history of an area for a certain period. A theme is typically couched in geographic (i.e., local, state, or national) and temporal terms to focus and facilitate the evaluation process.

Significance is based on how well a subject resource represents one or more themes through its associations with important events or people and/or through its inherent qualities. A resource must demonstrate more than just association with a theme; it must be a good representative of the theme, capable of illustrating the various thematic elements of a particular time and place in

history. In order to be included in the NRHP and thus be considered a historic property per 36 CFR 800.16(l), 36 CFR 60.4 stipulates:

The quality of significance in American history, architecture, archeology, 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

- (a) It is associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) It is associated with the lives of persons significant in our past; or
- (c) It embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or
- (d) It has yielded, or may be likely to yield, information important in prehistory or history.

Similarly, according to the CEQA Guidelines (Title 14, California Code of Regulations, Chapter 3), in order for a resource to be eligible for the CRHR, it must meet at least one of the criteria defined in California PRC 5024.1:

- (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- (2) Is associated with the lives of persons important in our past.
- (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- (4) Has yielded, or may be likely to yield, information important in history or prehistory.

To be included in the NRHP and CRHR, a resource must not only possess historical significance but also the physical means to convey such significance—that is, it must possess integrity. Integrity refers to the degree to which a resource retains its original character. To facilitate this assessment, the NPS (2002:44–45) provides the following definition of the seven aspects of integrity.

- 1. Location is the place where the historic property was constructed or the place where the historic event occurred;
- 2. Design is the combination of elements that create the form, plan, space, structure, and style of a property;
- 3. Setting is the physical environment of a historic property;

4. Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property;
5. Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory;
6. Feeling is a property's expression of the aesthetic or historic sense of a particular period of time; and,
7. Association is the direct link between an important historic event or person and a historic property.

Assessing integrity of a significant historical resource depends on an understanding of the components or features that give it significance. For this reason, the issue of integrity is addressed only after significance has been established. Moreover, cultural resources that are not significant per NRHP and CRHR criteria are by definition not eligible to either register and do not require an integrity assessment.

4 FINDINGS

4.1 RECORDS SEARCH

On June 11, 2018 the SSJVIC responded to Æ's records search request (Records Search File No. 18-250). The SSJVIC responded that there have been no previous cultural resource studies in the APE, while eight cultural resource studies have been completed within a 0.5-mile radius of the APE. The search identified one built environment resource in the APE, the Hanford & Summit Lake Railway of the San Joaquin Division of the Southern Pacific Railroad (P-10-003930/CA-FRE-3109H). This railway intersects the Project's APE in two places at Manning Avenue and southwest of 12th Street (Appendix B). In addition, one historical built environment resource, the James Irrigation District (P-10-006632), was identified within 0.5 mile of the APE. The SSJVIC's detailed list of the reports and resources that fall within the Project APE and surrounding 0.5-mile radius are provided in Appendix B.

Although not yet filed with the CHRIS, Æ conducted a cultural resource inventory of 4.0 acres within the City of San Joaquin for the Wells 3 and 5 Manganese Removal Project (Baloian and Tibbet 2017). This project proposes to construct a system to treat raw water from Wells 3 and 5. The treatment system will be built at Well 5 at West Cherry Lane and will include a storage tank and booster pump station. A water pipeline approximately 2,700 feet long will be installed at the site of Well 3 and run east along Railroad Street and turn south along South Colusa Avenue to the site of Well 5. Approximately 1,100 feet of sewer pipe to dispose of wastewater will be connected to the existing sewer system near the intersection of South Colusa Avenue and Karin Avenue. The project is being funded by a Community Development Block Grant. Æ did not identify any cultural resources as a result of the inventory.

The Hanford & Summit Lake Railway is a 42-mile railroad that begins in Ingle, passes Riverdale, and terminates at Hardwick in Kings County. The railway went into operation around 1912 and was acquired by the Southern Pacific Railroad in 1917 (Robertson 1998:126). A few small West Side communities emerged in association with use of this railroad, including Tranquility and San Joaquin.

4.2 ARCHIVAL RESEARCH

Historical Fresno County atlases indicate that the land in the Project vicinity was sold and leased for ranching and agriculture at least as early as 1900 (Clough 1986:136). San Joaquin is depicted on the 1925 USGS San Joaquin topographic quadrangle (Figure 4-1), and the city appears in aerial photographs dated as early as 1937 (Figure 4-2). The town center as it currently exists was established in 1912 with the construction of the Hanford & Summit Lake Railway, which currently bisects the city. Aerial photographs dating from 1937 to 2018 demonstrate that the city boundaries have remained relatively unchanged for the better part of a century, although there was a small surge in residential development during the 1950s and 1960s. Historical USGS topographic maps corroborate the city boundaries depicted in aerial photographs. San Joaquin,

like most communities on the West Side of Fresno County, has sustained itself as an agricultural center from the late nineteenth century into the present. The landscape beyond the city boundaries has remained primarily agricultural, and cotton has been a primary cultivar since World War I, a time when cotton imports were blocked (Hall 1986:175–177).

The Hanford and Summit Lake Railroad is the only notable historic-aged building or structure within the APE, and it intersects a portion of the APE along Manning Avenue. However, preliminary investigation on historical property ownership within the APE revealed that the Miller & Lux Company owned and rented out most of the land in the Project vicinity during the late nineteenth and early twentieth centuries (Miller & Lux 1935). Miller & Lux owned thousands of acres of land in the San Joaquin Valley. These lands were often utilized for cattle ranching or leased out for agricultural purposes (Vandor 1919).

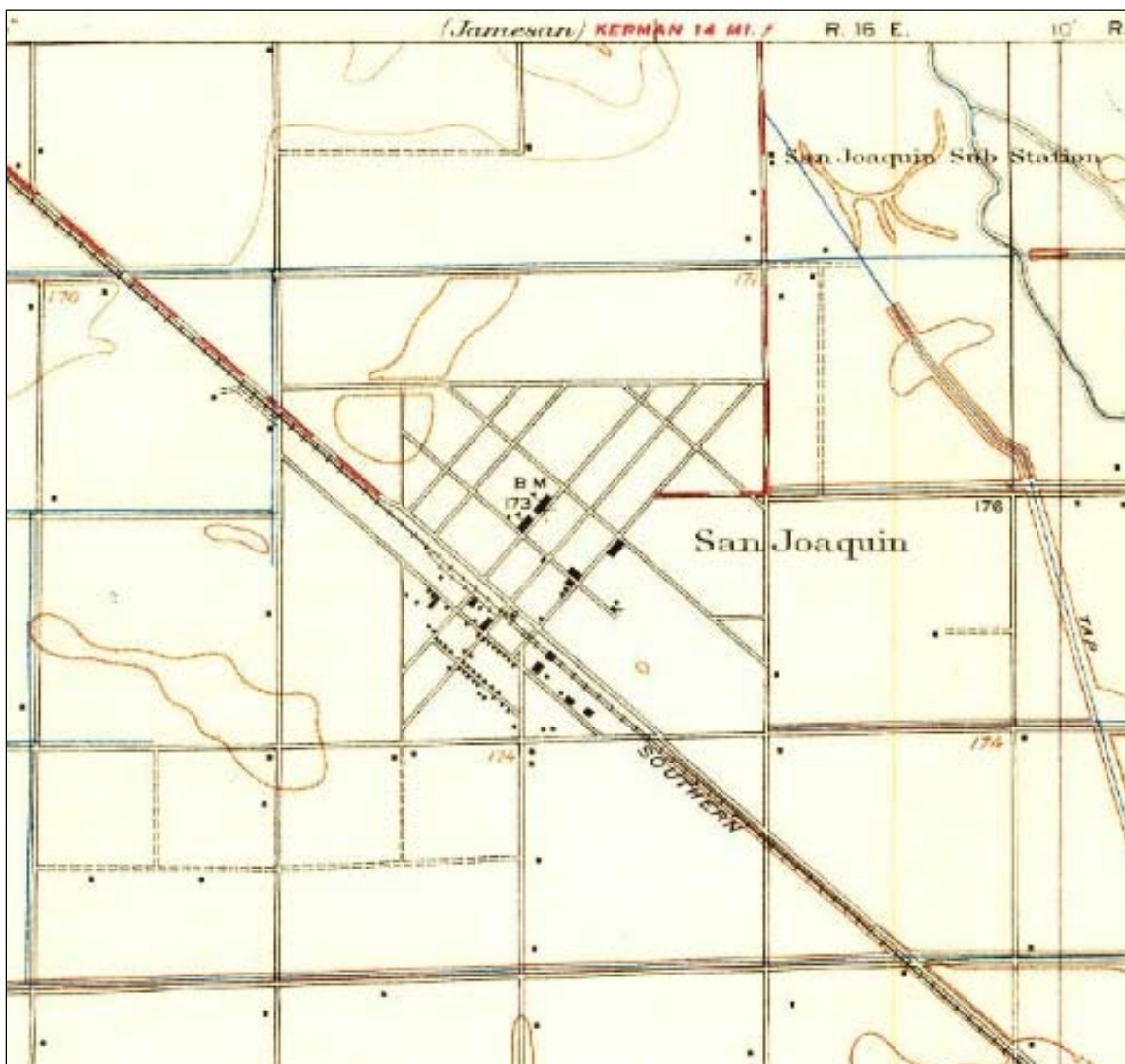


Figure 4-1 1925 USGS San Joaquin quadrangle showing the San Joaquin street grid and Southern Pacific Railroad (Hanford & Summit Lake Railway).



Figure 4-2 1937 aerial image of San Joaquin, depicting the Hanford & Summit Lake Railway of the Southern Pacific Railroad (CA-FRE-3109H).

4.3 NATIVE AMERICAN OUTREACH

In its June 13, 2018 response to Æ’s request, the NAHC stated that a search of the Sacred Lands File did not indicate the presence of resources in the immediate Project APE (see Appendix C); however, the NAHC cautioned that the absence of specific site information in the Sacred Lands File does not indicate the absence of tribal cultural resources in the Project area. The NAHC suggested contacting other sources who might have specific knowledge regarding Native American use of the Project area and provided contact information for 12 Native American representatives, including:

- Chairperson Elizabeth Kipp, Big Sandy Rancheria of Western Mono Indians
- Chairperson Carol Bill, Cold Springs Rancheria
- Chairperson Robert Ledger Sr., Dumna Wo-Wah Tribal Government

- Chairperson, Dunlap Band of Mono Indians
- Stan Alec, Choinumni Farm Tribe
- Chairperson Ron Goode, North Fork Mono Tribe
- Chairperson Rueben Barrios Sr., Santa Rosa Indian Community of the Santa Rosa Rancheria
- Chairperson Leanne Walker-Grant, Table Mountain Rancheria of California
- Cultural Resources Director Bob Pennell, Table Mountain Rancheria of California
- Chairperson David Alvarez, Traditional Choinumni Tribe
- Rick Osborne, Traditional Choinumni Tribe
- Chairperson Kenneth Woodrow, Wuksache Indian Tribe/Eshom Valley Band

On June 29, 2018, Æ sent a letter describing the Project to each of the individuals above and followed-up with a phone call on August 9, 2018. Bob Pennell, Table Mountain Rancheria's Cultural Resources Director, responded with a letter on August 14, 2018, declining the tribe's participation at this time, but he would appreciate being notified of any identified cultural resources. Chief Robert Ledger Sr. of the Dumna Wo-Wah Tribal Government replied via telephone that the Tribal Council is considering potential impacts of the Project, but no response has been received to date. No additional responses from tribal representatives have been received.

4.4 PEDESTRIAN SURVEY RESULTS

On June 14, 2018, Æ Staff Archaeologists Kathleen Jernigan and Eric Kowalski conducted a survey of the Project APE (Figure 4-3). They conducted an intensive pedestrian survey of 5.29 acres, including 3.29 acres of the APE and an additional 2 acres surrounding Well 6 to accommodate potential changes in Project design. A 0.38-acre fenced area at Well 6 was inaccessible due to a locked gate. Approximately 0.73 acre of the APE was surveyed "opportunistically" to view patches of exposed ground not covered by asphalt or sidewalk, and Jernigan and Kowalski inspected the remainder of the APE from a vehicle to identify built environment resources over 50 years old.

Ground visibility within unpaved portions of the APE was excellent (90 percent or greater). Grasses and weeds were the primary factors limiting surface visibility in these areas. Waterline replacement corridors are in unpaved alleyways, which provided excellent ground visibility (Figures 4-4 and 4-5). The proposed location for the Well 6 treatment facility also had excellent ground visibility (Figure 4-6). Portions of the proposed sewer and water pipeline corridors for this facility intersected asphalt-paved roadways and were subject to opportunistic visual inspection from a vehicle. Water line installation corridors along Manning Avenue were opportunistically inspected on foot or from a vehicle (Figure 4-3). Ground visibility in these corridors was generally poor (0–10 percent) because most of the ground surface was paved with asphalt or concrete.



Figure 4-3 Aerial view of the Project area showing survey coverage and recorded segment of CA-FRE-3109H.



Figure 4-4 Representative view of survey conditions within water line replacement corridors, facing northeast.



Figure 4-5 Representative view of survey conditions at the proposed Well 6 pump and treatment facility site, facing southeast.

During the survey, Æ archaeologists observed disturbance from mechanical excavation for upgrades to existing system components in some of these corridors (Figure 4-6). The open excavations were examined from outside a safety barrier; no cultural resources were observed. Modern debris was noted along the edges of the alleys.



Figure 4-6 Excavation for water line replacement observed during survey, facing southwest.

Æ's survey of the 4.02-acre Project APE resulted in the documentation of one historical built environment resource, an unrecorded segment of CA-FRE-3109H, the Hanford & Summit Lake Railway of the Southern Pacific Railroad (Figure 4-3). No isolated artifacts, cultural features, archaeological sites, or other historic-age built environment resources were discovered as a result of the pedestrian survey.

4.5 BURIED SITE SENSITIVITY ASSESSMENT

4.5.1 Geomorphic Context

The APE is within the San Joaquin Valley of central California, which is bounded by the Sierra Nevada to the east and California Coast Ranges to the west. Sedimentation in the valley is dominated by cycles of erosion from the high mountains, producing granitic parent material deposited on the floor of the valley below, forming vast alluvial fans and piedmont landforms. Local hydrology moves granitic sediments throughout the valley and deposits these sediments into existing basins. During periods of high effective moisture, rivers overflow and deposit fine-grained and often organic-rich sediments across the valley floodplain. The accumulation of these

fine organic sediments along with periods of stability resulted in a soil-rich region, making the San Joaquin Valley a prime landscape for agricultural practices. The city of San Joaquin is in the Kings Groundwater Subbasin, which forms part of the San Joaquin Valley Groundwater basin of the Tulare Lake Hydrologic Region. The San Joaquin River north of the Project area is an important part of the local hydrology. Tributaries of the river provide a reliable water source that was channeled, accessed, and divided amongst the early homesteaders within the surrounding communities.

4.5.2 Landscape Chronology

The valley floor is largely composed of older Pleistocene (prior to 25,000 calibrated years before present [cal B.P.]) alluvial fan deposits originating from the Sierra Nevada that form a large piedmont to the east where the valley margins join the Sierra Nevada. These margins have undergone episodes of stability as well as erosion by channel incision. Eroded material is later redeposited, which results in an accumulation of buried deposits within the center of the valley. Smaller alluvial fans are present along the western margins of the valley, but the bulk of these landforms is buried by younger deposits dating from 31,340 and 26,352 cal B.P. (Meyers et al. 2010).

During the glacial conditions of the late Pleistocene (approximately 25,000–15,000 cal B.P.), the valley experienced a period of landscape stability, allowing soils to form, although channel incision continued from 25,000 to 20,000 cal B.P. during episodes of glacial outwash. After 20,000–19,000 cal B.P., channels and streams began to exceed their carrying capacity, resulting in the infilling of channels and existing basins. Infilling was then followed by a lateral spread of sediments across existing alluvial fans and throughout the floodplain. The entrainment, transportation, and deposition of these glacial sediments appear to have ceased between 18,500 and 16,500 years ago. Landforms of the late Pleistocene are small, often isolated, and far less prevalent than older Pleistocene landforms within the valley (Meyers et al. 2010).

The transition to nonglacial conditions during the latest Pleistocene (15,000–11,500 cal B.P.) brought on pronounced changes in hydrologic, geomorphic, and biotic systems. During this time, the environment experienced rapid climatic fluctuations, most notably during the onset of the Younger Dryas (12,900–11,500 cal B.P.) when the climate abruptly, yet briefly, returned to glacial conditions. The latest Pleistocene was a period of greater climatic variability compared to prior time periods, and the subsequent disequilibrium is evident in the stratigraphic deposits. The increased variability and rapidly fluctuating conditions led to an increase in both erosion and deposition throughout the valley. As such, landforms generated during this period of environmental instability are more prevalent today than late Pleistocene-age landforms (Meyers et al. 2010).

The Early Holocene (11,500–7000 cal B.P.) saw more stable conditions than the latest Pleistocene and experienced a warmer and drier climate. A reduction in effective moisture promoted stabilization of existing landforms, continued soil development, and limited confinement of erosion and transport to existing channels. The most notable example of landscape stability during this time is seen in the alluvial landforms along the valley's western margins where well-developed Early Holocene soils are present (Meyers et al. 2010).

Early Holocene stability was followed by pronounced climatic variability in the Middle Holocene (7000–4000 cal B.P.). Middle Holocene landforms within California are typically rare. There is a lack of consensus surrounding whether the climatic conditions of the Middle Holocene were markedly warmer and drier or cooler and wetter than today. Although there is a gap in the Middle Holocene stratigraphic record throughout California, this is not the case for the San Joaquin Valley, as buried soils of this age have been documented within alluvial fans, floodplains, and basins within the valley with dates ranging from 6400 to 4500 cal B.P. These Middle Holocene deposits sometimes bury Early Holocene surfaces within the confines of the valley; however, the Middle Holocene surfaces are still the least prevalent when compared to the abundance of landforms from other periods (Meyers et al. 2010).

The cooler and wetter conditions of the Late Holocene (4000–0 cal B.P.) are characterized by episodes of increased precipitation and runoff. Multiple episodes of deposition can be seen in the alluvial fans and floodplains of the valley. The increase in wetness allowed vegetation to flourish, stabilizing new deposits as well as existing landforms and slowing the rate of landscape change prior to 2000 cal B.P. These Late Holocene surfaces are best observed on the east and west margins of the valley (Meyers et al. 2010).

The onset of the latest Holocene (2000–150 cal B.P.) brought increased shifts in rainfall, episodic droughts, and the Little Ice Age. This increase in variability contributed to rapid and extensive landscape modification, which is observable on exposed landforms. Large-scale flooding led to large-scale deposition. The majority of the valley is capped by these vast latest Holocene alluvial deposits. The climate oscillations between wet and dry also contributed to the destabilization of large portions of the landscape, contributing to the widespread deposition that spans the valley floor (Meyers et al. 2010).

The historic and modern (150–0 cal B.P.) period is characterized by extensive landscape development and erosion throughout the valley due to agriculture, logging, livestock grazing, dredging, mining, quarrying, irrigation, and landscape reclamation. Changes in vegetation from native to nonnative species as well as a reduction in ground cover due to drought and livestock grazing fueled erosion. Large expanses of Fresno County were used for grazing in the early historic period until canals and levees were constructed in the late 1800s to prevent flooding and to transport water for farming. Additionally, portions of the landscape were subjected to artificial cut and fill episodes to support modern urbanization and development. Much of the natural topography (e.g., mounds and natural levees) that may have harbored prehistoric archaeological sites was truncated and destroyed by this development. Modern deposits continue to form within the valley, but these are human-made deposits resulting from continued landscape modification (Meyers et al. 2010).

4.5.3 Buried Site Sensitivity

Geologic and soils literature derived from the National Resources Conservation Service (NRCS) Soils Survey for the Project area indicates that the APE consists of Quaternary alluvium and marine deposits (CAQ;0) dating from the Pleistocene to Holocene (U.S. Geological Survey 2018). However, the deposits in the Project APE are expected to be dominated by nonmarine sediments because marine sediments are not usually present in inland locales away from the coast. Sediment deposits in the San Joaquin Valley are derived from hydrologic action occurring

along the San Joaquin River as it erodes large amounts of granite and soil sediments from the southern Sierra Nevada. These erosional processes have been in place for millennia, creating a dynamic geomorphologic cycle that has direct bearing on the potential for encountering buried archaeological deposits. The entire San Joaquin Valley has low potential for the identification of Paleo (13,500–10,500 B.P.) and Lower Archaic (10,500–7500 B.P.) archaeological sites due to this process, which has occurred across the Central Valley continuously during the Early and Middle Holocene (URS, HMM, and Arup Joint Venture 2011). Older sites are often destroyed, displaced from their original place of deposition, or deeply buried by flood or alluvial sediment deposition. However, during the Late Holocene (2000 B.P. to present) mass erosional deposition has decreased such that the possibility of encountering intact archaeological sites is moderate to high in flat or elevated areas located away from tributaries, rivers, and streams. In these latter areas, seasonal flooding and wash outs obliterate archaeological sites present along the banks.

According to Meyers et al. (2010), the APE lies on landforms that date to the Late Holocene (4000–2000 cal B.P.). Data gathered from pollen, tree-ring, and plant macrofossil records reveal a period marked by increased precipitation and runoff as well as significant widespread flooding (Meyers et al. 2010:79). Soils in the APE are dominated by Merced clay, slightly saline sediments (Mk) (Natural Resources Conservation Service [NRCS] 2018). The Merced Series contains clay and clay loam sediments, both of which exhibit very poor drainage, are classified as having medium runoff, low salinity, and slight to moderate alkalinity ranging between pH 7.4 to 8.2 (NRCS 2018; U.S. Department of Agriculture 2018). In general, environments composed of poorly drained soils with low salinity and moderate alkaline levels tend to preserve bone, teeth, and other organic materials well (Kibblewhite et al. 2015). Low levels of saline, as would be found in Merced series soils, introduced into artifacts via groundwater percolation would contribute to the slow decay of artifacts, and metals and other porous materials are the most susceptible (Kibblewhite et al. 2015). However, the degree of decay would be comparatively less than if exposed to high alkaline or high saline groundwater. These data suggest moderate to high possibility of encountering well-preserved archaeological deposits in the APE.

The general sensitivity of an area is based on distance to water, landform slope, and the distribution and age of geological deposits present at the modern ground surface. The San Joaquin River, a significant source of sediment deposition, is 12 miles north of the APE, while the Fresno Slough is less than a mile from the city's center. Prior to the construction of modern irrigation systems, the region was characterized by seasonal flood and dry cycles. This floodplain, including upper river terraces, hosts young soils that are generally highly sensitive for buried archaeological sites; however, sediments within the river bed and immediate river floodplain have low sensitivity for buried sites. Cultural resources found in this area are likely to occur on stable portions of the environment such as floodplain surfaces that are very young. Early inhabitants who exploited the complexity of the riverine ecosystem established their camps on the drier portions of the floodplain. Often during floods, artifacts are entrained into the river flow and redeposited in secondary contexts. Also, Holocene sediments were deposited under much lower energy flow, leading to the preservation of sites during periods of aggradation. Thus, the San Joaquin River floodplain as a whole is highly sensitive for well-preserved complex buried sites.

Taken together, the sedimentology of the APE and its proximity to the Fresno Slough and San Joaquin River suggest there may have been moderate to high potential to uncover intact buried

archaeological sites at one time. However, extensive earthwork within the proposed Project APE over the last century has greatly reduced the likelihood of finding any intact archaeological deposits. Historical landscape modifications caused by the construction of the Hanford & Summit Lake Railway and development of the city of San Joaquin, particularly its neighborhoods and infrastructure, indicate that remaining archaeological deposits near the surface (i.e., within 6 feet below ground surface) would be in a highly disturbed context.

4.6 EVALUATION OF THE HANFORD & SUMMIT LAKE RAILWAY

4.6.1 Description of Recorded Segment

A segment of the Hanford & Summit Lake Railway of the Southern Pacific Railroad (P-10-003930/CA-FRE-3109H) intersects the APE in two places: at the eastern waterline installation corridor along Manning Avenue and again northwest of 12th Street. The recorded segment is approximately 40 feet wide and 838 feet long and is oriented northwest to southeast. The segment is southwest of West Colorado Avenue and northeast of Railroad Street between Manning Avenue and 12th Street (Figures 4-3 and 4-7). It is a steel standard-gauge railroad supported by wood ties on a stone ballast berm approximately 3 feet high. Some sections of the segment are level with the road surface and not supported by the stone ballast berm. The railroad retains its original alignment, but materials including rails, ties, and ballast have been replaced since its construction in 1912. The DPR site record forms documenting the segment of CA-FRE-3109H in the APE are included in Appendix D.



Figure 4-7 Overview of the segment of CA-FRE-3109H within the APE, facing west along Manning Avenue.

Under the guidelines of the Office of Historic Preservation (1995), the railroad is a linear resource. This category also includes transmission lines, roads, canals, gas lines, and similar structures.

Based primarily on its relatively short (42 mile) length, the Hanford & Summit Lake Railway is evaluated within a local or county-wide geographical context. The railroad relates to the theme of transportation. Because it is a precondition for so many socioeconomic developments, it is a theme that cross-cuts numerous other topics in history. Within the history of Fresno County, agriculture provided the impetus for construction of roads and railroads as well as the establishment of steamboat routes in the late nineteenth century. The county's great productivity, which was the result of intensive irrigation and agricultural colonization, would have meant very little to valley farmers without a viable means to ship their commodities to the Bay Area, southern California, and other markets.

For the purposes of this evaluation, the period of significance of the recorded segment is set at 1872–1896. In 1872, the San Joaquin Valley Division of the Central Pacific Railroad reached Fresno County. The end year of the period of significance is defined here as 1896 when the competing San Francisco & San Joaquin Valley Railroad (later acquired by Atchison, Topeka and Santa Fe Railway) arrived in Fresno County and broke the Southern Pacific Railroad's monopoly in the Central Valley (Clough and Secrest 1984:333).

4.6.2 Evaluation of NRHP/CRHR Eligibility

Criterion A/1

The historical significance of the Hanford & Summit Lake Railway is directly tied to the purpose of its construction. Beginning in 1909, with the platting of the Tranquility Colony, rancher Jefferson James began the decade-long process of converting his pasture to farmland (Guard 1911:21). Following his death in 1910, the Graham Farm Lands Company and the San Joaquin Valley Farm Land Company continued the process through numerous improvements, including additional subdivision, canals, and reclamation of overflow lands along the Fresno Slough (Engh 1920:193; Poor's Publishing Co. 1922:360; Walker 1920:57). No doubt spurred by these developments, the Hanford & Summit Lake Railway Company built a line through the heart of these new agricultural colonies. Similar prospects for agricultural development had prompted the Southern Pacific Railroad to build a line through the San Joaquin Valley in the early 1870s.

Yet whereas the Southern Pacific's valley line represented a watershed event in county history, construction of the Hanford & Summit Lake Railway is seen historically only as a continued expansion of the rail network. The Hanford & Summit Lake Railway was constructed after the defined period of significance (1872–1896) as an adjunct between railroads built during this period. Moreover, the railway is associated with agricultural endeavors that are not historically significant. The agricultural colonies of the San Joaquin Valley Farm Land Company do not stand out among the numerous other canals and subdivisions created during the late nineteenth and early twentieth centuries, particularly given that agricultural development of the West Side lagged behind the county's eastern side.

For these reasons, the Hanford & Summit Lake Railway is not considered historically significant under Criterion A/1.

Criterion B/2

Research identified no individual of historical import associated with the railroad. The Hanford & Summit Lake Railway is thus not considered historically significant under Criterion B/2.

Criterion C/3

Significance under Criterion C/3, when applied to railroads and similar linear structures, is measured by distinctive or innovative design, methods of construction, or use of technology. There is no evidence that the Hanford & Summit Lake Railway ever possessed such qualities. The Hanford & Summit Lake Railway is thus not considered historically significant under Criterion C/3.

Criterion D/4

Criterion D/4 is most relevant for archaeological sites, but it can apply to built environment resources if further study has the potential to yield information that cannot be obtained from other sources. However, historical information about railroads is prevalent, and further study would clearly not add any new information. The Hanford & Summit Lake Railway is thus not considered significant under Criterion D/4.

Integrity

Because the Hanford & Summit Lake Railway is not considered historically significant under any of the four criteria, formal assessment of integrity is not necessary.

Eligibility

Due to a lack of significance, the Hanford & Summit Lake Railway is not considered eligible for inclusion in the NRHP or CRHR.

5 SUMMARY AND RECOMMENDATIONS

Æ performed a cultural resource inventory for the City of San Joaquin Wells 4 and 6 Manganese Treatment and Distribution Pipeline Project in Fresno County, California. The existing water system infrastructure is inadequate to meet the City's long-term water supply needs and contains wells which exceed established maximum contaminant levels for manganese. The current Project consists of Water Supply Alternative B, Water Treatment Alternative II, and distribution system improvements (Gouveia Engineering 2017).

As a subconsultant to Crawford & Bowen Planning, Inc., Æ conducted a cultural resources inventory of the 4.02-acre APE and an additional 2 acres surrounding Well 6 to determine if historic properties/historical resources are present that could be affected by the proposed project. Accordingly, Æ performed background research, obtained a records search from the SSJVIC, requested a search of the NAHC Sacred Lands File, contacted local Native American tribal representatives, assessed the potential for buried sites, and conducted a survey of the APE.

The SSJVIC records search identified that the Hanford & Summit Lake Railway of the Southern Pacific Railroad (CA-FRE-3109H) transects the Project APE. The SSJVIC did not have any record of previous cultural studies within the APE; however, Æ recently completed an inventory of 4.0 acres that slightly overlaps the current APE also within the City of San Joaquin (Baloian and Tibbet 2017). No cultural resources were identified as a result of that study. The SSJVIC search revealed one historical built environment resource (the James Irrigation District) and eight previous cultural studies within a 0.5-mile radius of the APE. No additional resources were identified as a result of Native American outreach or archival research. Æ's pedestrian survey of the APE did not identify additional prehistoric or historic-era archaeological or historical built environment resources within the APE; however, a segment of CA-FRE-3109H was recorded during survey. Æ evaluated the significance of the segment and recommended it ineligible for listing on the NRHP and the CRHR.

Æ's geoarchaeological assessment of the vertical APE revealed that the sedimentology and soils have moderate to high potential for harboring well-preserved archaeological deposits. However the extent of modern development and disturbance across the APE results in a low probability of encountering archaeological deposits in primary context. Buried site testing is not recommended.

Consistent with state and federal statutes, Æ advises that in the event archaeological remains are encountered during Project development or ground-moving activities within any portion of the APE, all work in the vicinity of the find should be halted until a qualified archaeologist can identify the discovery and assess its significance. In addition, if human remains are uncovered during construction, the Fresno County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified—on the basis of archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 requires that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent, who will be afforded the opportunity to

recommend means for treatment of the human remains following protocols in California Public Resources Code 5097.98.

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APPENDIX A

Personnel Qualifications

Areas of Expertise

- Historical research
- Architectural and archaeological survey and site evaluation
- Field logistics
- Statistical analysis
- Biological anthropology

Years of Experience

- 16

Education

M.A., Anthropology, University of California, Davis, 1989

B.A., Anthropology, California State University, Fresno, 1986

B.S., Business Administration, California State University, Fresno, 1986

Permits/Licensure

Field Director, California BLM
Statewide Cultural Resources Use
Permit CA-15-29

Professional Experience

2001– Associate Historian, Applied EarthWorks, Inc., Fresno, California

Technical Qualifications

Mr. Baloian conducts historical research, evaluates architectural and archaeological resources, performs statistical analyses, prepares reports, and assists with various administrative tasks including budget and proposal preparation. He has evaluated numerous historical resources in the Central Valley and Sierra Nevada foothills, including residences, ranch complexes, commercial structures, mining sites, recreational camps and parks, and agricultural properties. Through his efforts as a historian, Mr. Baloian has amassed a considerable archive on the topic of irrigation, and he maintains the library and site record archives at Applied EarthWorks' Fresno office. He has authored numerous evaluation reports on irrigation canals on both sides of the Central Valley, and his research on the history of the Central Valley also supports archaeological investigations in that region. In addition to his duties as historian and archivist, Mr. Baloian routinely performs archaeological surveys and has participated in site testing and data recovery fieldwork. He has completed the Advisory Council on Historic Preservation course on National Historic Preservation Act Section 106 compliance. Mr. Baloian's academic studies focused on paleoanthropology, primatology, human genetics, statistical analysis, and the genetic and cultural manifestations of ethnicity.

Areas of Expertise

- Cultural resource management
- Ethnography
- Tribal consultation
- Zooarchaeological, paleoethnobotanical, and lithics analysis

Years of Experience

- 18

Education

Ph.D., Anthropology/Feminist Studies, University of California, Santa Barbara, 2018

M.A., Anthropology (Archaeology/Cultural Resource Management emphasis), University of California, Santa Barbara, 2010

B.A., Anthropology, University of California, Santa Barbara, 2002

A.A., Liberal Arts and Sciences, Ventura College, 1999

Registrations/Certifications

- Registered Professional Archaeologist 39362477

Professional Affiliations

- American Anthropological Association
- American Cultural Resources Association
- Santa Barbara Museum of Natural History
- Society for American Archaeology
- Society for California Archaeology
- World Archaeological Congress

Professional Experience

2018–	Senior Archaeologist, Applied EarthWorks, Inc., Fresno, California
2015–2018	Interim Cultural Resources Supervisor and Senior Archaeologist/Ethnographer, Aspen Environmental Group
2007–2009	Archaeologist (GS-9), U.S. Department of Agriculture, Los Padres National Forest
2005–2007	Archaeologist (GS-7), U.S. Department of Agriculture, Los Padres National Forest
2004–2005	Archaeological Contractor, Padre, Inc., Ventura, California
2000–2005	Archaeologist (GS-4/5), U.S. Department of Agriculture, Los Padres National Forest

Technical Qualifications

Ms. Dyste has 18 years of experience in cultural resources management and meets the Secretary of the Interior's qualification criteria as an archaeologist and ethnographer. She has extensive experience preparing environmental documents and managing complex projects pursuant to applicable federal, state, and local regulations. Her work includes senior review or prime authorship of cultural resources documents for National Historical Preservation Act Section 106, National Environmental Policy Act, and California Environmental Quality Act compliance, including public and tribal comment and response; development of research designs; design and implementation of cultural resources plans. Ms. Dyste is qualified to conduct archaeological survey, including the supervision of small to large sized field crews, as well as zooarchaeological, paleoethnobotanical, lithics, and ethnographic analyses. She is able to analyze cultural spatial patterns via use of Total Station and Geographic Information Systems software. Ms. Dyste's Assembly Bill 52 and NHPA Section 106 tribal consultation services are informed by her knowledge and training in Native American jurisprudence, cultural sensitivity training, and graduate seminars in Native American environmental law, indigenous research methodologies, and community-based Participatory Action Research with tribal and special interest groups. She has project experience in coastal, highlands, grasslands, desert, and remote mountain settings across the state of California, although her academic region of specialty is in central and southern California with a focus on Salinan, Esselan, northern/interior/coastal Chumash prehistoric and modern political tribal groups. Ms. Dyste is a native Spanish speaker and assists clients with the translation of English to Spanish signage and public notices.

Areas of Expertise

- Geographic Information Systems (GIS) in archaeology
- Computer-generated maps and graphics
- Archaeological survey and excavation

Years of Experience

- 5

Education

B.A., Anthropology, California State University, Sacramento, 2013

Archaeological Technician Certificate, Anthropology Department, Fresno City College, Fresno, California, 2011

Professional Experience

- | | |
|-----------|---|
| 2015– | Geographic Information Systems (GIS) Technician/Staff Archaeologist, Applied EarthWorks, Inc., Fresno, California |
| 2012–2013 | Laboratory Technician (volunteer), Archaeological Research Center, California State University, Sacramento |
| 2009–2010 | Laboratory Technician (volunteer), Fresno City College, Fresno, California |

Technical Qualifications

As a staff archaeologist, Ms. Jones performs archival research, pedestrian archaeological and built environment survey, site recordation, and excavation on projects throughout the Central Valley and Sierra Nevada foothills. She also is a primary author or contributor for cultural resource inventory reports and is familiar with the preparation of California Department of Parks and Recreation cultural resource record forms (DPR 523 series) and California Department of Transportation documents. In her role as a GIS technician, Ms. Jones serves as cartographer and has participated in large and small projects involving both prehistoric and historic-era cultural resources. Using ESRI ArcGIS software, she has prepared maps and illustrations for documentation and technical reports encompassing archaeological and built environment resources for a variety of projects in California and Oregon. Additionally, she assists in the management and maintenance of the company's GPS data/units and cultural resources database system. She has extensive experience volunteering in archaeological repositories and is well versed in laboratory methodology related to the processing, cataloging, and management of archaeological collections.

APPENDIX B

Records Search Results



6/11/2018

Mary Balorian
Applied EarthWorks, Inc.
1391 W. Shaw Ave., Suite C
Fresno, CA 93711

Re: The City of San Joaquin Water Supply Project
Records Search File No.: 18-250

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the San Joaquin USGS 7.5' quad. The following reflects the results of the records search for the project area and the 0.5 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☐ custom GIS maps ☒ shapefiles ☐ hand-drawn maps

Resources within project area:	P-10-003930
Resources within 0.5 mile radius:	P-10-006632
Reports within project area:	FR-00116, 00511, 00631, 00632, 01857, 02532
Reports within 0.5 mile radius:	FR-02354, 02769

Resource Database Printout (list):

☒ enclosed ☐ not requested ☐ nothing listed

Resource Database Printout (details):

☒ enclosed ☐ not requested ☐ nothing listed

Resource Digital Database Records:

☒ enclosed ☐ not requested ☐ nothing listed

Report Database Printout (list):

☒ enclosed ☐ not requested ☐ nothing listed

Report Database Printout (details):

☒ enclosed ☐ not requested ☐ nothing listed

Report Digital Database Records:

☒ enclosed ☐ not requested ☐ nothing listed

Resource Record Copies:

☒ enclosed ☐ not requested ☐ nothing listed

Report Copies:

☐ enclosed ☒ not requested ☐ nothing listed

OHP Historic Properties Directory:

☐ enclosed ☐ not requested ☒ nothing listed

Archaeological Determinations of Eligibility:

☐ enclosed ☐ not requested ☒ nothing listed

CA Inventory of Historic Resources (1976):

☐ enclosed ☐ not requested ☒ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see
<http://www.dot.ca.gov/hq/structur/strmaint/historic.htm>

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see
<http://historicalmaps.arcgis.com/usgs/>

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC; please see
<http://www.glorerecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1> and/or
<http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items>

Shipwreck Inventory: Not available at SSJVIC; please see
<http://www.slc.ca.gov/Info/Shipwrecks.html>

Soil Survey Maps: Not available at SSJVIC; please see
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.


The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

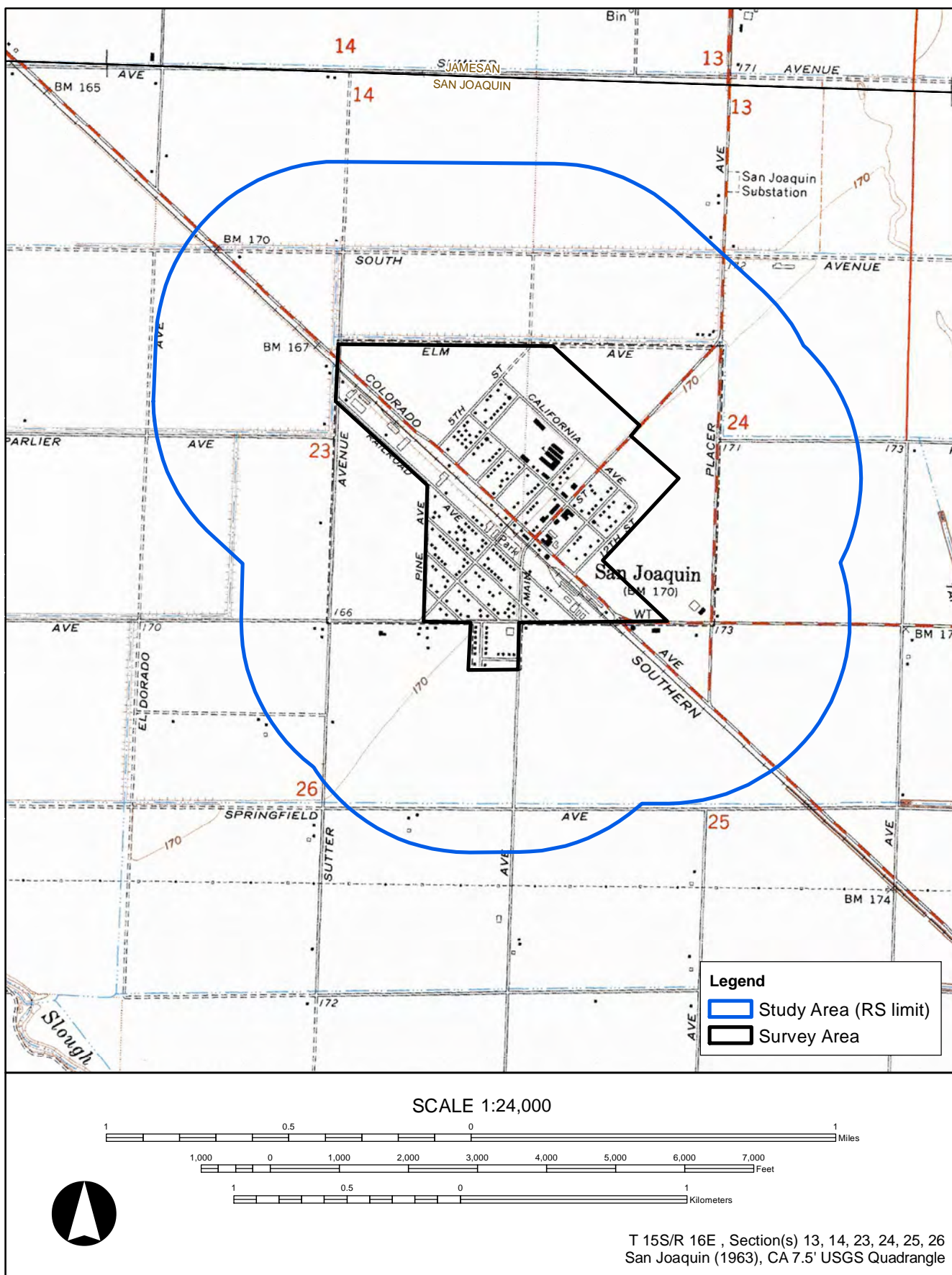
Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,


Celeste M. Thomson
Coordinator



Records Search location map for the *City of San Joaquin Water Supply Project - AE3882*.

Report List

SSJVIC Record Search 18-250

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-00116	NADB-R - 1141388	1991	Bissonnette, Linda Dick	Helm Elementary School District Proposed School Site Cultural Resources Survey	Michael Paoli and Associates	
FR-00511		1995	Kus, James S. and Mader, Claudia A.	Archaeological Survey Report for a proposed farm laborhousing project located in Section 23, T15S, R16E, MDBM	CSU Fresno	
FR-00631		1988	Unknown	Cultural Resource Assessment of the San Joaquin Family Apartment Complex, Fresno County, California	Peak & Associates, Inc.	
FR-00632		1988	Unknown	Cultural Resource Assessment of the San Joaquin Senior Apartment Complex, Fresno County, California	Peak & Associates, Inc.	
FR-01857		2001	Billat, Lorna Beth	Nextel Communications Wireless Telecommunications Service Facilities Located in Counties Covered by the Southern San Joaquin Valley Information Center	EarthTouch, LLC.	
FR-02354		2010	Varner, Dudley M.	A Cultural Resource Study for the Water Storage Tank No. 1 Project in the City of San Joaquin, Fresno County, California	Varner Associates	
FR-02532		2010	Kaijankowski, Philip	Cultural Resouce Sensitivity Study for San Joaquin - Carvalo Solar PV Project Gen-Tie Lines	Far Western Anthropological Research Group, Inc.	
FR-02769		2016	Asselin, Katie, Baloian, Randy, Morlet, Aubrie, Mirro, Michael, Whiteman, Jennifer, Tibbet, Josh, and Baloian, Mary	Cultural Resources Inventory and Evaluation for the Central Valley Power Connect Project, Fresno, Kings, and Madera Counties, California	Applied EarthWorks	10-003930, 10-005810, 10-006602, 10-006603, 10-006604, 10-006605, 10-006606, 10-006607, 10-006608, 10-006609, 10-006610, 10-006611, 10-006612, 10-006613, 10-006614, 10-006615, 10-006616, 10-006617, 10-006618, 10-006619, 10-006620, 10-006621, 10-006622, 10-006623, 10-006624, 10-006625, 10-006626, 10-006627, 10-006628, 10-006629, 10-006630, 10-006631, 10-006632, 10-006633, 10-006634, 10-006635, 10-006636, 10-006637, 10-006638, 10-006639, 10-006640
FR-02769A		2016	Asselin, Katie, Mirro, Michael, and Baloian, Mary Clark	Supplemental Cultural Resources Inventory for the Central Valley Power Connect Project, Madera, Fresno, and Kings Counties, California	Applied EarthWorks	

Resource List

SSJVIC Record Search 18-250

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-10-003930	CA-FRE-003109H	Resource Name - Southern Pacific Railroad	Structure	Historic	AH07 (Roads/trails/railroad grades)	1998 (W.L. Norton, Jones & Stokes); 1999 (S. Hooper, S. Flint, Applied EarthWorks, Inc.); 2002 (Peggy B. Murphy, Three Girls and a Shovel); 2004 (Bryan Larson, Cindy Toffelmier, JRP Historical Consulting); 2009 (Joseph Freeman, Rebecca Flores, JRP Historical Consulting); 2009 (Joseph Freeman, Rebecca Flores, JRP Historical Consulting); 2009 (Joseph Freeman, Rebecca Flores, JRP Historical Consulting); 2010 (Michael Hibma, LSA Associates); 2013 (Randy Baloian, Applied Earthworks, Inc.); 2015 (Randy Baloian, Applied EarthWorks, Inc.); 2015 (Randy Baloian, Applied Earthworks, Inc.); 2016 (J. Tibbet, Applied EarthWorks, Inc.)	FR-00238, FR-01770, FR-01771, FR-01772, FR-02642, FR-02726, FR-02769, FR-02847
P-10-006632	CA-FRE-003774H	Resource Name - James Irrigation District Lateral R Canal	Structure	Historic	HP20 (Canal/aqueduct)	2015 (Randy Baloian, Applied EarthWorks); 2015 (Randy Baloian, Applied EarthWorks)	FR-02769, FR-02791

Historical Maps and Aerial Images Consulted

Date	Name	Source	Reference
1937	Fresno County Aerial Survey 1937 13-ABI 75-32	Agricultural Adjustment Administration	1937 Fresno County, California, Aerial Survey 1937 13-ABI 75-32, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/1197/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1946	Fresno County Aerial Survey 1946 GS-CO 7-67	Agricultural Adjustment Administration	1942 Fresno County, California, Aerial Survey 1946 ABI-10B-130, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/22379/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1950	Fresno County Aerial Survey 1950 ABI-9G-167	U.S. Dept. of Agriculture	1950 Fresno County, California, Aerial Survey 1950 ABI-9G-167, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/2492/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1957	Fresno County Aerial Survey 1957 ABI-27T-46	U.S. Commodity Stabilization Service	1957 Fresno County, California, Aerial Survey 1957 ABI-27T-46, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/2993/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1961	Fresno County Aerial Survey 1961 FRE-1-35	U.S. Agricultural Stabilization and Conservation Service	1961 Fresno County, California, Aerial Survey 1961 ABI-4BB-77, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/4643/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1964	Fresno County Aerial Survey 1964 BR-WWD 5-95	U.S. Commodity Stabilization Service	1964 Fresno County, California, Aerial Survey 1964 BR-WWD 5-95, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/16597/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1965	Fresno County Aerial Survey 1965 FRE-3-108	U.S. Soil Conservation Service	1965 Fresno County, California, Aerial Survey 1965 FRE-3-108, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/6340/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.

Historical Maps and Aerial Images Consulted

Date	Name	Source	Reference
1967	Fresno County Aerial Survey 1987 NAPP 472-167	Agricultural Adjustment Administration	1967 Fresno County, California, Aerial Survey 1967 ABI-8HH-83, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/5938/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1970	Fresno County Aerial Survey 1970 2866-12-38	U.S. Agricultural Stabilization and Conservation Service	1970 Fresno County, California, Aerial Survey 1970 2866-12-38, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/5694/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1973	Fresno County Aerial Survey 1973 06019 273-26 L	U.S. Agricultural Stabilization and Conservation Service	1973 Fresno County, California, Aerial Survey 1973 06019 273-26 L, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/9645/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1977	Fresno County Aerial Survey 1977 FRE CO 9-17 R	Agricultural Adjustment Administration	1977 Fresno County, California, Aerial Survey 1977 FRE CO 9-17 R, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/23452/rec/2 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1987	Fresno County Aerial Survey 1987 NAPP 472-117	Agricultural Adjustment Administration	1987 Fresno County, California, Aerial Survey 1987 NAPP 472-117, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/7709/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1992	Fresno County Aerial Survey 1992 BR-CVHAB 6-178	Agricultural Adjustment Administration	1992 Fresno County, California, Aerial Survey 1992 BR-CVHAB 6-178, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/9866/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1993	Fresno County Aerial Survey 1993 NAPP 6297-104	California Department of Transportation District 6	1993 Fresno County, California, Aerial Survey 1993 NAPP 6297-104, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/9289/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.

Historical Maps and Aerial Images Consulted

Date	Name	Source	Reference
1998	Fresno County Aerial Survey 1998 NAPP 10545-33	Agricultural Adjustment Administration	1998 Fresno County, California, Aerial Survey 1998 NAPP 10545-33, https://digitized.library.fresnostate.edu/digital/collection/aerial/id/17781/rec/1 , accessed through Map and Aerial Locator Tool (MALT), Henry Madden Library, California State University, Fresno, July 30, 2018.
1925	San Joaquin, CA, 1:31,680	U.S. Geological Survey	1925 San Joaquin, Calif., 1:31,680 scale. U.S. National Geologic Map Database, Historical Topographic Map Collection (topoView), https://ngmdb.usgs.gov/topoview/ , accessed July 30, 2018.
1947	San Joaquin, CA, 1:24,000	U.S. Geological Survey	1947 San Joaquin, Calif., 1:24,000 scale. U.S. National Geologic Map Database, Historical Topographic Map Collection (topoView), https://ngmdb.usgs.gov/topoview/ , accessed July 30, 2018.
1963 (PI1965)	San Joaquin, CA, 1:24,000	U.S. Geological Survey	1963 San Joaquin, Calif., 1:24,000 scale. U.S. National Geologic Map Database, Historical Topographic Map Collection (topoView), https://ngmdb.usgs.gov/topoview/ , accessed July 30, 2018.

APPENDIX C

Native American Outreach

Native American Outreach

City of San Joaquin Water Supply Improvements Project

Organization	Name	Position	Letter	Phone	Summary of Contact
Native American Heritage Commission					
Big Sandy Rancheria	Elizabeth D. Kipp	Chairperson	06/29/18	08/07/18	No answer, left message-JJ
Cold Springs Rancheria of Mono Indians	Carol Bill	Chairperson	06/29/18	08/07/18	No answer, left message-JJ
Dumna Wo-Wah Tribal Government	Robert Ledger Sr.	Tribal Chairperson	06/29/18	08/07/18	Called and spoke with Chief Ledger, he said response is pending as there might potentially be sites near the project.-JJ
Dunlap Band of Mono Indians	Dick Charley	Chairperson	06/29/18	08/16/18	No answer, left message-JJ
Kings River Choinumni Farm Tribe	Stan Alec		06/29/18	08/16/18	Called and spoke with Stan Alec. He has no information or comments on the Project area.-JJ
North Fork Mono Tribe	Ron Goode	Chairperson	06/29/18	08/16/18	No answer, left message-JJ
Santa Rosa Rancheria Tachi Yokut Tribe	Rueben Barrios Sr.	Chairperson	06/29/18	08/16/18	No answer, left message-JJ
Table Mountain Rancheria	Leanne Walker-Grant	Chairperson	06/29/18	08/16/18	No answer, left message-JJ
Table Mountain Rancheria	Bob Pennell	Cultural Resources Director	06/29/18	08/16/18	No answer, left message-JJ; response received from Bob Pennell requesting that the Rancheria be notified if any resources are discovered during project work-mb/jj
Traditional Choinumni Tribe	David Alvarez	Chairperson	06/29/18	08/16/18	No answer, left message-JJ
Wuksache Indian Tribe/Eshom Valley Band	Kenneth Woodrow	Chairperson	06/29/18	08/16/18	No answer, could not leave message-JJ
Traditional Choinumni Tribe	Rick Osborne	Cultural Resources	06/29/18	08/16/18	Left message with Mrs. Osborne. -JJ

NATIVE AMERICAN HERITAGE COMMISSION

Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710



June 13, 2018

Mary Baloian
Applied Earth Works

Sent by Email: mbaloian@appliedearthworks.com
Number of Pages: 2

RE: City of San Joaquin Water Supply Project, Fresno County

Dear Ms. Boloian:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. **Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.**

I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. **By contacting all those on the list, your organization will be better able to respond to claims of failure to consult.** If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: sharaya.souza@nahc.ca.gov or (916) 573-0168.

Sincerely,

A handwritten signature in black ink, appearing to read "Sharaya Souza".

Sharaya Souza
Staff Services Analyst
(916) 573-0168

**Native American Heritage Commission
Native American Consultation List
6/13/2018**

Big Sandy Rancheria of Western Mono Indians
Elizabeth D. Kipp, Chairperson
PO. Box 337 37387 Auberry Mission Rd. Western Mono
Auberry, CA 93602
lkipp@bsrnation.com
(559) 374-0066
(559) 374-0055

North Fork Mono Tribe
Ron Goode, Chairperson
13396 Tollhouse Road Mono
Clovis, CA 93619
rwgoode911@hotmail.com
(559) 299-3729 Home
(559) 355-1774 - cell

Cold Springs Rancheria
Carol Bill, Chairperson
P.O. Box 209 Mono
Tollhouse, CA 93667
(559) 855-5043
(559) 855-4445 Fax

Santa Rosa Rancheria Tachi Yokut Tribe
Rueben Barrios Sr., Chairperson
P.O. Box 8 Tache
Lemoore, CA 93245 Tachi
(559) 924-1278 Yokut
(559) 924-3583 Fax

Dumna Wo-Wah Tribal Government
Robert Ledger SR., Chairperson
2191 West Pico Ave. Dumna/Foothill Yokuts
Fresno, CA 93705 Mono
ledgerrobert@gmail.com
(559) 540-6346

Table Mountain Rancheria
Leanne Walker-Grant, Chairperson
P.O. Box 410 Yokuts
Friant, CA 93626
(559) 822-2587
(559) 822-2693 Fax

Dunlap Band of Mono Indians
Dick Charley, Chairperson
Box 44 Mono
Dunlap, CA 93621
(559) 338-2545

Table Mountain Rancheria
Bob Pennell, Cultural Resources Director
P.O. Box 410 Yokuts
Friant, CA 93626
rpennell@tmr.org
(559) 325-0351
(559) 325-0394 Fax

Kings River Choinumni Farm Tribe
Stan Alec
3515 East Fedora Avenue Foothill Yokuts
Fresno, CA 93726 Choinumni
(559) 647-3227 Cell

Traditional Choinumni Tribe
David Alvarez, Chairperson
2415 E. Houston Avenue Choinumni
Fresno, CA 93720
dave@davealvarez.com
(559) 217-0396 Cell

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed:
City of San Joaquin Water Supply Project, Fresno County.

**Native American Heritage Commission
Native American Consultation List
6/13/2018**

Traditional Choinumni Tribe
Rick Osborne, Cultural Resources
2415 E. Houston Avenue Choinumni
Fresno , CA 93720
(559) 324-8764
lemek@att.net

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct. Foothill Yokuts
Salinas , CA 93906 Mono
kwood8934@aol.com Wuksache
(831) 443-9702

This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed:
City of San Joaquin Water Supply Project, Fresno County.

June 29, 2018

Elizabeth D. Kipp, Chairperson
Big Sandy Rancheria
P.O. Box 337/37387
Auberry, CA 93602

RE: City of San Joaquin's Water Supply, Treatment, Storage, and Distribution Improvements Project,
Fresno County, California.

Dear Ms. Elizabeth D. Kipp,

Applied EarthWorks, Inc. (Æ), under contract to Crawford and Bowen Planning, is providing cultural resources services in support of the City of San Joaquin (City) Water Supply Project (Project). The proposed project will include the installation of new water pipelines and easements, and the construction of a new water supply well, treatment system, and several hydrants. In general, ground disturbance will occur within existing paved roads and previously disturbed areas in the City's residential neighborhoods. The Project will comply with both the California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act (NHPA).

The Project's Area of Potential Effects is within Township 15 South, Range 16 East, Sections 23, 24, and 26 of the San Joaquin, CA 7.5-minute USGS quadrangle (see attached map). A search of the Native American Heritage Commission's (NAHC) *Sacred Lands File* failed to indicate the presence of Native American cultural resources in the immediate Project area. Æ also requested a records search of the California Historic Resources Information System at the Southern San Joaquin Valley Information Center in Bakersfield. The records search revealed one historical railroad segment and no prehistoric resources.

Æ completed a pedestrian survey of the Project area to identify and record cultural resources present. No historic-era or prehistoric resources were observed as a result of the survey. The NAHC provided your name and address as someone who might have information regarding sacred sites, tribal cultural resources, or other resources of importance in the project area. If you have any information that you wish to share, have questions, or would like more information about the project, please do not hesitate to contact me by phone (559) 229-1856 x 11, email (mbaloian@appliedearthworks.com), or send a letter to my attention.

I would appreciate any information you might provide to assist us with our inventory efforts. Be assured that any locations of archaeological sites, cemeteries, or sacred places will be treated confidentially, as required by law, and not disclosed in any document available to the general public.

Sincerely,



Mary Baloian
Principle Archaeologist

encl.: Project Location Map



TABLE MOUNTAIN RANCHERIA

TRIBAL GOVERNMENT OFFICE

CERTIFIED 9916 1465

August 14, 2018

Leanne Walker-Grant
Tribal Chairperson

Beverly J. Hunter
Tribal Vice-Chairperson

Craig Martinez
Tribal Secretary/Treasurer

Matthew W. Jones
Tribal Council Member

Richard L. Jones
Tribal Council Member

Mary Baloian, Principle Archaeologist
Applied Earth Works Inc.
1391 W. Shaw Ave., Suite C
Fresno, Ca. 93711

RE: City of San Joaquin's Water Supply, Treatment, Storage, and Distribution Improvements Project, Fresno County, California

Dear: Mary Baloian

This is in response to your letter dated, June 29, 2018, regarding, City of San Joaquin's Water Supply, Treatment, Storage, and Distribution Improvements Project, Fresno County, California. Thank you for notifying us of the potential development and the request for consultation.

We decline participation at this time but would appreciate being notified in the unlikely event that cultural resources are identified.

Sincerely,

Robert Pennell
Tribal Cultural Resources Director
rpennell@tmr.org
559.325.0351

23736
Sky Harbour Road
Post Office
Box 410
Friant
California
93626
(559) 822-2587
Fax
(559) 822-2693

APPENDIX D

Cultural Resource Records

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LINEAR FEATURE RECORD

Primary # 10-003930
HRI #/Trinomial CA-FRE-3109H

Page 1 of 2

Resource Name or #:

L1. Historic and/or Common Name: Hanford & Summit Lake Railway

L2a. Portion Described: ☐ Entire Resource ☒ Segment ☐ Point Observation **Designation:**

b. Location of point or segment: **UTM NAD 83; Zone 10N: 751724 mE / 4054732 mN** (NW End)
751919 mE / 4054575 mN (SE End)

L3. Description: The segment consists of a single set of standard gauge tracks set upon a grade of crushed stone ballast, raised about 3 feet above ground level. Some sections are not raised by a stone ballast and are level with the roadway surface. The welded steel rails are supported by standard wood ties.

L4. Dimensions:

- a. **Top Width:** ~5 feet
- b. **Bottom Width:** ~20 feet
- c. **Height or Depth:** 0–3 feet
- d. **Length of Segment:** 838 feet (NW to SE)

L4e. Sketch or Cross Section ☐ attached **Facing:**

☒ none

L5. Associated Resources: none

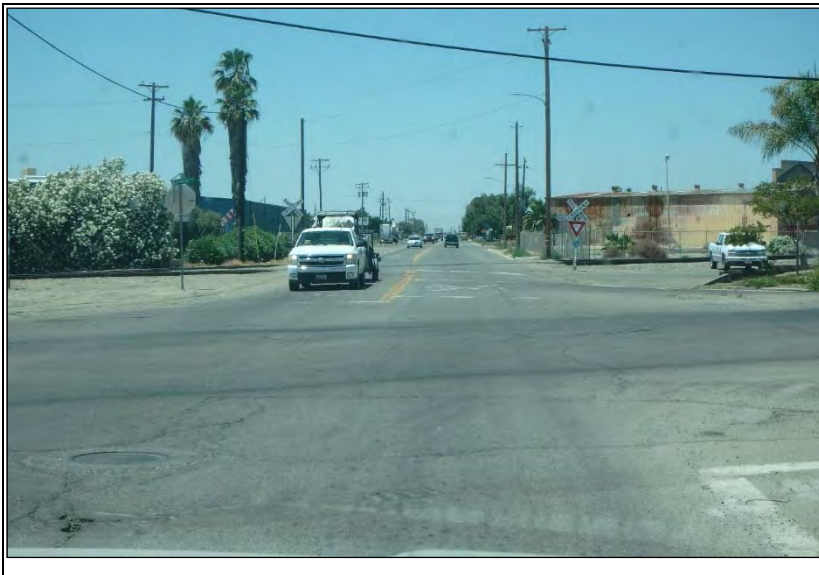
L6. Setting: Semi-rural, West Side of Fresno County

L7. Integrity Considerations: The railroad retains its original alignment, but its materials (rails, ties, ballast, etc.) have been replaced since its construction in 1912. See report cited below for a complete discussion of the segment's integrity and NRHP and CRHR eligibility:

Jones, Jessica, Randy Baloian, and Diana Dyste

2018 *Historic Properties Inventory and Evaluation for City of San Joaquin Wells 4 and 6 Manganese Treatment and Distribution Pipeline Project, Fresno County, California.* Applied EarthWorks, Inc., Fresno, California. Prepared for Crawford & Bowen Planning, Inc., Visalia, California.

L8a. Photo, Map, or Drawing:



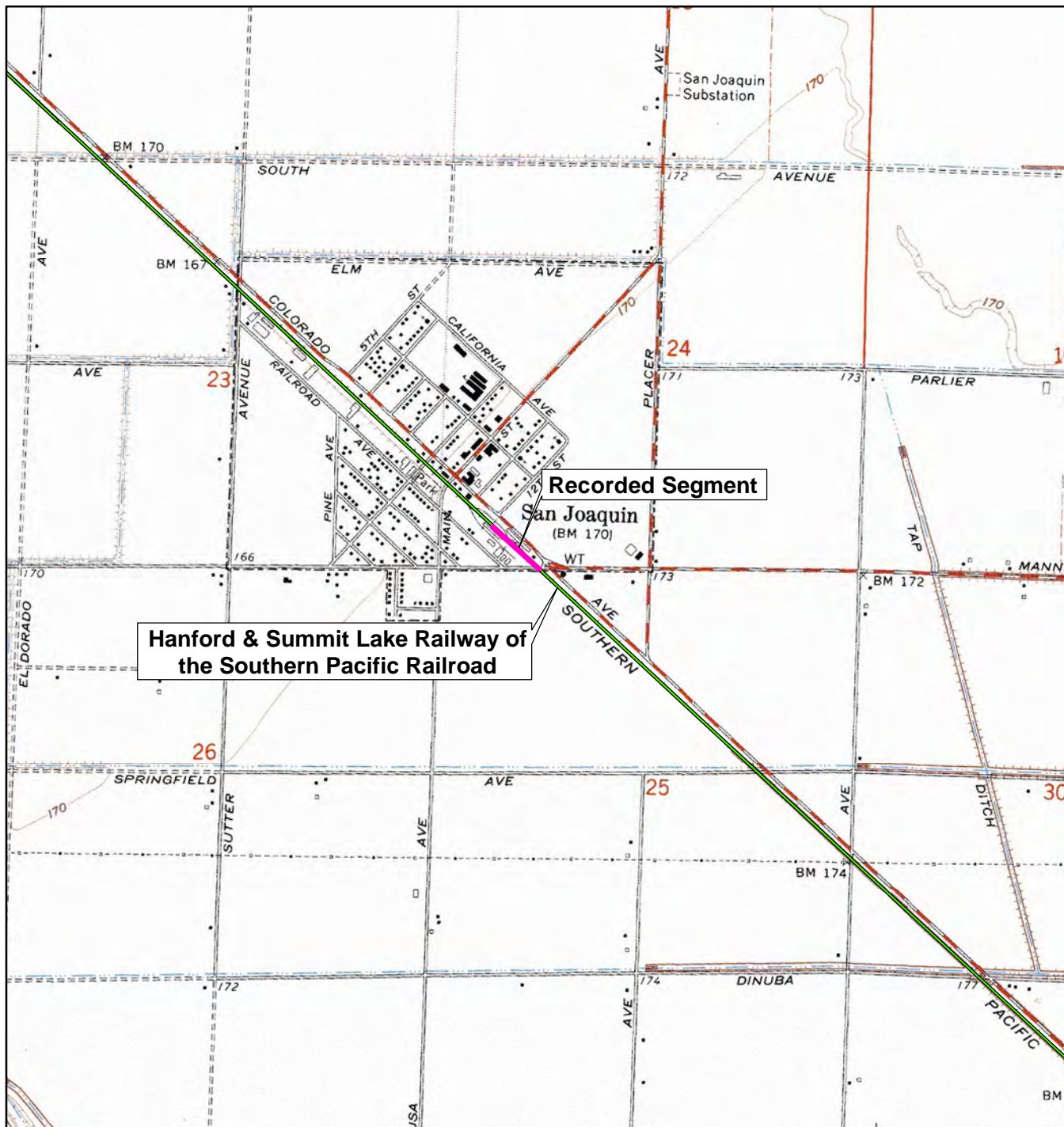
L8b. Description of Photo, Map, or Drawing:

View of the recorded segment, facing west down Manning Avenue.

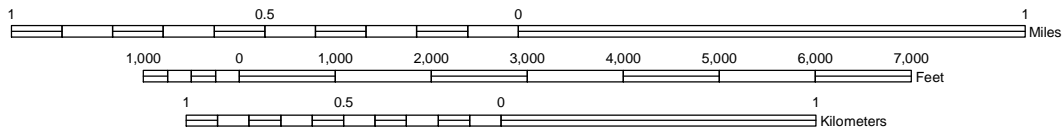
L9. Remarks: This resource was evaluated by Applied EarthWorks, Inc. and recommended ineligible for listing on the NRHP and CRHR.

L10. Form Prepared By: Jessica Jones
Applied EarthWorks, Inc.
Fresno, CA 93711

L11. Date: June 2018



SCALE 1:24,000



TRUE NORTH