Riverdale
Public Utility District

# RIVERDALE WELL 8 PROJECT

## DRAFT INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

FEBRUARY 2024


PREPARED FOR:
Riverdale Public Utility District
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# ACRONYMS AND ABBREVIATIONS

AB ..... Assembly Bill
AQP ..... Air Quality Plan
ARB ..... Air Resource Board
ARPA ..... American Rescue Plan Act
BA ..... Biological Assessment
BMP ..... Best Management Practices
BO ..... Biological Opinion
CalEEMod ..... California Emissions Estimator Model
CalGEM ..... California Geologic Energy Management Division
Cal/OSHA ..... California Occupational Safety and Health Administration
CCA ..... Clean Air Act
CCAA ..... California Clean Air Act
CDFW ..... California Fish and Wildlife
CEQA ..... California Environmental Quality Act
CESA ..... California Endangered Species Act
CFC ..... Chlorofluorocarbons
CFR ..... Code of Federal Regulations
CGS ..... California Geological Survey
$CH_4$ ..... Methane
CNDDB ..... California Natural Diversity Database
CNPS ..... California Native Plant Society
CO ..... Carbon monoxide
$CO_2$ ..... Carbon dioxide
$CO_2e$ ..... Carbon dioxide equivalent
County ..... Fresno
CWA ..... Clean Water Act
dBA ..... A-weighted decibels
District ..... Riverdale Public Utility District
DPM ..... Diesel Particulate Matter
DTSC ..... Department of Toxic Substances Control
DWR ..... Department of Water Resources
EIR ..... Environmental Impact Report

EMFAC ..... ARB Emission Factor
EPA ..... Environmental Protection Agency
ESA ..... Environmental Site Assessment
FEMA ..... Federal Emergency Management Agency
FMMP ..... Farmland Mapping and Monitoring Program
GAMAQI ..... Guideline for Assessing and Mitigating Air Quality Impacts
GHG ..... Greenhouse Gas
GIS ..... Geographic Information System
gpm ..... gallons per minute
GSA ..... Groundwater Sustainability Agency
GSP ..... Groundwater Sustainability Plan
GWP ..... Global Warming Potential
HFC ..... Hydrofluorocarbons
HUC ..... Hydrologic Unit Code
IRF ..... Intermediate Regional Flood
IS ..... Initial Study
IS/MND ..... Initial Study/Mitigated Negative Declaration
Lead Agency ..... Riverdale Public Utility District
MBTA ..... Migratory Bird Act
MGD ..... million gallons per day
MMRP ..... Mitigation Monitoring and Reporting Program
MND ..... Mitigated Negative Declaration
MRZ ..... Mineral Resource Zones
$MTCO_2e$ ..... Million Metric Tons of Carbon Dioxide Equivalent
NAAQS ..... National Ambient Air Quality Standards
NAHC ..... Native American Heritage Commission
ND ..... Negative Declaration
NEPA ..... National Environmental Policy Act
NFIP ..... National Flood Insurance Program
NFKGSA ..... North Fork Kings Groundwater Sustainability Agency
NMFS ..... National Marine Fisheries Service
$NO_2$ ..... Nitrogen Dioxide
$NO_X$ ..... Oxides of Nitrogen
NPDES ..... National Pollutant Discharge Elimination System

NPPA ..... Native Plant Protection Act
$O_3$ ..... Ozone
Pb ..... Lead
PC ..... production-consumption (region)
PFC ..... Perfluorocarbons
$PM_{10}$ ..... particulate matter 10 microns in size
$PM_{2.5}$ ..... particulate matter 2.5 microns in size
ppb ..... parts per billion
ppm ..... parts per million
Project ..... Well No. 8
ROG ..... Reactive Organic Gases
RPUD ..... Riverdale Public Utility District
RWQCB ..... Regional Water Quality Control Board
SB ..... Senate Bill
SCAQMD ..... South Coast Air Quality Management District
SFHA ..... Special Flood Hazard Areas
SGMA ..... Sustainable Groundwater Management Act
SJVAB ..... San Joaquin Valley Air Basin
SJVAPCD ..... San Joaquin Valley Air Pollution Control District
$SO_2$ ..... Sulfur Dioxide
SR ..... State Route
SSJVIC ..... Southern San Joaquin Valley Information Center
SWPPP ..... Storm Water Pollution Prevention Plan
SWRCB ..... State Water Resources Control Board
TAC ..... Toxic Air Contaminant
USACE ..... United States Army Corps of Engineers
USC ..... United States Code
USFWS ..... United States Fish and Wildlife Service
USGS ..... United States Geological Survey
WDR ..... Waste Discharge Requirements
WWTP ..... Wastewater Treatment Plant
µg/m3 ..... micrograms per cubic meter

# CHAPTER 1 INTRODUCTION

Provost & Pritchard Consulting Group (Provost & Pritchard) has prepared this Initial Study/Mitigated Negative Declaration (IS/MND) on behalf of the Riverdale Public Utility District to address the environmental effects of the Well No. 8 Project (Project). This document has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq. The District is the CEQA lead agency for this Project.

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

## 1.1 REGULATORY INFORMATION

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

a. The IS shows there is no substantial evidence, in light of the whole record before the agency, that the proposed Project may have a significant effect on the environment, or
b. The IS identified potentially significant effects, but:
    1. Revisions in the project plans or proposals made by or agreed to by the applicant before the proposed MND and IS is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur is prepared, and
    2. There is no substantial evidence, in light of the whole record before the agency, that the proposed Project as *revised* may have a significant effect on the environment.

## 1.2 DOCUMENT FORMAT

This IS/MND contains six chapters. Chapter 1 Introduction, provides an overview of the Project and the CEQA process. Chapter 2 Project Description, provides a detailed description of proposed Project components and objectives. Chapter 3 Determination, the Lead Agency's determination based upon this initial evaluation. Chapter 4 Environmental Impact Analysis presents the CEQA checklist and environmental analysis for all impact areas, mandatory findings of significance, and feasible mitigation measures. If the Project does not have the potential to significantly impact a given issue area, the relevant section provides a brief discussion of the reasons why no impacts are expected. If the Project could have a potentially significant impact on a resource, the issue area discussion provides a description of potential impacts, and appropriate mitigation measures and/or permit requirements that would reduce those impacts to a less

than significant level. Chapter 5 Mitigation, Monitoring, and Reporting Program (MMRP), provides the proposed mitigation measures, implementation timelines, and the entity/agency responsible for ensuring implementation. Chapter 6 References details the documents and reports this document relies upon to provide its analysis.

The Air Quality and Greenhouse Gas Emissions Model, Biological Evaluation, and Class III Inventory/Phase I Survey, are provided as technical Appendix A, Appendix B, and Appendix C, respectively, at the end of this document.

# CHAPTER 2 PROJECT DESCRIPTION

## 2.1 PROJECT BACKGROUND

### 2.1.1 Project Title

Riverdale Public Utility District: Well No. 8

### 2.1.2 Lead Agency Name and Address

Riverdale Public Utility District
20896 Malsbary St
Riverdale, CA 93656

### 2.1.3 Contact Person and Phone Number

#### Lead Agency Contact

Vincent Romero
District Superintendent
(559) 867-3838

#### CEQA Consultant

Provost & Pritchard Consulting Group
Amy M. Wilson, Senior Planner
(559) 636-1166

### 2.1.4 Project Location

The Project is located in the unincorporated community of Riverdale, in Fresno County, California, approximately 174 miles southeast of Sacramento and 85 miles northwest of Bakersfield (see Figure 2-1 and Figure 2-2). The Project well site is located approximately on Assessor's Parcel Number 053-260-21. The centroid of the Project site is 36°25'45.92"N, 119°51'12.89"W.

### 2.1.5 Description of Project

#### Project Background and Purpose

The Riverdale Public Utility District (RPUD) has received grant funding from the Small Community Drought Relief Program through the Department of Water Resources (DWR) and grant funding from the American Rescue Plan Act (ARPA) through the County of Fresno (County). The DWR and ARPA funds will co-fund the cost of the new well (Well No. 8) and associated infrastructure.

The existing RPUD water system is currently supplied by two active wells, Well 6 and Well 7. Well 6 is located in the southeast area of Riverdale and has a capacity of approximately 1,350 gallons per minute (gpm). Well 7 is located in the northwest part of the community and, due to recent issues with pumping

sand, has a reduced capacity of about 450 gpm. A downhole and above ground sand separator were installed at Well 7, but the well continues to have issues pumping fine sand and is proving to be an unreliable source for the water system. If the highest capacity well (Well 6) is out of service, the peak demands of the system cannot be met by the diminished production of Well 7. The addition of Well 8 will allow peak demands to continue to be met with either of the existing wells out of service.

## Project Description

The Project would consist of the construction of a new potable water well for the community of Riverdale. The Project is intended to supplement the community's water supply system by constructing a new well site and associated infrastructure including but not limited to: well pump, site piping and appurtenant infrastructure, motor control center and structure, electrical connection and transformer, emergency generator, chemical storage enclosure, a ponding basin for site drainage, site lighting, site grading, and site fencing. This Project will help address fire flow, system redundancy, pressure, looping concerns throughout the District, and provide additional drought resiliency for the community. The well Project site will be located on an approximately 1.8-acre parcel acquired by the District, located behind the Saint Ann Church on W. Mt Whitney Avenue on Assessor's Parcel Number 053-260-21.

Along with construction of the new well site, accompanying infrastructure will include the installation of new water mains and the replacement of an aging, undersized water main near the Project site and the existing Well No. 6 site. Approximately 6,200 linear feet of 10-inch water main will be constructed along W. Wood Avenue, S. Marks Avenue, W. Kruger Avenue, and S. Feland Avenue within the existing road right of way. The proposed water main alignment will replace the existing undersized 4-inch water main and provide a new stretch of 10-inch distribution main for better connectivity between Well 6 in the southeast area and the rest of the system. In order to connect the Project site to the distribution system, approximately 600 LF of 12-inch water main will be installed along the north side of the Burrel Ditch canal from S. Feland Avenue to the Project well site. The Project will also incorporate the construction of an on-site retention basin for site drainage. The basin will be constructed on the northwest portion of the well site. The basin will be designed per Fresno Metropolitan Flood Control District design standards for a 100-year, 10-day storm (approximately 6 inches of rainfall depth) and will retain approximately 0.75 acre-feet of water. Drainage infrastructure will be constructed (inlets and piping) as needed for runoff and well flushing and will outlet to the basin. An additional basin will be constructed for the Church that is located north of the Project site since the new well site will take the area that property currently drains, this basin will have the same design criteria, with a total volume of 0.65 ac-ft.

The design of the Well 8 site will be similar to Well 6 and Well 7 to be consistent with well infrastructure across the District. Based on prior studies and design of other wells in and around Riverdale, it is expected that Well 8 will be approximately 2,000 feet deep and be sealed down to a depth at least below the Corcoran Clay and will be designed with a desired pumping capacity of 1,350 gallons per minute. Arsenic, color, and Total Organic Carbon are expected to be present, but at levels below the current maximum contaminant level. While it is not anticipated that the water quality at the Well No. 8 site will require treatment, a portion of the site has been planned for future treatment facilities if the District needs additional treatment. The District has also planned space for a water storage tank should the system need additional operational storage capacity at any point in the future.

## Construction Schedule

The total project construction time is expected to be approximately 15 months. Construction timing will be critical due to the long lead times on many of the electrical and mechanical equipment required for

this project. The construction completion dates for County ARPA funding and DWR Small Community Drought Relief Funding are December 31, 2026 and December 31, 2024, respectively. Construction Equipment could include scrapers, backhoes, and drilling rigs. It is anticipated that the staging area for the construction equipment will be located in the proposed well site as well as the existing Well 6 and Well 7 sites.

#### Operation and Maintenance

Operation and maintenance of the new well will be performed by the RPUD existing maintenance staff.

### 2.1.6 Site and Surrounding Land Uses and Setting

Table 2-1 : Existing Uses, General Plan Designation, & Zone Districts of Surrounding Properties

| Direction from Project Site | Existing Use | General Plan Designation | Zone District |
|---|---|---|---|
| NORTH | Church | Medium Density Residential | R-1 (Single Family Residential) |
| EAST | Residential | Medium Density Residential | R-1 (Single Family Residential) |
| SOUTH | Vacant | Medium Density Residential | R-1 (Single Family Residential) |
| WEST | Event Hall | Park | AL-20 (Limited Agriculture) |

### 2.1.7 Other Public Agencies Whose Approval May Be Required

- State Water Resources Control Board
- San Joaquin Valley Air Pollution Control District

### 2.1.8 Consultation with California Native American Tribes

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

The District has not received any written correspondence from a Tribe pursuant to Public Resources Code Section 21080.3.1 requesting notification of the proposed project.

Outreach letters were however sent to all tribes listed on the Native American Heritage Commission (NAHC) provided contact list on 25 April 2023, with follow-up emails sent on 11 August 2023. One response was received from the Santa Rosa Rancheria Tachi-Yokut Tribe on 28 June 2023 requesting continued consultation, the results of the cultural study, to be retained for a cultural presentation prior to work, and to have a tribal monitor present for all ground disturbing activities.

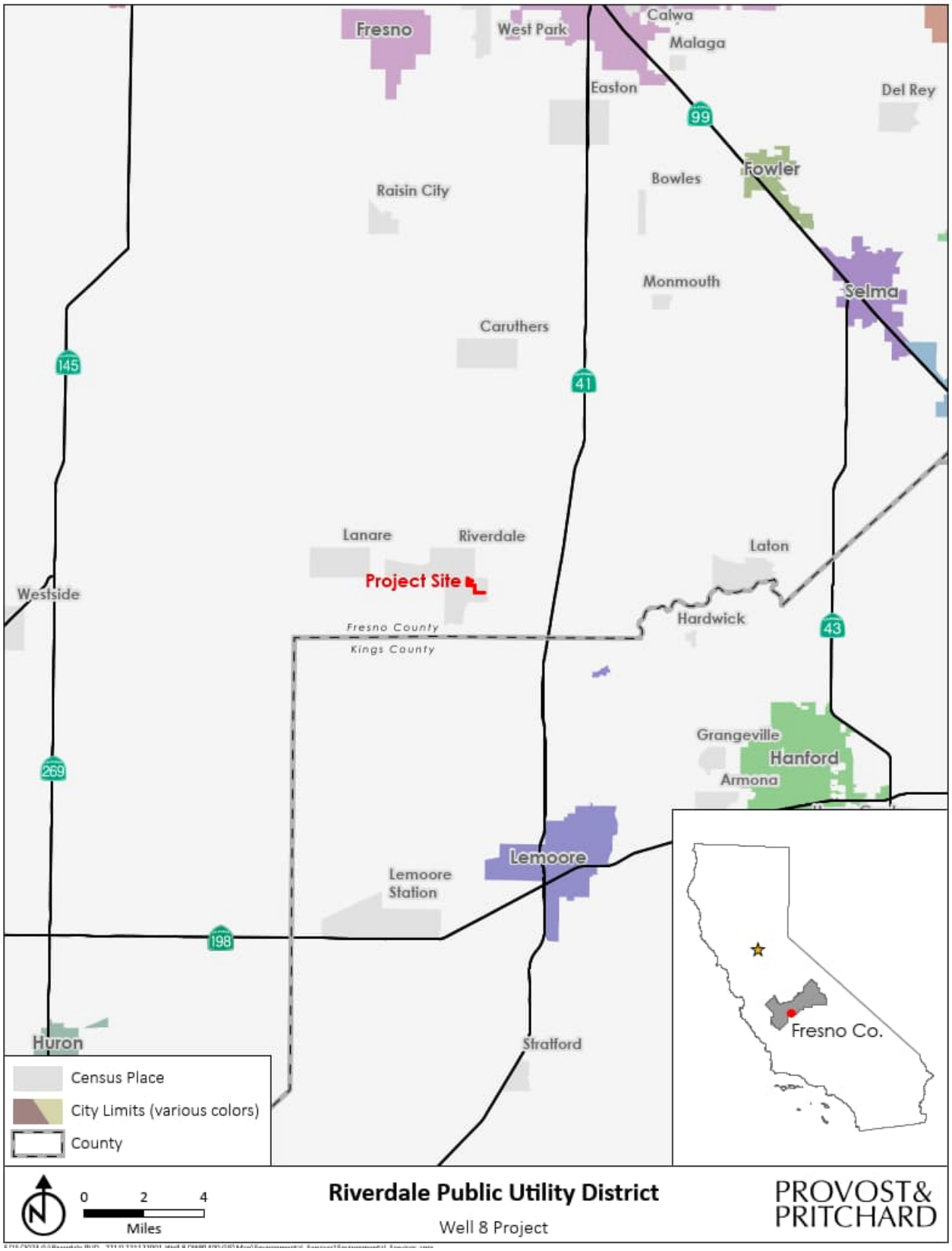


Figure 2-1: Regional Location Map

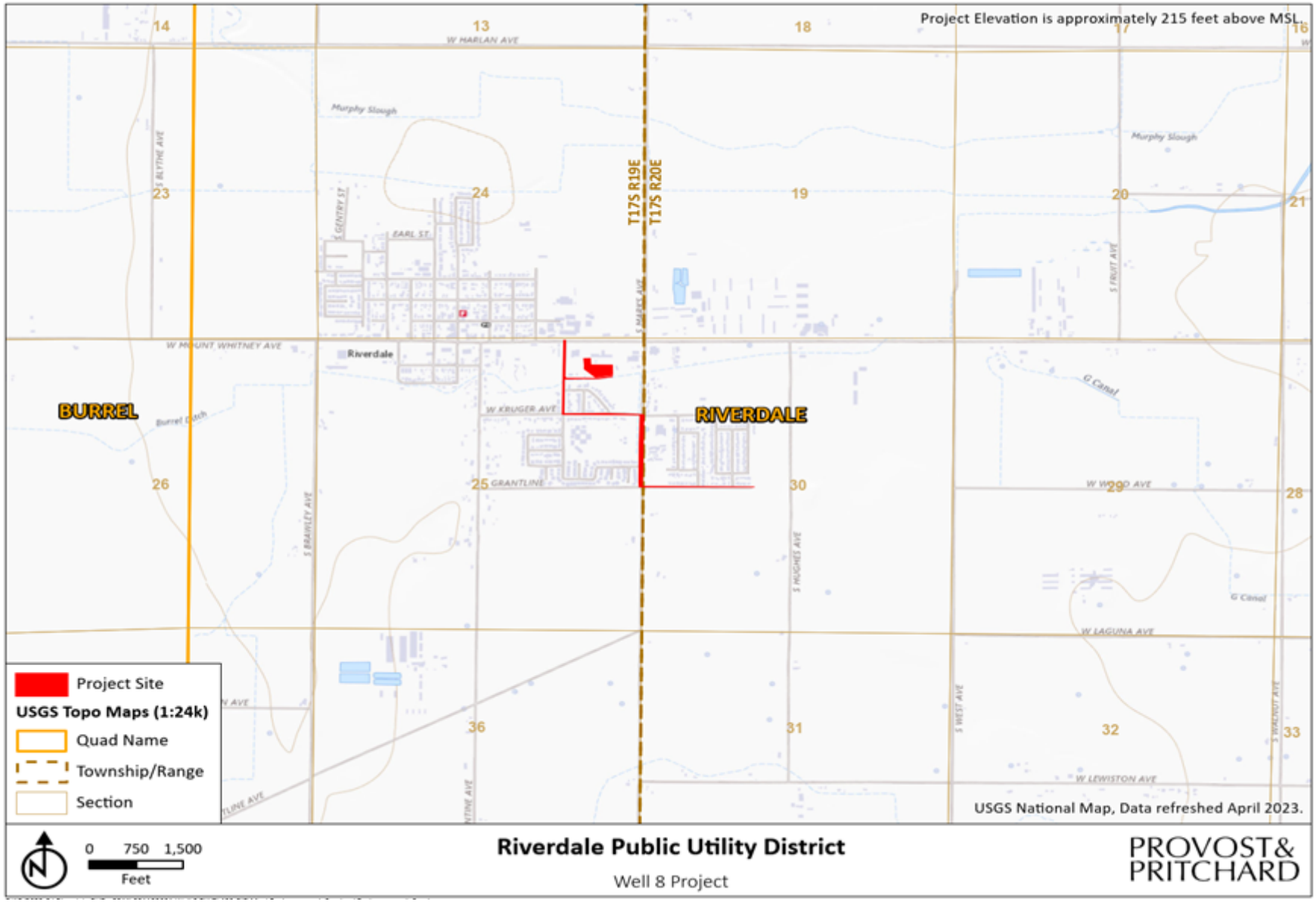


Figure 2-2: Topo Quad Map

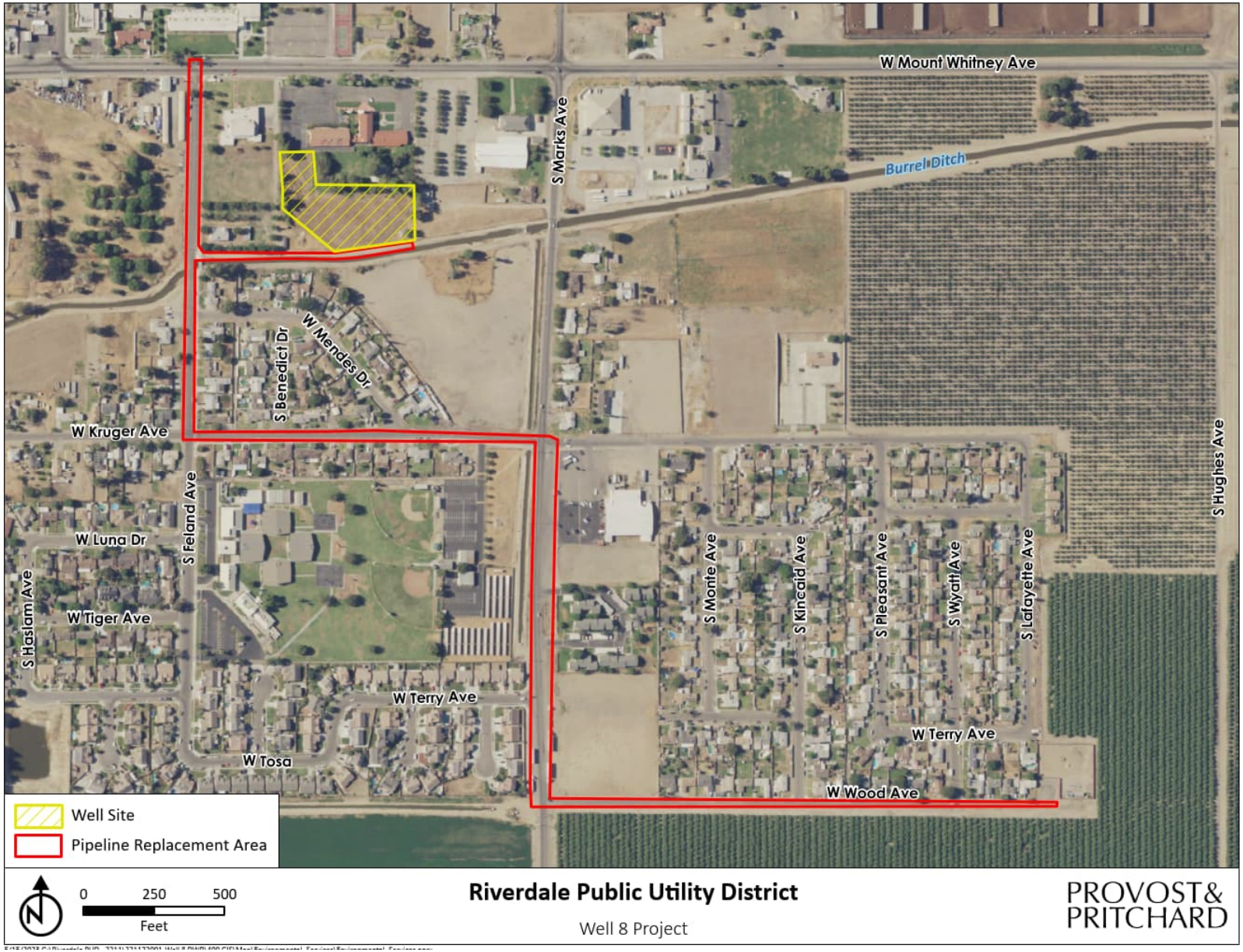


Figure 2-3: Aerial Map

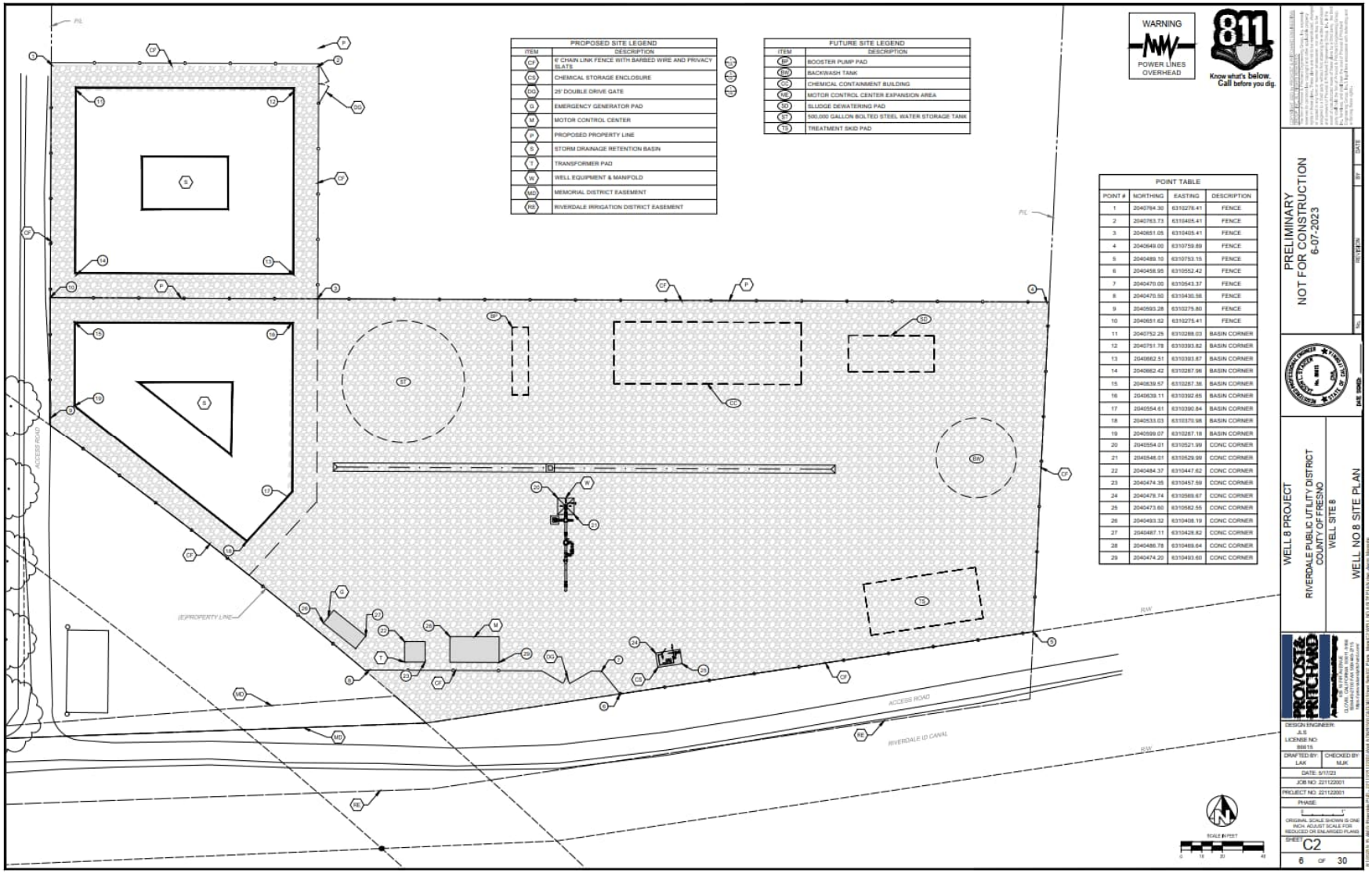


Figure 2-4: Site Plan

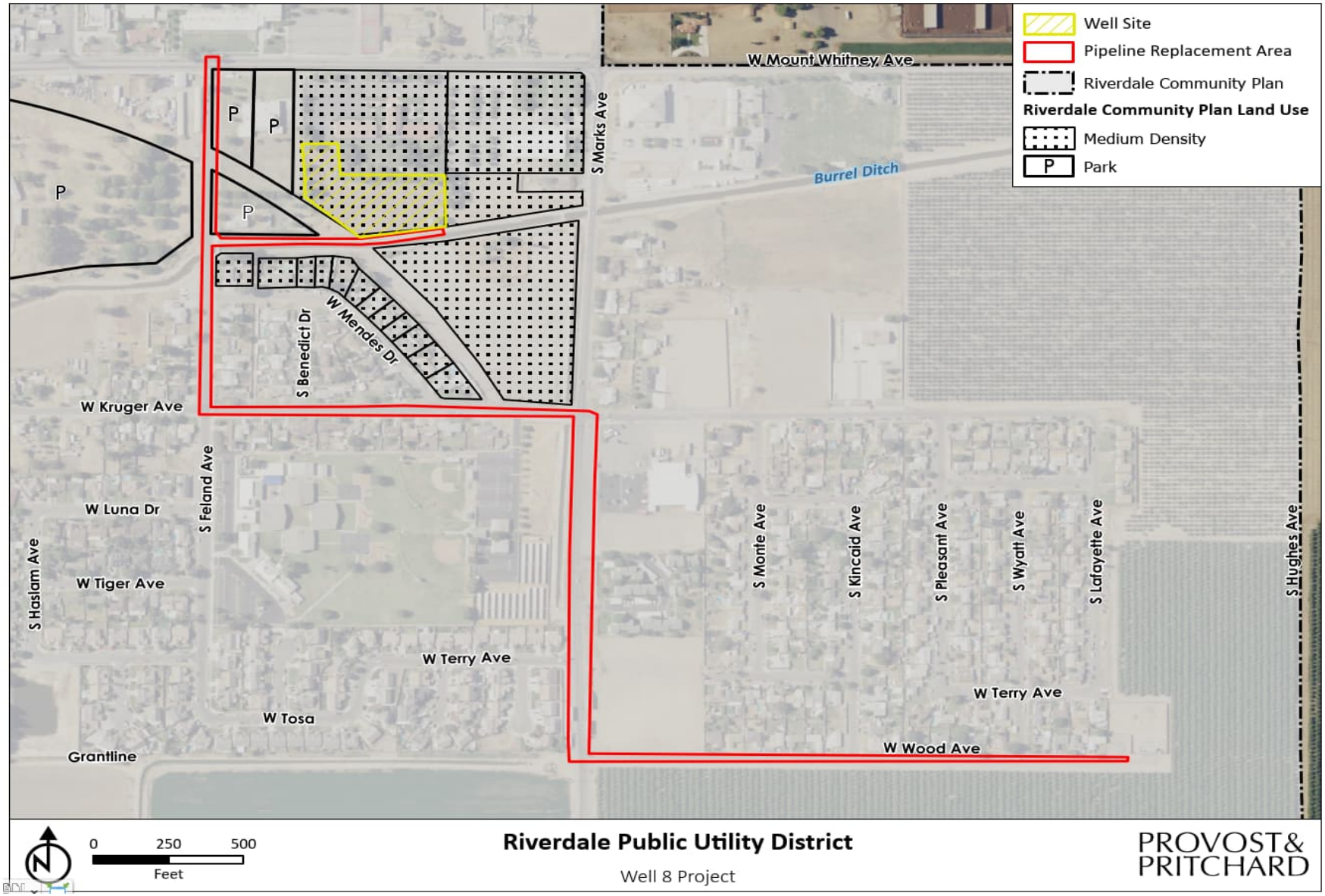


Figure 2-5: General Plan Land Use Designation Map

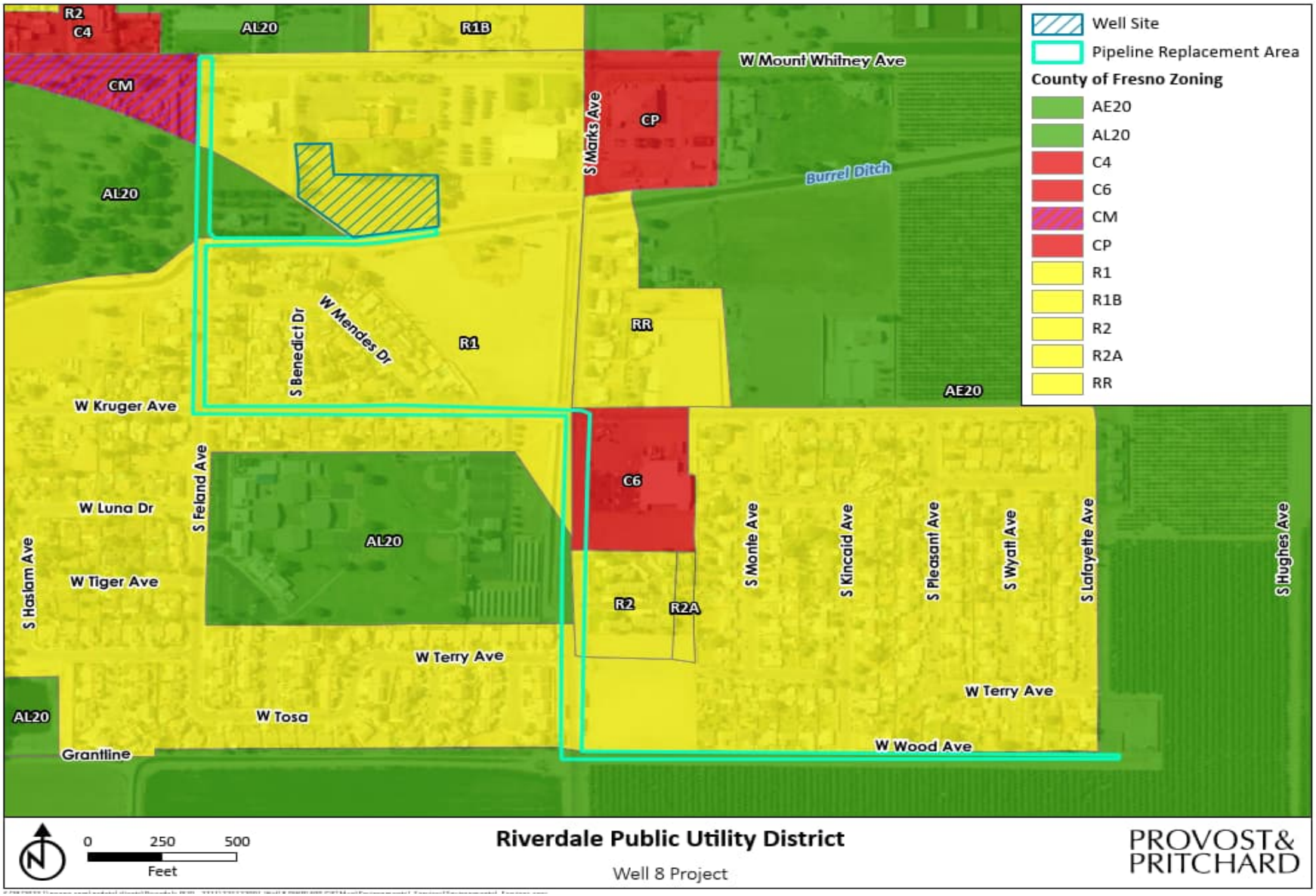


Figure 2-6: Zone District Map

# CHAPTER 3 DETERMINATION

## 3.1 POTENTIAL ENVIRONMENTAL IMPACTS

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

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

The analyses of environmental impacts in Chapter 4 Impact Analysis result in an impact statement, which shall have the following meanings.

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

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

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

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

## 3.2 DETERMINATION

On the basis of this initial evaluation (to be completed by the Lead Agency):

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

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

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

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

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

Signature

2/14/2024
Date

Vincent Ramos, District Superintendent
Printed Name/Position

# CHAPTER 4 ENVIRONMENTAL IMPACT ANALYSIS

## 4.1 AESTHETICS

Table 4-1: Aesthetics Impacts

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

### 4.1.1 Baseline Conditions

The Project site is located in an unincorporated portion of Fresno County, within the community of Riverdale, in California's San Joaquin Valley. The predominant landscape feature of the San Joaquin Valley is a wide variety of agricultural land. Regional views from the valley floor are generally limited due to the flatness of the region, however, on clear days the Sierra Nevada Mountains are visible to the east. The community is surrounded by agricultural land.

The Project lies within an area designated as medium density residential. The surrounding area is considered low density, with agricultural land containing one single-family residence to the south of the Project site. There are no scenic vistas on the Project site or in the vicinity. There are no designated State Scenic Highways within the City or surrounding area. In Fresno County, a portion of State Route 180 (SR 180) has been officially identified by Caltrans as a "designated State Scenic Highway," however, that segment is approximately 26 miles southeast of the Project site.[1]

[1] (California Department of Transportation 2023)

### 4.1.2 Impact Analysis

a) Have substantial adverse effect on a scenic vista?

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

**No Impact.** There are no scenic resources, scenic vistas or designated State Scenic Highways located on or near the Project site. The California Department of Transportation Scenic Highway Mapping System identifies a stretch of State Route 180, located on the eastern side of State Route 99 as an Eligible Scenic Highway.[2] This is the nearest scenic highway and is located approximately 26 miles southeast of the Project site. Additionally, the Project would not remove any trees, rock outcroppings or historic buildings within a State scenic highway corridor. Therefore, the Project would have no impact to scenic vistas, designated scenic resources or highways.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

**No Impact.** The Project would result in minor alteration of the existing visual character of public views of the site with the addition of minimal structures. Currently the well site is vacant with some grassland to be removed. Due to the nature of the Project, most of its components are located underground. Above-ground structures will consist of the wellhead, pump, and related appurtenances. The Project will not be inconsistent with the existing visual setting of the area.

The improvements proposed by the Project are typical of public facility areas and are generally expected from residents of the community. The Project itself is not visually imposing against the scale of the existing surrounding area and would comply with zoning and regulations for groundwater well related construction. Therefore, the Project would have no impact on the visual character of the area.

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.** Current sources of light near the Project site include streetlights, vehicles traveling along surrounding roadways and residential lighting in the area. Any lighting sources during construction would be utilized during non-daylight hours to ensure safety of the public, construction personnel and the public water system; however, lighting would be directed downward to minimize light and glare on adjacent properties and roadways. Once operational the Project will implement minimal amounts of site lighting. Such lighting would be shielded so as not to spill onto adjacent properties and would be subject to County standards. Accordingly, potential impacts would be considered less than significant.

[2] (California Department of Transportation 2023)

# 4.2 AGRICULTURE AND FORESTRY RESOURCES

Table 4-2: Agriculture and Forest Impacts

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

## 4.2.1 Baseline Conditions

The Project is located in California's San Joaquin Valley in Fresno County and more specifically within the unincorporated community of Riverdale. Fresno County is located within California's agricultural heartland. In 2019, Fresno County ranked as the top agricultural county in the State in the annual market value of farm products.[3]

The Farmland Mapping and Monitoring Program (FMMP) for Fresno County designates the majority of the Project site and the surrounding properties as Urban and Built-up Land with approximately 400 feet of pipeline to be installed on land designated as Prime Farmland along the road right of way on Wood Avenue, see **Figure 4-1:** FMMP .[4]

[3] (California Department of Food and Agriculture, 2020)
[4] (Calfornia Department of Conservation 2022)

### 4.2.2 Impact Analysis

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

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

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

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

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

**No Impact.** There are no agricultural resources or forest lands present on the Project site. The Project consists of constructing a groundwater well and associated infrastructure on a currently vacant site along with 6,200 linear feet of water main along the road right of way on W. Wood Avenue, S. Marks Avenue, W. Kruger Avenue, and S. Feland Avenue. The Project would not conflict with the County of Fresno's land use designations upon approval. As demonstrated in **Figure 4-1**: FMMPthe majority of the Project site is considered Urban and Built-up Land by the FMMP, with approximately 400 linear feet of land designated Prime Farmland along the road right of way on Wood Avenue. The work to be completed along Wood Avenue will consist of installing pipeline in existing road ROW and will not disturb any farmland use as the work will occur on the road right of way. As a result, the Project would not convert prime farmland, conflict with an existing agricultural use, or result in the conversion of existing farmland. Additionally, no Williamson Act contracted lands would be impacted due to the Project, and the Project site is not subject to a Williamson Act contract. Therefore, the Project would have no impact on agricultural and forest resources.

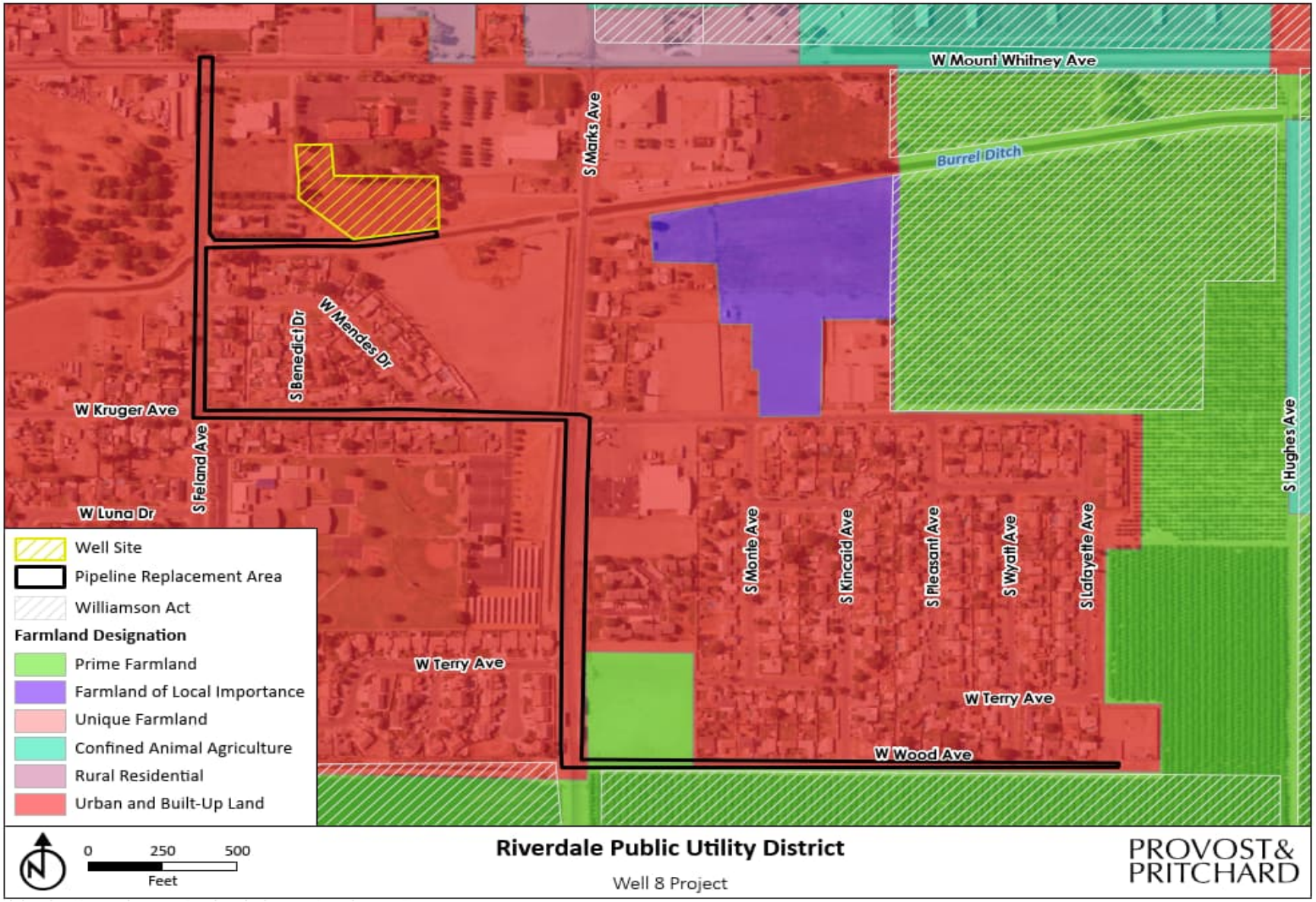


Figure 4-1: FMMP

# 4.3 AIR QUALITY

Table 4-3: Air Quality Impacts

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

## 4.3.1 Baseline Conditions

### Regulatory Attainment Designations

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

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

The State and national attainment status designations pertaining to the SJVAB are summarized in Appendix A. The SJVAB is currently designated as a nonattainment area with respect to the State $PM_{10}$ standard, ozone, and $PM_{2.5}$ standards. The SJVAB is designated nonattainment for the National Ambient Air Quality

Standards (NAAQS) 8-hour ozone and $PM_{2.5}$ standards. On September 25, 2008, the EPA re-designated the San Joaquin Valley to attainment status for the $PM_{10}$ NAAQS and approved the $PM_{10}$ Maintenance Plan. California's ambient air monitoring network is one of the most extensive in the world, with more than 250 sites and 700 individual monitors measuring air pollutant levels across a diverse range of topography, meteorology, emissions, and air quality. Existing levels of ambient air quality and historical trends and projections in the Project are best documented by measurements made by these monitoring sites.

Criteria air pollutant concentrations are measured at several monitoring stations in the surrounding area. Table 4-4 summarizes the air quality data measured at monitoring stations near the project site during the last three years (2019-2021). The Hanford-S Irwin Street station is the closest station.

Table 4-4. Summary of Annual Data on Ambient Air Quality (2019-2021)

| | 2019 | 2020 | 2021 |
|---|---|---|---|
| Ozone | | | |
| Maximum concentration (1-hr/8-hr avg, ppm) | 0.093 / 0.077 | 0.103 / 0.088 | 0.102 / 0.096 |
| Number of days state standard exceeded (1-hr/8-hr) | 0/13 | 6/27 | 2/18 |
| Number of days national standard exceeded (8-hr) | 13 | 26 | 16 |
| Fine Particulate Matter ($PM_{2.5}$) | | | |
| Maximum concentration (24-hour $\mu g/m^3$) | 48.2 | 147.0 | 81.0 |
| Number of days national standard exceeded (24-hour measured) | 20 | 52 | 31 |
| Respirable Particulate Matter ($PM_{10}$) | | | |
| Maximum concentration ($\mu g/m^3$) | 220.5 | 180.9 | 192.7 |
| Number of days state standard exceeded | 17 | 22 | 146 |
| Number of days national standard exceeded | 1 | 3 | 2 |
| Notes: $\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million<br>Source: (California Air Resources Board) | | | |

## 4.3.2 Thresholds

The San Joaquin Valley Air Pollution Control District's (SJVAPCD) annual emission significance thresholds used for the Project define the substantial contribution for both operational and construction emissions as follows:

Table 4-5 Thresholds of Significance

| Criteria Pollutant | Emissions (in tons per year) | |
|---|---|---|
| | Construction | Operations |
| ROG | 10 | 10 |
| CO | 100 | 100 |
| $NO_X$ | 10 | 10 |
| $SO_X$ | 27 | 27 |
| $PM_{10}$ | 15 | 15 |
| $PM_{2.5}$ | 15 | 15 |

Odor impacts on residential areas and other sensitive receptors, such as hospitals, day-care centers, schools, etc. warrant the closest scrutiny, but consideration should also be given to other land uses where people may congregate, such as recreational facilities, worksites, and commercial areas. The District has

determined the common land use types that are known to produce odors in the Air Basin. These types are shown in Table 4-6.

Table 4-6 Screening Levels for Potential Odor Sources

| Odor Generator | Screening Distance |
|---|---|
| Wastewater Treatment Facilities | 2 miles |
| Sanitary Landfills | 1 mile |
| Transfer Stations | 1 mile |
| Composting Facilities | 1 mile |
| Petroleum Refineries | 2 miles |
| Asphalt Batch Plants | 1 mile |
| Chemical Manufacturers | 1 mile |
| Fiberglass Manufacturers | 1 mile |
| Painting/Coating Operations | 1 mile |
| Food Processors | 1 mile |
| Feed Lots and Dairies | 1 mile |
| Rendering Plants | 1 mile |

Table 4-7: Summary of Ambient Air Quality Standards and Attainment Designation

| Pollutant | Averaging Time | California Standards | National Standards |
|---|---|---|---|
| Ozone ($O_3$) | 1-hour | Nonattainment/Severe | No Federal Standard |
| | 8-hour | Nonattainment | Nonattainment (Extreme) |
| Particulate Matter ($PM_{10}$) | AAM | Nonattainment | Attainment |
| | 24-hour | | |
| Fine Particulate Matter ($PM_{2.5}$) | AAM | Nonattainment | Nonattainment |
| | 24-hour | | |
| Carbon Monoxide (CO) | 1-hour | Attainment/Unclassified | Attainment/Unclassified |
| | 8-hour | | |
| | 8-hour (Lake Tahoe) | | |
| Nitrogen Dioxide ($NO_2$) | AAM | Attainment | Attainment/Unclassified |
| | 1-hour | | |
| Sulfur Dioxide ($SO_2$) | AAM | Attainment | Attainment/Unclassified |
| | 24-hour | | |
| | 3-hour | | |
| | 1-hour | | |
| Lead (Pb) | 30-day Average | Attainment | No Designation/Classification |
| | Calendar Quarter | | |
| | Rolling 3-Month Average | | |
| Sulfates ($SO_4$) | 24-hour | Attainment | No Federal Standards |

| Pollutant | Averaging Time | California Standards | National Standards |
|---|---|---|---|
| Hydrogen Sulfide ($H_2S$) | 1-hour | Unclassified | No Federal Standards |
| Vinyl Chloride ($C_2H_3Cl$) | 24-hour | Attainment | No Federal Standards |
| Visibility-Reducing Particle Matter | 8-hour | Unclassified | No Federal Standards |

AAM: Annual Arithmetic Mean
Source: California Air Resources Board (CARB)

### 4.3.3 Impact Analysis

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

**Less than Significant Impact.** The CEQA Guidelines indicate that a significant impact would occur if the Project would conflict with or obstruct implementation of the applicable air quality plan. The Guideline for Assessing and Mitigating Air Quality Impacts (GAMAQI) indicates that projects that do not exceed San Joaquin Valley Air Pollution Control District (SJVAPCD) regional criteria pollutant emissions quantitative thresholds would not conflict with or obstruct the applicable air quality plan (AQP). As discussed below, emissions of ROG, $NO_X$, $PM_{10}$, and $PM_{2.5}$ associated with the construction and operation of the Project would not exceed the District's significance thresholds. Therefore, the Project would not contribute to air quality violations. The Project's emissions would be less than significant for all criteria pollutants and would not result in inconsistency with the AQP for this criterion. The Project complies with all applicable control measures from the AQP therefore, the Project is consistent with the AQP, and the impact would be less than significant.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

**Less than Significant Impact.** Project-generated emissions are below the SJVAPCD's regional significance thresholds and the Project is consistent with current air quality attainment plans including control measures and regulations, as depicted below in Table 4-8 and Table 4-9.

The SJVAPCD through its GAMAQI has determined that projects that exceed regional thresholds would have a cumulatively considerable health impact. As demonstrated in Table 4-8 and Table 4-9 the Project would not exceed the SJVAPCD's significance thresholds, and its cumulatively considerable impacts would be less than significant.

#### Construction Emissions

The results of the modeling are presented in Table 4-8. The emissions that would occur during construction activities were compared with the significance threshold for each pollutant. For assumptions in estimating the emissions, please refer to Appendix A. As shown in Table 4-8, the emissions are below the significance thresholds. Therefore, the emissions would be less than significant on a Project basis.

Table 4-8 Construction Emission Summary, Criteria Air Pollutants

| | Emissions (in tons per year) | | | | | |
|---|---|---|---|---|---|---|
| | ROG | NOX | CO | SO2 | PM10 | PM2.5 |
| Maximum Annual Emissions | 0.116 | 1.089 | 1.169 | .0002 | 0.103 | 0.071 |
| Significance Threshold | 10 | 10 | 100 | 27 | 15 | 15 |
| Significant Impact? | No | No | No | No | No | No |
| Source:*Appendix A* | | | | | | |

## Operational Emissions

Operational emissions occur over the lifetime of the Project and are from the emergency generator. Operations are expected to commence in October 2024. The SJVAPCD considers construction and operational emissions separately when making significance determinations.

As shown in Table 4-9, the emissions are below the SJVAPCD significance thresholds prior to application of mitigation measures or taking credit for Project design features that would reduce Project emissions and, therefore, would result in a less than significant impact.

Table 4-9 Operational Emissions Summary, Criteria Air Pollutants

| | Emissions (in tons per year) | | | | | |
|---|---|---|---|---|---|---|
| | ROG | $NO_X$ | CO | $SO_2$ | $PM_{10}$ | $PM_{2.5}$ |
| Maximum Annual Emissions | 0.018 | 0.050 | 0.060 | <0.0005 | 0.002 | 0.002 |
| Significance Threshold | 10 | 10 | 100 | 27 | 15 | 15 |
| Significant Impact? | No | No | No | No | No | No |
| Source: ***Appendix A*** | | | | | | |

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

**Less than Significant Impact.** Implementation of the Project would not result in the long-term operation of any major onsite stationary sources of toxic air contaminants (TAC). However, construction of the Project may result in temporary increases in emissions of diesel particulate matter (DPM) associated with the use of off-road diesel equipment. Health-related risks associated with diesel-exhaust emissions are primarily associated with long-term exposure and associated risk of contracting cancer. As such, cancer risks associated with exposure of to TACs are typically calculated based on a long-term (e.g., 70-year) period of exposure. However, the use of diesel-powered construction equipment would be temporary and episodic.

Construction activities would occur over approximately 15 months, which would constitute less than 2 percent of the typical 70-year exposure period. The Project's pipeline trenching phase is estimated to be approximately 60 days and has the longest duration of any phase. Construction activity areas during this phase would be constantly changing as progress is made on pipeline installation; thus, sensitive receptors would not be exposed to TACs for an extended amount of time. For these reasons and given the relatively high dispersive properties of DPM, exposure to construction generated DPM would not be anticipated to exceed applicable thresholds (i.e., incremental increase in cancer risk of 10 in one million).

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

**Less than Significant Impact.** Land uses that commonly emit odorous compounds include dairies, agricultural uses, wastewater treatment plants, chemical plants, food processing facilities, composting,

refineries, and fiberglass molding facilities. The Project includes the construction of a well site and installation of pipelines to deliver clean drinking water to residences, which would not result in the emission of odorous compounds. The operational phase of the Project would not emit any odorous compounds. Impacts would be less than significant.

# 4.4 BIOLOGICAL RESOURCES

Table 4-10: Biological Resources Impacts

| Would the project: | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | ☐ | ☒ | ☐ | ☐ |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | ☐ | ☐ | ☐ | ☒ |
| 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? | ☐ | ☐ | ☐ | ☒ |

## 4.4.1 Baseline Conditions

The Project site is located on the floor of the San Joaquin Valley and in Fresno County, within the unincorporated community of Riverdale. A field survey was completed on April 27, 2023 by Provost & Pritchard staff biologists and three biotic habitats were observed on the project site, and included annual grassland, ruderal/canal, and urban habitats, see below:

### Annual Grassland

The annual grassland portion of the project site is located within the parcel south of W. Mount Whitney Avenue and north of Burrel Ditch. It is bordered by a church with a paved parking lot to the north,

residential/landscaped areas to the east and west, and the Burrel Ditch to the south. The dominant plant species observed included cheeseweed mallow (*Malva parviflora*), common fiddleneck (*Amsinckia intermedia*), red stemmed fillaree (*Erodium cicutarium*), foxtail barley (*Hordeum jubatum*), and ripgut brome (*Bromus diandrus*). In addition, Fremont cottonwood (*Populus fremontii*), and red pine (*Pinus resinosa*) trees were located around the borders of this habitat. Bird species observed within this habitat included Eurasian collared dove (*Streptopelia decaocto*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), and red-shouldered hawk (*Buteo lineatus*). No small mammal burrows or other mammal signs were observed.

#### Ruderal/Canal

A portion of the project area lies adjacent to the Burrel Ditch, which runs through Riverdale. The ditch had high water levels at the time of the field survey and supported plant species such as *Bromus* sp., cheeseweed mallow, common fiddleneck, red stemmed filaree, horseweed (*Conyza canadensis*), prickly lettuce (*Lactuca serriola*), and seep monkey flower (*Erythranthe guttata*). A brown-headed cowbird (*Molothrus ater*), and a Swainson's hawk (*Buteo swainsoni*) were seen flying over this habitat. No small mammal burrows or other mammal signs were observed.

#### Urban

The remainder of the project area lies within urban areas of Riverdale, which include residential neighborhoods and paved roadways. Many single-family homes are adjacent to the project area and have various ornamental trees, shrubs, and landscaping within their front yards. Bird species observed while surveying this habitat included American crow (*Corvus brachyrhynchos*), American pipit (*Anthus rubescens*), American robin (*Turdus migratorius*), black phoebe (*Sayornis nigricans*), European starling, house finch (*Haemorhous mexicanus*), and house sparrow.

### 4.4.2 Topography

The topography of the site is relatively flat with elevations ranging from approximately 210 to 220 feet.

### 4.4.3 Climate

Like most of California, the project site experiences a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. In the summer, average high temperatures range between 96- and 104-degrees Fahrenheit (°F), and the humidity is generally low. Winter temperatures are often below 60 °F during the day and rarely exceed 70 °F. On average, the Riverdale area receives approximately 4.9 inches of precipitation in the form of rainfall yearly, most of which occurs between October and March, and the project site would be expected to receive similar amounts of precipitation.

### 4.4.4 Hydrology

A watershed is the topographic region that drains into a stream, river, or lake. Watersheds are made up of many smaller subwatersheds that drain into a particular stream, river, or lake. The project site lies within the Murphy Slough-Fresno Slough watershed; Hydrologic Unit Code (HUC): 1803000901 and is within the Turner Ditch-Fresno Slough subwatershed; HUC: 180300090103 and Boggs Slough-Fresno Slough subwatershed; HUC: 180300090101. The nearest surface water to the Project is the Burrel Ditch which is adjacent to a portion of the Project area, located south of the well site.

The Murph Slough-Fresno Slough watershed is fed by stormwater or snowmelt runoff from nearby areas which flows into Murphy Slough, Turner Ditch, and Boggs Slough which flow into the Fresno Slough.

### 4.4.5 Soils

Five soil mapping units representing two soil types were identified within the project site and are listed in Table 4-11: Soils. The soils are displayed with their core properties in the table below, according to the Major Land Resource Area of California. All five soils are primarily used for grazing and agriculture.

Table 4-11: Soils

| Soil | Soil Map Unit | Percent of Project Site | Major Com-ponent Hydric Soil | Minor Com-ponent Hydric | Drainage | Permeability | Runoff |
|---|---|---|---|---|---|---|---|
| *Chino* | Sandy loam | 14.5% | Yes | No | Somewhat poorly drained | Moderately slow | Slow to very low runoff |
| *Chino* | Sandy loam, saline-alkali | 13.3% | Yes | No | Somewhat poorly drained | Moderately slow | Slow to very low runoff |
| *Chino* | Loam | 2.6% | Yes | Yes | Somewhat poorly drained | Moderately slow | Slow to very low runoff |
| *Grangeville* | Sandy loam | 63.4% | Yes | No | Somewhat poorly drained | Moderately rapid permeability | Negligible to very low runoff |
| *Grangeville* | Fine sandy loam, 0 to 1 percent slopes | 6.1% | Yes | Yes | Somewhat poorly drained | Moderately rapid permeability | Negligible to very low runoff |

### 4.4.6 Special Status Plants and Animals

California contains several rare plant and animal species. In this context, “rare” is defined as species known to have low populations or limited distributions. As the human population grows, urban expansion encroaches on the already-limited suitable habitat for rare species. This results in sensitive species becoming increasingly more vulnerable to extirpation. State and federal regulations have provided the CDFW and the USFWS with a mechanism for conserving and protecting the diversity of plant and animal species native to California. Numerous native plants and animals have been formally designated as “threatened” or “endangered” under state and federal endangered species legislation. Other formal designations include “candidate” for listing or “species of special concern” by CDFW. The California Native Plant Society (CNPS) has its list of native plants considered rare, threatened, or endangered. Collectively these plants and animals are referred to as “special status species.”

A query of the CNDDB for occurrences of special status plant and animal species was conducted for the *Riverdale* 7.5-minute U.S. Geological Survey (USGS) quadrangle that contains the project site, and for the 8 surrounding USGS quadrangles: *Raisin, Caruthers, Conejo, Burrel, Laton, Vanguard, Lemoore, and Hanford*. These species, and their potential to occur within the project site, are listed in Table 4-12 and

Table 4-13 on the following pages. Other special status species that did not show up in the CNDDB query, but have the potential to occur in the vicinity, are also included in Table 4-12. Species lists obtained from CNDDB, and U.S. Fish and Wildlife Service's Information for Planning and Consultation system are available in Appendix B. All relevant sources of information, as discussed in the *Study Methodology* section of this report, as well as field observations, were used to determine if any special status species are known to be within the project site.

Table 4-12: List of Special Status Animals with Potential to Occur on the Project Site and/or in the Vicinity

| Species | Status* | Habitat | Occurrence within the Project Site |
|---|---|---|---|
| Buena Vista Lake Shrew (*Sorex ornatus relictus)* | FE, CSSC | Prefers moist soils, inhabiting marshes, swamps, and riparian shrublands. Uses stumps, logs, and leaf litter for cover. | **Unlikely**. Habitat required for this species was unavailable within or near the project site. |
| Burrowing Owl (*Athene cunicularia*) | CSSC | Resides in open, dry annual or perennial grasslands, deserts, and scrublands with low growing vegetation. Nests underground in existing burrows created by mammals, most often ground squirrels. | **Unlikely**. While annual grasslands were present within the project site, no small mammal burrows were observed. Regular human disturbance adjacent to the project site likely deters this species from utilizing the site. |
| California Glossy Snake (*Arizona elegans occidentalis*) | CSSC | Inhabits arid scrub, rocky washes, grasslands, and chaparral. Prefers open areas with loose soil for easy burrowing. | **Unlikely**. Open areas with loose soil required by this species was absent within or near the project site. This species was last observed in 1939, 20 miles northeast of the project site. |
| California Tiger Salamander (*Ambystoma californiense*) | FT, CT | Requires vernal pools or seasonal ponds for breeding and small mammal burrows for aestivation. Generally found in grassland and oak savannah plant communities in central California from sea level to 1500 feet in elevation. Can migrate up to 1.3 miles to breed. | **Absent**. Breeding and aestivation habitats were absent from the project site and vicinity. |
| Crotch Bumble Bee (*Bombus crotchii*) | CCE | Occurs throughout coastal California, as well as east to the Sierra-Cascade crest, and south into Mexico. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia*, and *Eriogonum*. | **Unlikely**. Habitats and food plants required by this species were absent from the project site and vicinity. |
| Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*) | FE, CE | An inhabitant of alkali sinks and open grassland habitats in Merced, Kings Fresno, and Madera counties. Prefers bare, alkaline, clay-based soils subject to seasonal inundation with more friable soil mounds around shrubs and grasses. The most recent recorded observation of this species in California was in 1992 in Fresno County. | **Absent**. Habitats required by this species were absent from the project site and vicinity. |
| Giant Gartersnake (*Thamnophis gigas*) | FT, CT | Occurs in marshes, sloughs, drainage canals, irrigation ditches, rice fields, and adjacent uplands. Prefers locations with emergent vegetation for cover and open areas for basking. This species uses small mammal burrows adjacent to aquatic habitats for | **Unlikely**. Habitats required by this species were absent from the site and marginally adjacent to the site, in the form of Burrel Ditch. Emergent vegetation and small mammal burrows were absent from the project site and vicinity. |

| Species | Status* | Habitat | Occurrence within the Project Site |
|---|---|---|---|
| | | hibernation in the winter and to escape from excessive heat in the summer. | |
| Monarch Butterfly (*Danaus plexippus)* | FC | Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby. Larval host plants consist of milkweeds (*Asclepias* sp.). Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. | **Unlikely**. Habitats and tree species required by this species were absent from the project site and vicinity. |
| San Joaquin Kit Fox (*Vulpes macrotis mutica*) | FE, CT | Underground dens with multiple entrances in alkali sink, valley grassland, and woodland in valleys and adjacent foothills. | **Unlikely**. The annual grassland habitat of the site was marginal and lacked suitable small mammal prey and burrows for this species. |
| Swainson's Hawk (*Buteo swainsoni*) | CT | Nests in large trees in open areas adjacent to grasslands, grain or alfalfa fields, or livestock pastures suitable for supporting rodent populations. | **Unlikely**. There were some large trees in the project site that may provide nesting habitat for this species. Lack of prey within the project site makes it unlikely for species to occur there. May occur as a transient. |
| Tipton Kangaroo Rat (*Dipodomys nitratoides nitratoides*) | FE, CE | Saltbush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. Needs soft friable soils. | **Absent**. The project site is outside of the historical range of this species. Soft friable soils required by this species are absent from the project site. |
| Tricolored Blackbird (*Agelaius tricolor*) | CT, CSSC | Nests colonially near fresh water in dense cattails or tules, or in thickets of riparian shrubs. Forages in grassland and cropland. Large colonies are often found on dairy farm forage fields. | **Unlikely**. Nesting habitat required by this species was absent from the project site and vicinity. |
| Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*) | FT | Lives in mature elderberry shrubs of the Central Valley and foothills. Adults are active from March to June. | **Unlikely**. Elderberry shrubs required by this species were absent from the project site and adjacent lands. |
| Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) | FT | Occupies vernal pools, clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools. | **Absent**. Habitats required by this species were absent from the project site and adjacent lands. |
| Vernal Pool Tadpole Shrimp (*Lepidurus packardi*) | FE | Occurs in vernal pools, clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools. | **Absent**. Habitats required by this species were absent from the project site and adjacent lands. |
| Western Spadefoot (*Spea hammondii*) | CSSC | The majority of the time this species is terrestrial and occurs in small mammal burrows and soil cracks, sometimes in the bottom of dried pools. Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Vernal pools or temporary wetlands, lasting a minimum of three weeks are necessary for breeding. | **Absent.** Habitats required for breeding and aestivation were absent from the project site and adjacent lands. |

| Species | Status* | Habitat | Occurrence within the Project Site |
|---|---|---|---|
| Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) | FT, CE | Suitable nesting habitat in California includes dense riparian willow-cottonwood and mesquite habitats along a perennial river. Once a common breeding species in riparian habitats of lowland California, this species currently breeds consistently in only two locations in the state: along the Sacramento and South Fork Kern Rivers. | **Absent.** Habitats required for nesting were absent from the project site and adjacent lands. |

## Table 4-13: List of Special Status Plants with Potential to Occur on the Project Site and/or in the Vicinity

| Species | Status* | Habitat | Occurrence within the Project Site |
|---|---|---|---|
| Alkali-sink Goldfields (*Lasthenia chrysantha*) | CNPS 1B | Found in vernal pool and wet saline flat habitats. Occurrences documented in the San Joaquin and Sacramento Valleys at elevations below 656 feet. Blooms February -April. | **Absent**. Vernal pools and wet alkaline salt flats required by this species were absent from the project site and vicinity. |
| Brittlescale (*Atriplex depressa*) | CNPS 1B | Found in the San Joaquin Valley and Sacramento Valley in alkaline or clay soils, typically in meadows or annual grassland in at elevations below 1050 feet. Sometimes associated with vernal pools. Blooms June–October. | **Unlikely**. The alkaline and clay soils required for this species are absent from the project site were dominated by non-native grasses and forbs. |
| California Alkali Grass (*Puccinellia simplex*) | CNPS 1B | Found in the San Joaquin Valley and other parts of California in saline flats and mineral springs within valley grassland and wetland-riparian communities at elevations below 3000 feet. Blooms March–May. | **Absent**. Saline flats and mineral springs required for this species are absent from the project site and vicinity. |
| Lesser Saltscale (*Atriplex minuscula*) | CNPS 1B | Found in the San Joaquin Valley in sandy, alkaline soils in alkali scrub, valley and foothill grassland, and alkali sink communities at elevations below 750 feet. Blooms April–October. | **Unlikely**. The project site lacked the alkaline soils required for this species and the project site is dominated by non-native grasses and forbs. |
| Panoche Pepper-grass (*Lepidium jaredii* ssp. *album*) | CNPS 1B | Found on steep slopes, washes, alluvial-fans, and clay, sometimes alkaline, within Valley and Foothill Grassland communities in western Fresno County at elevations between 600–2400 feet. Blooms February–June. | **Absent**. The project site is outside of the known range and below the elevation range for this species. |

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

Unlikely: Species not observed on the project site, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed on the project site and precluded from occurring there due to absence of suitable habitat.

**STATUS CODES**

| | | | |
|---|---|---|---|
| FE | Federally Endangered | CE | California Endangered |
| FT | Federally Threatened | CT | California Threatened |
| FC | Federal Candidate | CSSC | California Species of Special Concern |

**CNPS LISTING**

1B Plants Rare, Threatened, or Endangered in California and elsewhere.

## 4.4.7 Applicable Regulations

### Federal

#### Endangered Species Act

The Endangered Species Act (ESA) protects plants and animals that are listed as endangered or threatened by USFWS and the National Marine Fisheries Service (NMFS). Section 9 of the ESA prohibits, without authorization, the taking of listed wildlife, where take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant under federal jurisdiction and removing, cutting, digging up, damaging, or destroying any listed plant in any other area in knowing violation of state law (16 United States Code [USC] 1538).

Under Section 7 of the ESA, federal agencies are required to consult with USFWS and/or NMFS if their actions, including permit approvals and funding, could adversely affect a listed (or proposed) species (including plants) or its critical habitat. Through consultation and the issuance of a biological opinion (BO), USFWS and NMFS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued existence of the species. Section 10 of ESA provides for the issuance of incidental take permits where no other federal actions are necessary provided a habitat conservation plan is developed.

#### Section 7 Consultation

Section 7 of the ESA mandates that all federal agencies consult with USFWS and/or NMFS to ensure that federal agencies' actions do not jeopardize the continued existence of a listed species or adversely modify critical habitat for a listed species. If direct and/or indirect effects will occur to critical habitat that appreciably diminish the value of critical habitat for both the survival and recovery of a species, the adverse modifications will require formal consultation with USFWS or NMFS. If adverse effects are likely, the federal lead agency must prepare a biological assessment (BA) for the purpose of analyzing the potential effects of the proposed Project on listed species and critical habitat to establish and justify an "effect determination." Often a third-party, non-federal applicant drafts the BA for the lead federal agencies. The USFWS/NMFS reviews the BA; if it concludes that the Project may adversely affect a listed species or its habitat, it prepares a BO. The BO may recommend "reasonable and prudent alternatives" to the Project to avoid jeopardizing or adversely modifying habitat.

#### Critical Habitat

Critical Habitat is defined in Section 3 of the ESA as:

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

For inclusion in a Critical Habitat designation, habitat within the geographical area occupied by the species at the time it was listed must first have features essential to the conservation of the species (16 USC 1533). Critical Habitat designations identify, to the extent known and using the best scientific data available,

habitat areas that provide essential life cycle needs of the species (areas on which are found the primary constituent elements). Primary constituent elements are the physical and biological features that are essential to the conservation of the species and that may require special management considerations or protection. These include but are not limited to the following:

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

### Migratory Bird Treaty Act

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

### Clean Water Act

The purpose of the federal Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Section 404 of the CWA prohibits the discharge of dredged or fill material into "Waters of the United States" without a permit from the United States Army Corps of Engineers (USACE). The definition of Waters of the U.S. includes rivers, streams, estuaries, the territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas "that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3 7b). The EPA also has authority over wetlands, including the authority to veto permits issued by USACE under CWA Section 404(c).

Projects involving activities that have no more than minimal individual and cumulative adverse environmental effects may meet the conditions of one of the Nationwide Permits already issued by USACE (Federal Register 82:1860, January 6, 2017). If impacts on wetlands could be substantial, an individual permit is required. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB).

## State

### California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code Sections 2050-2116) protects species of fish, wildlife, and plants listed by the State as endangered or threatened. Species identified as candidates for listing may also receive protection. Section 2080 of the CESA prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit. Take is defined in Fish and Game Code Section 86 as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The CESA allows for take incidental to otherwise lawful projects under permits issued by CDFW.

### Fully Protected Species

The State of California first began to designate species as "fully protected" prior to the creation of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the federal and/or California ESAs. Fully protected species are identified in the California Fish and Game Code Section 4700 for mammals, Section 3511 for birds, Section 5050 for reptiles and amphibians, and Section 5515 for fish.

These sections of the California Fish and Game Code provide that fully protected species may not be taken or possessed at any time, including prohibition of CDFW from issuing incidental take permits for fully protected species under the CESA. CDFW will issue licenses or permits for take of these species for necessary scientific research or live capture and relocation pursuant to the permit and may allow incidental take for lawful activities carried out under an approved Natural Community Conservation Plan within which such species are covered.

### Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 (Fish and Game Code Sections 1900-1913) was established with the intent to "preserve, protect and enhance rare and endangered plants in this state." The NPPA is administered by CDFW. The Fish and Game Commission has the authority to designate native plants as "endangered" or "rare." The NPPA prohibits the take of plants listed under the NPPA, but the NPPA contains a number of exemptions to this prohibition that have not been clarified by regulation or judicial rule. In 1984, the CESA brought under its protection all plants previously listed as endangered under NPPA. Plants listed as rare under NPPA are not protected under the CESA but are still protected under the provisions of NPPA. The Fish and Game Commission no longer lists plants under NPPA, referring all listings to the CESA.

### California Fish and Game Code Special Protections for Birds

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

Section 3800 states that it is unlawful to take non-game birds, such as those occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, except when in accordance with regulations of the California Fish and Game Commission or a mitigation plan approved by CDFW for mining operations.

Section 3503 prohibits the take, possession, or needless destruction of the nest or eggs of any bird.

Section 3503.5 protects birds of prey (which includes eagles, hawks, falcons, kites, ospreys, and owls) and prohibits the take, possession, or destruction of any birds and their nests.

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

Section 3513 specifically prohibits the take or possession of any migratory non-game bird as designated in the MBTA.

### Porter-Cologne Water Quality Control Act

The RWQCB implements water quality regulations under the federal CWA and the Porter-Cologne Water Quality Control Act. These regulations require compliance with the National Pollutant Discharge Elimination System (NPDES), including compliance with the California Storm Water NPDES General Construction Permit for discharges of stormwater runoff associated with construction activities. General Construction Permits for projects that disturb one or more acres of land require development and implementation of a Storm Water Pollution Prevention Plan. Under the Porter-Cologne Water Quality Control Act, the RWQCB regulates actions that would involve "discharging waste, or proposing to discharge waste, with any region that could affect the water of the state" [Water Code Section 13260(a)]. Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" [Water Code Section 13050 (e)]. The RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State, which are not regulated by USACE due to a lack of connectivity with a navigable water body. The RWQCB may require issuance of a Waste Discharge Requirements for these activities.

## Local

### Fresno County General Plan

The Fresno County General Plan Policy Document contains the following goals and policies related to the project:

Policy OS-A.23

> The County shall protect groundwater resources from contamination and overdraft by pursuing the following efforts: a. Identifying and controlling sources of potential contamination; b. Protecting important groundwater recharge areas; c. Encouraging water conservation efforts and supporting the use of surface water for urban and agricultural uses wherever feasible; d. Encouraging the use of treated wastewater for groundwater recharge and other purposes (e.g., irrigation, landscaping, commercial, and nondomestic uses); e. Supporting consumptive use where it can be demonstrated that this use does not exceed safe yield and is appropriately balanced with surface water supply to the same area; f. Considering areas where recharge potential is determined to be high for designation as open space; and g. Developing conjunctive use of surface and groundwater.

### 4.4.8 Impact Analysis

a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

**Less than Significant Impact with Mitigation Incorporated**. The Project site contains suitable nesting and foraging habitat for a variety of protected bird species, such as migratory birds and raptors. Protected birds nesting within or adjacent to the Project site during construction have the potential to be injured or killed by project-related activities. In addition to the direct "take" of protected birds within the project site or adjacent areas, these birds nesting in these areas could be disturbed by project-related activities resulting in nest abandonment. Implementation of the following measures **BIO-1** through **BIO-3** would reduce potential impacts to nesting raptors, migratory birds, and special status birds to a less than significant level under CEQA and ensure compliance with State and federal laws protecting these avian species.

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

**No Impact.** The CDFW and USFWS often designates areas of "Critical Habitat" when it lists species as threatened or endangered. Critical Habitat is a specific geographic area that contains features essential for the conservation of a threatened or endangered species and would require special management or protection. There are no CNDDB-designated "natural communities of special concern" recorded within the Project site or surrounding lands. Therefore, there would be no impact.

c) Would the project 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?

**Less than Significant Impact**. Wetlands, vernal pools, and other naturally occurring bodies of water were not observed onsite at the time of the field survey. The project site would not be considered Waters of the United States and state. The nearest water feature is the Burrel Ditch which is located adjacent to the south of the well site.

Since construction would involve ground disturbance over an area greater than one acre, the project would be required to obtain a Construction General Permit under the Construction Storm Water Program administered by the RWQCB. A prerequisite for this permit is the development of a Storm Water Pollution Prevention Plan (SWPPP) to ensure construction activities do not adversely affect water quality.

There are no designated wild and scenic rivers within the project site; therefore, the project would not result in direct impacts to wild and scenic rivers. Compliance with Construction General Permit would ensure that any impact would be less than significant.

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**. The Burrel Ditch canal which is located adjacent to the south of the well site, may be used as a wildlife corridor. Water main will be installed along the north side of Burrel Ditch canal; however, because the Project would not include any work within the canal, wildlife would be able to continue to utilize the canal as a movement corridor during Project activities. No native wildlife nursery sites were present on, or adjacent to the Project site. Therefore, the Project would have no impact on wildlife movement corridors or other native wildlife nursery sites, and there would be no impact.

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

**No Impact.** The Project would be in compliance with the goals and policies set forth in the Fresno County General Plan. Project activities do not include tree removal. There would be no impact.

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?

**No Impact.** The Project is consistent with the goals and policies of the County of Fresno General Plan. There is no habitat conservation plan, natural community conservation plan, or other approved local, regional, or State habitat conservation plan is in effect for the Project site. There would be no impact.

### 4.4.9 Mitigation

**BIO-1** **Avoidance:** The Project's construction activities would occur, if feasible, between September 16 and January 31 (outside of nesting bird season) in an effort to avoid impacts to nesting birds.

**BIO-2** **Pre-construction Surveys**: If activities must occur within nesting bird season (February 1 to September 15), a qualified biologist would conduct pre-construction surveys for Swainson's hawk nests onsite and within a 0.5-mile radius. This survey would be conducted in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee, 2000) or current guidance. The pre-construction survey would also provide a presence/absence survey for all other nesting birds within the area of potential effect and an additional 50 feet, no more than 7 days prior to the start of construction. All raptor nests would be considered "active" upon the nest-building stage.

**BIO-3** **Establish Buffers:** On discovery of any active nests or breeding colonies near work areas, the biologist would determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of the species in question. Construction buffers would be identified with flagging, fencing, or other easily visible means, and would be maintained until the biologist has determined that the nestlings have fledged.

# 4.5 CULTURAL RESOURCES

Table 4-14: Cultural Resources Impacts

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

## 4.5.1 Baseline Conditions

### Records Search

An archival records search was conducted at the California State University, Bakersfield, Southern San Joaquin Valley Information Center (SSJVIC), by SSJVIC staff members on April 17, 2022 to determine: (i) if prehistoric or historical cultural resources had previously been recorded within the Project area; (ii) if the Project are had been systematically surveyed by archaeologists prior to the initiation of this field study; and/or (iii) whether the region of the Project was known to contain archaeological sites and to thereby be archaeologically sensitive.

According to the records search results, one previous archaeological survey had been completed within the Project area, with one cultural resource known within it. This resource is the irrigation canal known as the Burrell Ditch located south of the well site. Two additional resources were known within a 0.5-mi radius of the Project area: segments of the Southern Pacific Railroad and the Riverside Ditch.

### Native American Outreach

In addition to the records search conducted at SSJVIC, ASM contacted the Native American Heritage Commission (NAHC) in Sacramento. ASM provided NAHC with a brief description of the project and a map showing the locations the Project 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. The results were negative. NAHC provided a current list of local Native American contacts that might be able to provide insight and additional information regarding the Proposed Project area. Seventeen tribal representatives who were believed to have potential knowledge of the area were contacted in writing via United States Postal Service in a letter mailed April 25, 2023, informing each Tribe of the Project and to request any information they might have about the area. The following tribal representatives were contacted:

1. Big Sandy Rancheria of Western Mono Indians, Elizabeth Kipp, Chairperson
2. Cold Springs Rancheria of Mono Indians, Carol Bill, Chairperson
3. Cold Springs Rancheria of Mono Indians, Jared Aldern, Tribal Contact
4. Dumna Wo-Wah Tribal Government, Robert Ledger, Chairperson

5. Kings River Choinumni Farm Tribe, Stan Alec, Tribal Contact
6. North Valley Yokuts Tribe, Katherine Perez, Chairperson
7. North Valley Yokuts Tribe, Timothy Perez, Tribal Contact
8. Picayune Rancheria of Chukchansi Indians, Heather Airey, Tribal Historic Preservation Officer
9. Picayune Rancheria of Chukchansi Indians, Claudia Gonzales, Chairwomen
10. Santa Rosa Rancheria Tachi-Yokut Tribe, Leo Sisco, Chairperson
11. Table Mountain Rancheria, Brenda Lavell, Chairperson
12. Table Mountain Rancheria, Bob Pennell, Cultural Resources Director
13. Traditional Choinumni Tribe, David Alvarez, Chairperson
14. Tule River Indian Tribe, Joey Garfield, Tribal Archeologist
15. Tule River Indian Tribe, Neil Peyron, Chairperson
16. Tule River Indian Tribe, Kerri Verra, Environnemental Department Contact
17. Wuksache Indian Tribe/Eshom Valley Band, Kenneth Woodrow, Chairperson

One response was received from the Santa Rosa Rancheria Tachi-Yokut Tribe on 28 June 2023 requesting continued consultation, as well as the results of the cultural study, to be retained for a cultural presentation prior to work, and to have a tribal monitor present for all ground disturbing activities. The District will continue to work with the tribe and will send a copy of the results from the cultural study to the tribe. There is little chance the Project would cause a substantial adverse change to the significance of a tribal cultural resource as defined. Tribal Cultural Resources are further discussed in Section 4.18. Mitigation measures for potential archaeological resources and human remains have also been incorporated into the document.

### 4.5.2 Impact Analysis

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

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

**Less than Significant Impact with Mitigation Incorporated**. As stated above, according to the records search conducted as SSJVIC, one previous archaeological survey has been completed within the Project area, with one cultural resource known to exist within it. This resource is the Burrell Ditch located south of the well site. Two additional resources were known within a 0.5-mi radius of the Project area: a segment of the Southern Pacific railroad and the Riverside Ditch. Four previous archaeological surveys have been completed within 0.5- mi of the Project area.

Based on the records search and other sources, the Project area appeared to have low cultural resources sensitivity. (See Appendix C) It is unlikely that the Project has the potential to result in significant impacts or adverse effects to cultural or historical resources, such as archaeological remains, artifacts or historic properties. However, in the unlikely event that cultural resources are encountered during Project construction, implementation of mitigation measures **CUL-1** outlined below, would reduce impacts to less than significant.

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

**Less than Significant Impact with Mitigation Incorporated**. There is no evidence that the Project site has the potential to be an unknown burial site, or the site of buried human remains. In the unlikely event of such a discovery, mitigation will be implemented. With incorporation of mitigation measure **CUL-2** outlined

below, impacts resulting from the discovery of remains interred in the Project site would be less than significant.

### 4.5.3 Mitigation

CUL-1 (**Archaeological Remains**): Should archaeological remains or artifacts be unearthed during any stage of project activities, work in the area of discovery shall cease until the area is evaluated by a qualified archaeologist. If mitigation is warranted, the project proponent shall abide by recommendations of the archaeologist.

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

# 4.6 ENERGY

Table 4-15: Energy Impacts

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

## 4.6.1 Baseline Conditions

Current operations for RPUD require diesel and gasoline fuel to make maintenance visits, as necessary. Operational energy consumption is composed of electricity consumption to power the existing water production well and its associated appurtenances. There are no applicable State or local plans for renewable energy or energy efficiency applicable to the Project.

## 4.6.2 Impact Analysis

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

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

**Less than Significant Impact.** Fuel consumed by construction equipment would be the primary energy resource expended over the course of Project construction. For heavy-duty construction equipment, horsepower and load factor were assumed using default data from the Road Construction Emissions Model. Fuel use associated with construction vehicle trips generated by the Project was also estimated; trips include construction worker trips, haul trucks trips for material transport, and vendor trips for construction material deliveries. Fuel use from these vehicles traveling to the Project was based on (1) the projected number of trips the Project will generate, (2) trip distances used in previous projects, and (3) fuel efficiencies estimated in the Air Resource Board (ARB) 2017 Emissions Factors model (EMFAC2017) mobile source emission model.

Construction is estimated to consume a total of 9,789 gallons of diesel fuel and 553 gallons of gasoline fuel. California Code of Regulations Title 13, Motor Vehicles, Section 2449(d)(2), Idling, limits idling times of construction vehicles to no more than 5 minutes, thereby precluding unnecessary and wasteful consumption of fuel because of unproductive idling of construction equipment.

Operational energy usage would not rise significantly from baseline conditions, as the Project consists of the replacement of existing pipeline and interconnection to existing water mains and the construction of

one new well. Pump equipment would be new and would comply with the latest energy efficiency standards. Impacts would therefore be less than significant.

Construction of the Project is anticipated to use of approximately 41,635 gallons of diesel and 204 gallons of gasoline, according to analysis performed by Provost & Pritchard Consulting Group utilizing data utilizing the CalEEMod Output Files (Appendix A). California Code of Regulations 13 § 2485 prohibits the idling of commercial diesel equipment for greater than five minutes and will ensure that energy usage remains efficient. Project operational energy consumption would be similar to current operations and maintenance activities requirements. Therefore, the Project would not conflict with State or local plans for energy efficiency or renewable energy. Impacts would be less than significant.

# 4.7 GEOLOGY AND SOILS

Table 4-16: Geology and Soils Impacts

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

## 4.7.1 Baseline Conditions

### Geology and Soils

The Project is located in southern Fresno County, in the southern section of California's Great Valley Geomorphic Province, or Central Valley. The Sacramento Valley makes up the northern third and the San Joaquin Valley makes up the southern two-thirds of the geomorphic province. Both valleys are watered by large rivers flowing west from the Sierra Nevada Range, with smaller tributaries flowing east from the Coast Ranges. Most of the surface of the Great Valley is covered by Quaternary (present day to 1.6 million years ago) alluvium. The sedimentary formations are steeply upturned along the western margin due to the

uplifted Sierra Nevada Range.[5] From the time the Valley first began to form, sediments derived from erosion of igneous and metamorphic rocks and consolidated marine sediments in the surrounding mountains have been transported into the Valley by streams.

Using the United States Department of Agriculture Natural Resources Conservation Service soil survey of the Project site, an analysis of the soils onsite was performed. See Table 4-17 below, for the list of soils identified within the Project site.

Table 4-17: Project Site Soils

| Soils Series | Map Unit Name | Parent Material | Runoff Class | Drainage Class | Approximate Acres of Project site |
|---|---|---|---|---|---|
| Ga | Grangeville sandy loam | Recent alluvium derived from granite | Very Low | Somewhat poorly drained | 5.1 |
| Cl | Chino sandy loam | Alluvium derived from granite | Low | Somewhat poorly drained | 1.2 |
| Cm | Chino sandy loam, saline-alkali | Alluvium derived from granite | Low | Somewhat poorly drained | 1.1 |
| Gf | Grangeville fine sandy loam, 0 to 1 percent slopes, MLRA 17 | Alluvium derived from granite | Very Low | Somewhat poorly drained | 0.5 |
| Cr | Chino loam | Alluvium derived from granite | Low | Somewhat poorly drained | 0.2 |

### Faults and Seismicity

The Project site is not located within an Alquist-Priolo Earthquake Fault Zone and there are no known active faults within the City. The nearest major fault is the San Andreas Fault, located approximately 49 miles southwest of the Project site. The San Andreas fault is the dominant active tectonic feature of the Coast Ranges and represents the boundary of the North American and Pacific plates. A smaller fault zone, the Nunez Fault is approximately 36 miles southwest of the site.[6]

### Liquefaction

The potential for liquefaction, which is the loss of soil strength due to seismic forces, is dependent on soil types and density, the groundwater table, and the duration and intensity of ground shaking. Although no specific liquefaction hazard areas have been identified in Fresno County, this potential is recognized throughout the San Joaquin Valley where unconsolidated sediments and a high-water table coincide. Soil types along the Valley floor are not generally conducive to liquefaction because they are generally too coarse.

[5] (Harden, 1998)
[6] (California Department of Conservation , 2023)

### Soil Subsidence

Subsidence occurs when a large land area settles due to over-saturation or extensive withdrawal of groundwater, oil, or natural gas. These areas are typically composed of open-textured soils, high in silt or clay content, that become saturated. Although some areas in Fresno County have experienced subsidence due to groundwater overdraft, Riverdale's elevation has remained relatively unchanged.

The soil of the Project site consist predominantly of Grangeville sandy loam, which is course-textured, low in clay content, and has a low shrink-swell potential. Therefore, soils onsite represent a low risk of subsidence.

### Dam and Levee Failure

Hundreds of dams and reservoirs have been built in California for water supply, flood control, hydroelectric power, and recreational uses. The storage capacity of these dams varies across the State from large reservoirs with capacities exceeding millions of acre-feet to small reservoirs with capacities from hundreds to thousands of acre-feet. Depending on the season, water from these reservoirs is released into the river system of the State and eventually reaches the Pacific Ocean. The Kings River, which flows approximately three miles south, is the primary river in the vicinity. The Kings River is impounded by a dam which forms the Pine Flat reservoir, approximately 40 miles northeast of the Project site.

## 4.7.2 Impact Analysis

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

ii. Seismic-related ground failure, including liquefaction?

**Less than Significant Impact.** The Project site is located in an area traditionally characterized by relatively low seismic activity. The site is not located in an Alquist-Priolo Earthquake Fault Zone as established by the Alquist-Priolo Fault Zoning Act (Section 2622 of Chapter 7.5, Division 2 of the California Public Resources Code). The nearest major fault is the San Andreas Fault, located approximately 49 miles southwest of the Project site. A smaller fault zone, The Nunez Fault is approximately 36 miles southwest of the site.

The Project involves construction of a groundwater well along with associated equipment and installation of 6,200 linear feet of water main, which does not include development of habitable residential, agricultural, commercial or industrial structures. Therefore, implementation of the Project would not result in an increase of people or habitable structures onsite therefore reducing the risk of adverse effects including risk of loss, injury or death due to project implementation. Any impact would be less than significant.

iii. Seismic-related ground failure, including liquefaction?

**Less than Significant Impact.** Liquefaction is a process which involves the temporary transformation of soil from a solid state to a fluid form during intense and prolonged ground shaking. Water-saturated areas with shallow depth to groundwater and uniform sands, loose-to-medium in density, are prone to liquefaction. The liquefaction risk is low in project area as the soils identified in **Section 4.7.1** are not uniform sands but primarily sandy loam and therefore the risk would be less than significant.

iv. Landslides?

**No Impact.** Landslides usually occur in locations with steep slopes and unstable soils. The Project is located on the Valley floor where no major geologic landforms exist, and the topography is essentially flat and level. Therefore, the Project site has minimal-to-no landslide susceptibility, and there would be no impact.

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

**Less than Significant Impact.** Construction activities associated with the Project involves soil-moving work. These activities could expose barren soils to sources of wind or water, resulting in the potential for erosion and sedimentation on and off the Project site. During construction, nuisance flow caused by minor rain could flow off-site. The District and/or contractor would be required to employ appropriate sediment and erosion control Best Management Practices (BMP) as part of construction activities. Once construction is complete, the Project would not result in soil erosion or loss of topsoil. Compliance with state regulations would ensure that impacts remain less than significant.

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

**Less than Significant Impact.** Soils onsite consist primarily of Grangeville sandy loamy, which is classified as somewhat poorly drained with a very low runoff class and is not considered expansive in nature (see Appendix B). The Project site and surrounding areas do not contain substantial grade changes. Risk of landslides, lateral spreading, subsidence, liquefaction, and collapse are minimal. The Project does not propose significant alteration of the topography of the site, and it does not involve development of structures or facilities that could be affected by expansive soils or expose people to substantial risks to life or property. Furthermore, the Project and its activities will be consistent with the California Building Standards Code regarding all electrical components. Any impacts would be less than significant.

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

**No Impact.** The Project does not include the construction, replacement, or disturbance of septic tanks or alternative wastewater disposal systems. The Project will not be tying into the existing sewer services and will instead utilize temporary portable toilets for staff during construction. Therefore, there would be no impact.

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

**Less than Significant Impact with Mitigation.** No known paleontological resources have been identified at the Project site. However, if a paleontological resource is found incorporation of mitigation measure **GEO-1** would reduce impacts to less than significant.

### 4.7.3 Mitigation

GEO-1 Should paleontological resources be encountered on the Project site, all ground disturbing activities in the area shall stop. A qualified paleontologist shall be contacted to assess the discovery. Mitigation may include monitoring, recording the fossil locality, data recovery and analysis, and a final report. Public educational outreach may also be appropriate. Upon completion of the assessment, a report documenting methods, findings, and recommendations shall be prepared and submitted to the County of Fresno for review, and (if paleontological materials are recovered) a paleontological repository, such as the University of California Museum of Paleontology.

# 4.8 GREENHOUSE GAS EMISSIONS

Table 4-18: Greenhouse Gas Emissions Impacts

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

## 4.8.1 Baseline Conditions

Commonly identified GHG emissions and sources include the following:

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

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

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

Carbon dioxide equivalent ($CO_2e$), $CO_2e$ is the summation of $CO_2$, $CH_4$, and $N_2O$, multiplied by each greenhouse gases' global warming potential (GWP). For purposes of this analysis, $CH_4$ and $N_2O$ are assigned a multiplier of 25 and 298, respectively, based on longevity in the atmosphere and the intensity of infrared absorbed. This is consistent with CARB's calculation and the 2007 Intergovernmental Panel on Climate Change fourth assessment report (AR4).

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

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

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

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

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

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

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

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

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

The Air Quality Output Files are contained in Appendix A

### 4.8.2 Thresholds

The District has not adopted its own GHG thresholds or prepared a Greenhouse Gas Reduction Plan that can be used as a basis for determining project significance. In accordance with SJVAPCD's *CEQA Greenhouse Gas Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects,*[7] proposed projects complying with Best Performance Standards (BPS) would be determined to have a less-

[7] (San Joaquin Valley Air Pollution Control District, 2009)

than-significant impact. The SJVAPCD does not have an adopted threshold for GHGs; however, the South Coast Air Quality Management District (SCAQMD) has set a threshold of 10,000 Million Metric Tons of Carbon Dioxide Equivalent ($MTCO_2e$).[8] This threshold has been applied to this Project. Compliance with BPS and projects generating less than 10,000 $MTCO_2e$ per year would result in less than significant impacts. In addition, project-generated emissions complying with an approved plan or mitigation program would also be determined to have a less-than-significant impact.

### 4.8.3 Impact Analysis

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

**Less than Significant Impact.** Total GHG emissions generated during all phases of construction were combined and are presented in Table 4-19. The SJVAPCD does not recommend assessing the significance of construction-related emissions. However, other jurisdictions such as the SCAQMD have concluded that construction emissions should be included since they may remain in the atmosphere for years after construction is complete. In order to account for the construction emissions, amortization of the total emissions generated during construction were based on the life of the development (nonresidential—30 years) and added to the operational emissions.

Table 4-19 Construction Emissions, Greenhouse Gases

| | $MTCO_2e$ |
|---|---|
| Total Construction Emissions | 317.40 |
| Amortized over 30 years | 10.58 |
| *Notes: Calculation totals use unrounded numbers from CalEEMod output.* *Source: Appendix A* | |

Total GHG emissions generated during operations are presented in Table 4-20. The amortized construction emissions have been added to the operational emissions generated by the Project. The Project would result in approximately 50 $MTCO_2e$ resulting from operational activities. This falls below the SCAQMD's threshold of 10,000 $MTCO_2e$, resulting in a less than significant impact.

Table 4-20 Operational Emissions, Greenhouse Gases

| | $MTCO_2e$ |
|---|---|
| Operational Emissions | 38.17 |
| Amortized Construction Emissions | 10.58 |
| Total Operational Emissions plus Amortized Construction Emissions | 48.75 |
| *Notes: Calculation totals use unrounded numbers from CalEEMod output.* *Source: Appendix A* | |

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

**Less than Significant Impact.** The District has not adopted a GHG reduction plan. In addition, the District has not completed the GHG inventory, benchmarking, or goal-setting process required to identify a reduction target and take advantage of the streamlining provisions contained in the CEQA Guidelines amendments adopted for Senate Bill (SB) 97 and clarifications provided in the CEQA Guidelines

[8] (South Coast Air Quality Management District, 2008)

amendments adopted on December 28, 2018. In lieu of such streamlining provisions, the Project is being compared to the SCAQMD thresholds. As the Project does not exceed these thresholds, the Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing greenhouse gas emissions. The Project proposes to utilize electric-powered pumps and would not preclude the use of non-fossil fuel powered emergency backup power. Impacts would be less than significant.

# 4.9 HAZARDS AND HAZARDOUS MATERIALS

Table 4-21: Hazards and Hazardous Materials Impacts

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

## 4.9.1 Baseline Conditions

### Hazardous Materials

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

List data (DTSC, 2010). In addition to the EnviroStor database, the State Water Resources Control Board (SWRCB) Geotracker database provides information on regulated hazardous waste facilities in California, including underground storage tank cases and non-underground storage tank cleanup programs, including Spills-Leaks-Investigations-Cleanups sites, Department of Defense sites, and Land Disposal program. A search of the DTSC EnviroStor database and the SWRCB Geotracker database performed on May 9, 2023, determined that there are no known active hazardous waste generators or hazardous material spill sites within the Project site or immediate surrounding vicinity.

#### Airports

The Fresno Yosemite International Airport is located approximately 25 miles northeast of the Project site.

#### Emergency Response Plan

The Fresno County Office of Emergency Services coordinates planning, preparedness, response, and recovery efforts for disasters occurring within the unincorporated area of the County. It also develops and maintains the Fresno County Multi-Jurisdictional Hazard Mitigation Plan.[9] No areas of the Project are listed as part of the plan.

#### Sensitive Receptors

There are several single-family residences located south of the well site, and residences located up and down the existing streets where pipeline replacement will occur. Riverdale High School, R Kids Preschool and Riverdale Christian Academy are located less than one-quarter mile from the project.

### 4.9.2 Impact Analysis

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

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

**a-b) Less than Significant Impact.** Construction of the Project would involve the use of hazardous materials associated with construction equipment, such as diesel fuel, lubricants, and solvents. BMPs to reduce the potential for exposure to waterways would be included as part of the Project during construction and would comply with all California Division of Occupational Safety and Health Administration (Cal/OSHA) regulations regarding regular maintenance and inspection of equipment, spill prevention, and spill remediation in order to reduce the potential for incidental release of pollutants or hazardous substances onsite. Furthermore, any potential accidental hazardous materials spills during construction are the responsibility of the contractor to remediate in accordance with industry best management practices and State and county regulations. The operational phase of the Project would not involve the use or transport of hazardous materials. Impacts would be less than significant.

[9] (Fresno County 2018)

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

**Less than Significant Impact.** The Project well site is located approximately 570 feet south of Riverdale High School. The pipeline replacement portion of the Project will be within road right of ways of residential neighborhoods. Construction of the Project will involve the use of hazardous materials associated with construction equipment, such as diesel fuel, lubricants, and solvents. However, the contractor will implement a SWPPP and will comply with all Cal/OSHA regulations regarding regular maintenance and inspection of equipment, spill prevention, and spill remediation in order to reduce the potential for incidental release of pollutants or hazardous substances onsite. Because the District and its contractors would be required to comply with existing and future hazardous materials laws and regulations covering the transport, use, and disposal of hazardous materials, and because of the nature and quantity of the hazardous materials to be potentially used by the Project, the impact related to the use of hazardous materials during construction within one-quarter mile of a school would be less than significant.

d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

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

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

**No Impact.** The Project is not located within an airport land use plan or within two miles of an airport. The Fresno Yosemite International Airport is located approximately 25 miles northeast, and the Selma Municipal Airport is located approximately 15 miles northeast of the Project. Construction and implementation of the Project would not be a safety hazard for people working in the area. There would be no impact.

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

**Less than Significant Impact.** The Project involves construction of a new municipal groundwater well and associated infrastructure. Construction activities will be temporary in nature and will not cause any road closures that could interfere with any adopted emergency response or evacuation plan. While minor roadwork will be necessary to install the pipeline into the road right of way, the construction contractor will be required to work with the County (public works, police/fire, etc.) if and when roadway diversions are required to ensure that adequate access is maintained for residents and emergency vehicles. As such, any impacts would be less than significant.

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

**No Impact.** The nearest wildland area, which has a high fire risk, according to Cal Fire[10] is located approximately 30 miles southwest of the Project site. Given the absence of wildlands in the vicinity, implementation of the Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. There would be no impact.

[10] (CAL FIRE 2022)

# 4.10 HYDROLOGY AND WATER QUALITY

Table 4-22: Hydrology and Water Quality Impacts

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

## 4.10.1 Baseline Conditions

The Project is located in the Kings Groundwater Subbasin, which contains the North Fork Kings Groundwater Sustainability Agency (NFKGSA). The NFKGSA is located in Fresno and Kings Counties and consists primarily of agricultural land but contains several rural communities such as Riverdale. As per the NFKGSA Groundwater Sustainability Plan (GSP) domestic water demands for communities such as Riverdale are met solely by groundwater.[11]

[11] (North Fork Kings GSA 2019)

Groundwater in the Kings subbasin, as well as the entire San Joaquin Valley Basin, has been a critical resource for sustaining agricultural activities and local communities. However, over the years, excessive groundwater pumping and overdraft have led to significant declines in groundwater levels and land subsidence, where the ground sinks due to the depletion of underground water reserves. This has raised concerns about the long-term sustainability of the groundwater resources in the region.

Within the Community of Riverdale, the District currently has two active water supply wells (Well No. 6 and Well No. 7). Well No. 7 is currently in a temporary state of emergency to add a sand separator and will be required to go inactive during construction. A water storage tank and pumping station are also located at the Well No. 7 site. The storage tank is filled by Well No. 7, which is then distributed to the system via booster pumps. Well No. 6 discharges directly into the distribution system.

## 4.10.2 Applicable Regulations

### Federal

#### Clean Water Act

The Clean Water Act (CWA) was enacted in 1972 with the intent of restoring and maintaining the chemical, physical and biological integrity of the Waters of the United States. In 1987 the CWA was amended to establish the National Storm Water Program. The program was established in two phases, incorporating a prioritized approach to stormwater. Phase I of the program required discharges from Municipal Storm Sewer Systems serving populations over 100,000 to be covered under a NPDES permit. Phase II of the program reduced the population threshold to 10,000 and reduced the area of construction disturbance that requires permit coverage from five acres to one acre.

#### National Pollutant Discharge Elimination System Program

Section 402 of the CWA established the NPDES to control water pollution by regulating point sources that discharge pollutants into Waters of the United States. In California, the EPA has authorized the SWRCB as the permitting authority to implement the NPDES program. The SWRCB issues two-baseline general permits; one for industrial operations, the other for construction activities (General Construction Permit). Additionally, the NPDES program includes the regulation of stormwater discharges from cities, counties, and other municipalities under Order No. R8-2009-0030 (waste discharge requirements for stormwater) and updated under Order No. 5-01-048 for the Central Valley Region.

#### Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP), in which participating agencies must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 adopted a desired level of protection with an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of occurrence on the order of once every 100 years, although such a flood may occur in any given year. The 1968 Act made federally subsidized flood insurance available to property owners if their communities participate in the NFIP. A community establishes its eligibility to participate by:

- Adopting and enforcing floodplain management measures to regulate new construction; and
- Ensuring that substantial improvements within Special Flood Hazard Areas (SFHA) are designed to eliminate or minimize future flood damage.

An SFHA is an area within a floodplain having a 1-percent or greater chance of flood occurrence within any given year. SFHAs are delineated on flood hazard boundary maps issued by FEMA. The Flood Disaster Protection Act of 1973 and the National Flood Insurance Reform Act of 1994 make flood insurance mandatory for most properties in SFHAs. Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. It generally requires federal agencies constructing, permitting, or funding a project in a floodplain to do the following:

- Avoid incompatible floodplain development;
- Be consistent with the standards and criteria of the NFIP; and
- Restore and preserve natural and beneficial floodplain values.

The NFIP is a program administered by FEMA to provide subsidized flood insurance for property owners in communities. The NFIP established regulations that limit development in flood-prone areas. The boundaries of flood-prone areas are determined by FEMA's Flood Insurance Rates Maps, which provide flood information and identify the flood hazard in the community. In certain high-risk areas, federally regulated or insured lenders require property owners to have flood insurance before issuing a mortgage.

## State

### Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969, which became Division 7 of the California Water Code, authorized the SWRCB to provide comprehensive protection for California's waters through water allocation and water quality protection. The SWRCB implements the requirement of CWA Section 303, which states that water quality standards must be established for certain waters through the adoption of water quality control plans under the Porter-Cologne Act. The Porter-Cologne Act established the responsibilities and authorities of the nine RWQCBs, which include preparing water quality plans within the regions, identifying water quality objectives, and instituting waste discharge requirements. Water quality objectives are defined as limits or levels of water quality constituents and characteristics established for reasonable protection of beneficial uses or prevention of nuisance. Beneficial uses consist of all the various ways that water can be used for the benefit of people and wildlife. The Porter-Cologne Act was later amended to provide the authority delegated from the EPA to issue NPDES permits regulating discharges to Waters of the United States.

### Sustainable Groundwater Management Act of 2014

On September 16, 2014, a three-bill legislative package was signed into law, composed of AB 1739, SB 1168, and SB 1319, collectively known as the Sustainable Groundwater Management Act (SGMA). The Governor's signing message states "a central feature of these bills is the recognition that groundwater management in California is best accomplished locally". SGMA provides a framework for sustainable management of groundwater supplies by local authorities, with the potential for state intervention, if necessary, to protect the resource. The Act requires the formation of a local Groundwater Sustainability Agency (GSA) that must assess conditions in their local water basins and adopt locally based management plans. The groundwater basin that serves Fresno County has been designated by the Department of Water Resources as high- priority and subject to a condition of critical overdraft

## 4.10.3 Impact Analysis

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

**Less than Significant Impact.** Construction activities could temporarily increase runoff, erosion, and sedimentation. Construction activities also could result in soil compaction and wind erosion effects that could adversely affect soils and reduce the revegetation potential at construction sites and staging areas.

Three general sources of potential short-term construction-related stormwater pollution associated with the proposed Project are: 1) the handling, storage, and disposal of construction materials containing pollutants; 2) the maintenance and operation of construction equipment; and 3) earth moving activities which, when not controlled, may generate soil erosion and transportation, via storm runoff or mechanical equipment. Generally, routine safety precautions for handling and storing construction materials may effectively mitigate the potential pollution of stormwater by these materials. These types of common sense, Best Management Practices (BPMs) procedures can be extended to non-hazardous stormwater pollutants such as sawdust and other solid wastes.

Additionally, any water discharge associated with construction activities such as earth moving or drilling, as well as discharge associated with operation and maintenance of the well would be directed to an onsite retention basin or the Burrell Ditch canal adjacent to the site (after obtaining necessary approvals from the irrigation company) which will be installed as part of the Project. Drainage infrastructure will be constructed (inlets and piping) as needed for runoff and potential water discharge and will outlet to the basin.

Once constructed, the Project will provide supplemental water to the Community of Riverdale. The water extracted by the new groundwater well will be in compliance with the requirements of the Division of Drinking Water. As previously mentioned, any water discharge associated with operation or maintenance would be directed to a retention basin on site. Therefore, any impacts relating to potential water quality due to waste or water discharge would be less than significant.

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

**Less than Significant Impact.** There is no anticipated increase in water demand resulting from implementation of the Project. The Project is being implemented to provide reliable safe drinking water within the community. As it stands, the Community currently has two active water supply wells, Well No. 6 and Well No. 7, with an additional Well No. 4 that was put on standby in December 2014 due to contamination.

Currently, the only fully functional well within the Community is Well No. 6, as Well No. 7 is currently operating at below half capacity due to sanding issues at the wellhead. The installation of this new Well along with the improvements to the water system will ensure that the current water demand can continue to be met in the Community and will provide much needed redundancy in case of additional failures at the existing wells.

Additionally, the project will not interfere substantially with groundwater recharge, nor would the Project interfere substantially with the production rate of pre-existing nearby wells. The new well site and pumping rate were designed to not interfere with the drawdown of nearby wells. Therefore, implementation of the Project will not impede sustainable groundwater management of the San Joaquin Valley Kings subbasin, nor will it substantially decrease ground water supplies. Any impacts will be less than significant.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i. result in substantial erosion or siltation on- or off-site;

ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

iv. impede or redirect flood flows?

**Less than Significant Impact.** The Project includes changes to the existing stormwater drainage pattern of the area through the grading of the well site and installation of impermeable (concrete/asphalt) surfaces and/or structures associated with the new groundwater well.

To account for the changes to the existing drainage pattern to the well site the Project will include an on-site retention basin. The basin will be designed to County of Fresno standards for a 100 year, 10-day storm (approximately 6 inches of rainfall depth) and will retain approximately 0.45 acre-feet (146,000 gallons) of water with one foot of freeboard to the top of the basin. The well site will be graded to generally follow the existing gradient, which is southeast to northwest, with the retention basin located in the northwest corner of the site. Drainage infrastructure will be constructed (inlets and piping) as needed for runoff and well flushing and will outlet to the basin.

Furthermore, standard construction practices and compliance with County ordinances and regulations, the California Building Code, and adherence to professional engineering designs approved by the County of Fresno will reduce or eliminate potential drainage impacts from the Project. Therefore, any impacts resulting from drainage patterns would be less than significant.

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

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

**d-e) No Impact.** The proposed Project site is not within any special flood hazard areas, or other areas of flood hazard (as identified by current FEMA Flood Insurance Rate Map). In addition, the Project does not include any housing or structures that would be subject to flooding either from a watercourse or from dam inundation. There are no bodies of water near the site that would create a potential risk of hazards from seiche, tsunami or mudflow. The Project would not conflict with any water quality control plans or

sustainable groundwater management plan. Additionally, stormwater will remain on site and be retained within the proposed basin, preventing stormwater runoff from infiltrating the adjacent Burrell Ditch canal. As a result there would be no impacts associated with Project implementation.

# 4.11 LAND USE AND PLANNING

Table 4-23: Land Use and Planning Impacts

| Would the project: | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| f) Physically divide an established community? | ☐ | ☐ | ☐ | ☒ |
| g) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? | ☐ | ☐ | ☐ | ☒ |

## 4.11.1 Baseline Conditions

The Project is located within the unincorporated community of Riverdale in southern Fresno County. The Project site is located approximately 2.8 miles west of State Route 41 and more specifically, on the southwest corner of West Mt. Whitney Avenue and South Marks Avenue. The Project area is surrounded by agricultural lands, ruderal vacant lots, and residential uses.

The well site is located within vacant land zoned R1, Single Family Residential, in Fresno County. The installation of a new and replacement water main would be located along West Wood Avenue, South Marks Avenue, West Kruger Avenue, South Feland Avenue and associated public right-of-way. West Wood Avenue and West Kruger Avenue are adjacent to parcels zoned for Single Family Residential. West Marks Avenue lies adjacent to parcels zoned for general commercial, single family and multi-family residential, and agriculture, while South Feland Avenue is adjacent to parcels zoned for residential, commercial and agricultural uses.

The Riverdale Community Plan Land Use Map designates the properties adjacent to West Wood Avenue and West Kruger Avenue as Medium Density Residential. Properties adjacent to West Marks Avenue are designated as Medium Density Residential, Medium High Density Residential, Community Commercial, and Service Commercial, while properties adjacent to South Feland Avenue are designated as Limited Industrial, Park and Medium Density Residential. Zone Districts and General Plan Land Use Designations are illustrated in Figure 2-5 and Figure 2-6, respectively.

## 4.11.2 Impact Analysis

### a) Would the project physically divide an established community?

**No Impact.** The physical division of an established community typically refers to the construction of a physical feature (such as a wall, interstate highway, or railroad tracks) or the removal of a means of access (such as a local road or bridge) that would impair mobility. The Project does not include any component that would divide an established community. The installation of the new well and water main would be installed on a vacant parcel and existing right of way. The project would be a benefit for the established community as the intent is to continue to provide a safe and reliable drinking water supply for the

Riverdale residents. The Project itself will not alter the boundaries of the site and would not divide an established community. No impacts would occur as a result of Project implementation.

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

**No Impact.** The Project Site is within an area designated by the Riverdale Community Plan as Medium Residential. The Community Plan contains goals and policies to provide services to meet the needs of the existing community and planned growth, and since the Project constitutes improvements to existing water facilities, implementation of the Project would not conflict with any applicable land use plan, policy, or regulation. As such, no direct impacts would occur. There would be no impact.

# 4.12 MINERAL RESOURCES

Table 4-24: Mineral Resources Impacts

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

## 4.12.1 Baseline Conditions

The community of Riverdale is located within the Fresno production-consumption (PC) region, which includes parts of Madera and Fresno Counties. The California Geological Survey (CGS), previously known as California Department of Conservation Division of Mines and Geology, has analyzed this region for the presence of aggregate resources in a 1988 mineral land classification report[12] and a subsequent 1999 update.[13] In each of these reports CGS has classified the Fresno PC region according to the presence or absence of significant aggregate deposits. The land classification is presented in the form of Mineral Resource Zones (MRZs). MRZ-1 represents areas where information indicates that there are no significant aggregate deposits. MRZ-2 represents areas where adequate information indicates that significant aggregate deposits ae present or where it is judged that a high likelihood exists for their presence. MRZ-3 represents areas containing mineral deposits the significance of which cannot be evaluated from available data. In both CGS reports, the Riverdale area is classified as MRZ-3. All areas known to contain significant aggregate deposits within the Fresno PC region are located along the Kings River floodplain and along the San Joaquin River.

## 4.12.2 Impact Analysis

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

**a-b) No Impact.** According to the CGS's Aggregate Sustainability Map, the Project is not within the vicinity of a site being used for aggregate production.[14] The nearest aggregate production site is the Chrisman Pit (Mine ID 91-54-0025) located within Tulare County, approximately 30 miles east of the Project site.[15] In addition, California's Geologic Energy Management Division (CalGEM) has no record of active or

[12] (California Division of Mines and Geology 1988)
[13] (California Department of Conservation 1999)
[14] (California Geologic Survey 2018)
[15] (California Department of Conservation 2021)

inactive oil or gas wells or petroleum resources on the Project site or in the vicinity.[16] The Project site lies within a large region that has been classified by CGS as MRZ-3, representing an area containing mineral deposits the significance of which cannot be evaluated from available data. However, given the relatively small footprint of the proposed Project and the amount of existing development in the immediate area, it is highly unlikely that any surface mining or mineral recovery operation could feasibly take place in these areas. Therefore, implementation of the Project would not result in the loss of availability of a known mineral resource since no known mineral resources occur in this area. There would be no impact.

[16] (California Geologic Energy Management Division 2023)

# 4.13 NOISE

Table 4-25: Noise Impacts

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

## 4.13.1 Baseline Conditions

Riverdale is a rural unincorporated community in southern Fresno County, dominated by agricultural production. State Route 41 is the nearest highway, which is approximately 2.8 miles east of the Project site. The community is impacted by a multitude of noise sources. Principal noise sources include traffic on roadways, agricultural noise, and industrial noise. Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise in most communities, and they are predominant sources of noise in the community. The Project is located in an area consisting of residential uses, agricultural uses, and ruderal vacant lots. The predominant noise sources in the Project site include traffic on local roadways and noise associated with active agriculture. Sensitive receptors (residences) abut the well site to the south and east and are along the water main installation areas.

## 4.13.2 Applicable Regulations

Fresno County General Plan: The Fresno County General Plan sets forth the following policies regarding noise and which have potential relevance to the Project's CEQA review:

Policy HS-G.1: The County shall require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses.

Policy HS-G.6: The County shall regulate construction-related noise to reduce impacts on adjacent uses in accordance with the County's Noise Control Ordinance.

Fresno County Noise Control Ordinance: Chapter 8.40 of the Fresno County Municipal Code contains the Noise Control Ordinance, which places limits on noise levels and hours of construction. Section 8.40.060

states that noise sources associated with construction activities are exempt from the provisions of the Noise Control Ordinance, as long as construction does not take place before 6:00 a.m. or after 9:00 p.m. on any day except Saturday or Sunday, or before 7:00 a.m. or after 5:00 p.m. on Saturday or Sunday.

### 4.13.3 Impact Analysis

a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

**Less than Significant Impact.** Project operation would not generate significant noise; however, Project construction will generate temporary noise, mostly from construction equipment. Equipment could include scrapers, backhoes, and drilling rigs.

As illustrated in Table 4-26 below, typical construction noise levels could range between 74 to 89 dBA at a distance of 50 feet from the source, according to criteria from the Federal Transit Administration (FTA).[17] Implementation of feasible noise control measures, such as the installation of mufflers or engine casing, would result in noise reduction of 5-10 dBA per source.

Table 4-26: Typical Construction Noise Levels

| Equipment | Typical Noise Level (dBA) 50 feet from Source |
|---|---|
| Roller | 74 |
| Concrete Vibrator, Pump, Saw | 76 |
| Backhoe | 80 |
| Generator, Air Compressor | 81 |
| Compactor, concrete pump | 82 |
| Crane, Mobile | 83 |
| Dozer, Grader, Loader, Concrete Mixer, Impact Wrench, Pneumatic Tool | 85 |
| Truck, Jack Hammer | 88 |
| Paver, Scraper | 89 |
| Drill Rig | 85 |

Noise from construction activities could exceed Fresno County Noise Control Ordinance standards of 65 dBA. However, Section 8.40.060 of the Noise Control Ordinance provides an exemption for noise sources associated with work performed by private or public utilities in the maintenance or modification of its facilities as well as an exemption for noise sources associated with the drilling or redrilling of petroleum, gas, injection or water wells.

Construction noise would be temporary, with an estimated 15 months for full project construction. Well drilling would be continuous over a period of approximately five weeks. Upon project completion the

[17] (Federal Highway Administration 2017)

Project would adhere to the standards of the Fresno County Noise Control Ordinance. Maintenance at the well site would take place as needed. Impacts due to noise would be less than significant.

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

**Less than Significant Impact**. The construction phase of the Project will have excavation and grading as part of development of the new well and associated infrastructure. The Project area is located an area dominated by agricultural production, which includes the use of offroad equipment and ground-disturbing activities on a regular basis. Conditions created by Project-related construction activities would not vary substantially from the baseline conditions routinely experienced onsite. Impacts would be less than significant.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

**No Impact.** The Project is not located within an airport land use plan or within two miles of an airport. The Fresno Yosemite International Airport is located approximately 25 miles northeast and a private airstrip is located approximately 6.3 miles northeast of the Project. Furthermore, the Project does not involve the development of habitable structures or require the presence of permanent staff onsite. There would be no impact.

# 4.14 POPULATION AND HOUSING

Table 4-27: Population and Housing Impacts

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

## 4.14.1 Baseline Conditions

Riverdale is a census-designated place in Fresno County. According to the 2020 Census the population of Riverdale was 3, 477 people which saw an increase from the 2010 Census Population of 3,153.[18]There are 980 housing units in Riverdale with an estimated 3.5 persons per household.[19]

## 4.14.2 Impact Analysis

a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

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

**No Impact.** The Project involves construction of a new groundwater well on a vacant site. The Project would not encourage population growth directly or indirectly beyond that previously analyzed by the County's General Plan. No housing or habitable structures would be built, nor will any be removed. Project implementation would not result in displacement of people or existing housing. Therefore, there would be no impact.

[18] (United States Census Bureau 2023)
[19] Ibid

# 4.15 PUBLIC SERVICES

Table 4-28: Public Services

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

## 4.15.1 Baseline Conditions

Fire Protection: The proposed Project area would be served by the Fresno County Fire Protection District, Station 91 located approximately 0.5 miles northwest of the well site. The site is also served by the Riverdale Public Utility District Volunteer Fire Department Station 69.

Police Protection: The Fresno County Sherriff's Department serves the unincorporated population of Riverdale. The closest patrol station is located in Selma approximately 16 miles northeast of the Project site.

Schools: Public school services are provided throughout Fresno County by 32 school districts, one of which is Riverdale Joint Unified School District.[20] Riverdale Joint Unified School District is a K-12 school district with four schools, Fipps Primary (K-3), Riverdale Elementary (4-8), Riverdale High School (9-12), and Horizon High Continuation School (9-12). Riverdale Joint Unified School district provides services to approximately 1600 students. The closest school to the Project site is Riverdale High School located approximately 570 feet north of the well site.

Parks: Fresno County has several regional parks, as well as State and national parks, national forest, wilderness areas, and ecological reserves. Regional recreational facilities within the County include 12 parks, four fishing access areas, and boating facility. Laton-Kingston Park is the nearest regional park, located approximately 10.5 miles southeast of the Project site.

[20] (County of Fresno 2023)

### 4.15.2 Impact Analysis

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

i. Fire Protection:

ii. Police Protection:

iii. Schools:

iv. Parks:

v. Other public facilities:

**No Impact.** The Project does not include any features or facilities that would require additional fire protection resources or enhanced levels of police protection. The Project does not have the potential to directly increase or decrease the area's population and would therefore not result in impacts to schools, parks, or other public facilities. Therefore, there would be no impact.

# 4.16 RECREATION

Table 4-29: Recreation Impacts

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

## 4.16.1 Baseline Conditions

Fresno County offers a variety of recreational opportunities through its Parks Division. The recreational facility, Lanare Community Center, is located approximately 3.8-miles from the Project site. The parkland standard in the Fresno County General Plan is five to eight acres of County owned improved parkland per 1,000 residents in the unincorporated areas. Unincorporated Fresno County has a population of 170,990 people as of 2018 and contains 1,578 acres of County parks.[21] The County, therefore, exceeds the parkland standard of five acres per 1,000 residents but falls short of the eight-acre standard.

## 4.16.2 Impact Analysis

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

**No Impact.** The Project 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 or recreation facilities.

[21] (County of Fresno 2023)

# 4.17 TRANSPORTATION

Table 4-30: Transportation Impacts

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

## 4.17.1 Baseline Conditions

The Proposed Project is located within the mid-southern portion of Fresno County and is surrounded by agriculture and some residential development. No state or interstate highways are in the immediate vicinity and the Proposed Project will not result in an increase in District staff. The nearest airstrip of any kind is Swanson Ranch Airstrip, located approximately 1.5 miles from the proposed Project; however, it is currently inactive. The nearest active airstrip is the Lemoore Naval Air Station, located seven miles southwest of the proposed Project and the nearest regional airport is Fresno Yosemite International, located approximately 23 miles north/northeast of the proposed Project.

## 4.17.2 Impact Analysis

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

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b)?

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

d) Would the project result in inadequate emergency access?

**a-d) Less than Significant Impact.** The Project includes the construction of a new groundwater well as well as installation of approximately 6,200 linear feet of water main to supplement the City's water supplies. Construction activities would be temporary in nature, and construction activities would occur over a period of approximately 15-months. The approximately four-month period of installation of the water main has the most probability of creating an impact to the community's circulation system, however the construction contractor will be required to work with the County (public works, police/fire, etc.) if

roadway diversions are required to ensure that adequate access is maintained for residents and emergency vehicles. Therefore, any impact would be less than significant.

# 4.18 TRIBAL CULTURAL RESOURCES

Table 4-31: Tribal Cultural Resources Impacts

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

## 4.18.1 Baseline Conditions

Penutian-speaking Yokuts tribal groups occupied the southern San Joaquin Valley region and much of the nearby Sierra Nevada. For a variety of historical reasons, existing research information emphasizes the central Yokuts tribes who occupied both the valley and particularly the foothills of the Sierra. The northernmost tribes suffered from the influx of Euro-Americans during the Gold Rush and their populations were in substantial decline by the time ethnographic studies began in the early twentieth century. In contrast, the southernmost tribes were partially removed by the Spanish to missions and eventually absorbed into multi-tribal communities on the Sebastian Indian Reservation (on Tejon Ranch), and later the Tule River Reservation and Santa Rosa Rancheria to the north, as well as other reservations in the foothills and Sierras. The result is an unfortunate scarcity of ethnographic detail on valley tribes, especially in relation to the rich information collected from the central foothills tribes where native speakers of the Yokuts dialects are still found. Regardless, the general details of indigenous life-ways were similar across the broad expanse of Yokuts territory, particularly in terms of environmentally influenced subsistence and adaptation and with regard to religion and belief, which were similar everywhere. (See Appendix C)

Although population estimates vary and population size was greatly affected by the introduction of Euro-American diseases and social disruption, the Yokuts were one of the largest, most successful groups in Native California. It is estimated that the Yokuts region contained 27 percent of the aboriginal population in the state at the time of contact; other estimates are even higher. Many Yokuts people continue to reside in the southern San Joaquin Valley today.

### Records Search

An archival records search was conducted at the California State University, Bakersfield, Southern San Joaquin Valley Information Center (SSJVIC), by SSJVIC staff members on April 17, 2023 to determine: (i) if prehistoric or historical cultural resources had previously been recorded within the Project area; (ii) if the Project area had been systematically surveyed by archaeologists prior to the initiation of this field study; and/or (iii) whether the region of the Project was known to contain archaeological sites and to thereby be archaeologically sensitive.

According to the records search results, one previous archaeological survey had been completed within the Project area, with one cultural resource known within it. This resource is the irrigation canal known as the Burrell Ditch located south of the well site. Two additional resources were known within a 0.5-mi radius of the Project area: segments of the Southern Pacific Railroad and the Riverside Ditch.

### Native American Outreach

A Sacred Lands File search was completed for the Project by the Native American Heritage Commission (NAHC) on 18 May 2023. The results of the search were negative for tribal cultural resources or sacred sites in the vicinity of the Project area. Outreach letters were sent to all tribes listed on the NAHC-provided contact list on 25 April 2023, with follow-up emails sent on 11 August 2023. One response was received from the Santa Rosa Rancheria Tachi-Yokut Tribe on 28 June 2023 requesting continued consultation, the results of the cultural study, to be retained for a cultural presentation prior to work, and to have a tribal monitor present for all ground disturbing activities. (Appendix C)

## 4.18.2 Applicable Regulations

### Public Resources Code Section 21080.3.1, et seq. (Codification of AB 52, 2013-14)

Public Resources Code Section 21080.3.1, et seq. (codification of AB 52, 2013-14) requires that a lead agency, within 14 days of determining that it would undertake a project, must notify in writing any California Native American Tribe traditionally and culturally affiliated with the geographic area of the project if that Tribe has previously requested notification about projects in that geographic area. The notice must briefly describe the project and inquire whether the Tribe wishes to initiate a request for formal consultation. Tribes have 30 days from receipt of notification to request formal consultation. The lead agency then has 30 days to initiate the consultation, which then continues until the parties come to an agreement regarding necessary mitigation or agree that no mitigation is needed, or one or both parties determine that negotiation occurred in good faith, but no agreement would be made. The District has not received any written correspondence from a Tribe pursuant to Public Resources Code Section 21080.3.1 requesting notification of proposed projects.

## 4.18.3 Impact Assessment

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

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

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

**Less than Significant Impact with Mitigation Incorporated.** The District, as a public lead agency has not received any formal requests for notification from any State tribes, pursuant to AB 52. However, on April 24, 2023, ASM Affiliates Inc. completed the Class III inventory/Phase I survey fieldwork of the Project site. In addition to the record search of the Sacred Lands File received May 18, 2023, NAHC provided a list of local Native American Tribes who may have knowledge of cultural resources in the vicinity or general interest in the Project. The following Tribe contacts were contacted in writing via U.S. Mail, informing them of the proposed Project and general consultation.

1. Big Sandy Rancheria of Western Mono Indians, Elizabeth Kipp, Chairperson
2. Cold Springs Rancheria of Mono Indians, Carol Bill, Chairperson
3. Cold Springs Rancheria of Mono Indians, Jared Aldern, Tribal Contact
4. Dumna Wo-Wah Tribal Government, Robert Ledger, Chairperson
5. Kings River Choinumni Farm Tribe, Stan Alec, Tribal Contact
6. North Valley Yokuts Tribe, Katherine Perez, Chairperson
7. North Valley Yokuts Tribe, Timothy Perez, Tribal Contact
8. Picayune Rancheria of Chukchansi Indians, Heather Airey, Tribal Historic Preservation Officer
9. Picayune Rancheria of Chukchansi Indians, Claudia Gonzales, Chairwomen
10. Santa Rosa Rancheria Tachi-Yokut Tribe, Leo Sisco, Chairperson
11. Table Mountain Rancheria, Brenda Lavell, Chairperson
12. Table Mountain Rancheria, Bob Pennell, Cultural Resources Director
13. Traditional Choinumni Tribe, David Alvarez, Chairperson
14. Tule River Indian Tribe, Joey Garfield, Tribal Archeologist
15. Tule River Indian Tribe, Neil Peyron, Chairperson
16. Tule River Indian Tribe, Kerri Verra, Environnemental Department Contact
17. Wuksache Indian Tribe/Eshom Valley Band, Kenneth Woodrow, Chairperson

One response was received from the Santa Rosa Rancheria Tachi-Yokut Tribe on 28 June 2023 requesting continued consultation, as well as the results of the cultural study, to be retained for a cultural presentation prior to work, and to have a tribal monitor present for all ground disturbing activities. The District will continue to work with the tribe and will send a copy of the results from the cultural study to the tribe. There is little chance the Project would cause a substantial adverse change to the significance of a tribal cultural resource as defined. With implementation of mitigation measures **CUL-1**, and **CUL-2**

above, and the implementation of **TCR-1** and **TCR-2** mitigation measures outlined below and impacts to Tribal Cultural Resources would be less than significant.

### 4.18.4 Mitigation

See **CUL-1** and **CUL-2** outlined above in Section 4.5.3

TCR-1 (**Sensitivity and Awareness Training**): Prior to construction the applicant/contractor shall be required to provide a cultural resources and tribal cultural resources sensitivity and awareness training program (Worker Environmental Awareness Program [WEAP]) for all personnel involved in project construction, including field consultants and construction workers. The WEAP will be developed in coordination with an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology, as well as culturally affiliated Native American tribes. The WEAP shall be conducted before any project-related construction activities begin in the project site. The WEAP will include relevant information regarding sensitive cultural resources and tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The WEAP will also describe appropriate avoidance and impact minimization measures for cultural resources and tribal cultural resources that could be located at the project site and will outline what to do and who to contact if any potential cultural resources or tribal cultural resources are encountered. The WEAP will emphasize the requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans and will discuss appropriate behaviors and responsive actions, consistent with Native American tribal values.

TCR-2 (**Inadvertent Discoveries**): In the case of any inadvertent discoveries at any time during the duration of construction or implementation, RPUD shall contact the Santa Rosa Rancheria Tachi-Yokut Tribe for further information, investigation, and guidance on the process for handling such discoveries.

# 4.19 UTILITIES AND SERVICE SYSTEMS

Table 4-32: Utilities and Service Systems Impacts

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

## 4.19.1 Baseline Conditions

Wastewater Services / Facilities: The RPUD Wastewater Treatment Plant (WWTP) currently operates under a permit issued by the Central Valley RWQCB, Waste Discharge Requirements (WDR) Order No. 85-252. The permitted capacity of the existing pond-based WWTP is 0.25 million gallons per day (MGD). The facility presently operates at approximately 0.21 MGD (average daily flow), or 88% of the treatment capacity. The RWQCB typically recommends planning for capacity expansion to occur when a system reaches 80% of the design capacity.

Water: The Riverdale Public Utility District is responsible for providing potable water to the unincorporated community of Riverdale. Service is also provided via domestic wells and via the Riverdale Irrigation District for agricultural water consumption.

Solid Waste: The nearest active landfill within Fresno County is the American Avenue Disposal Site, located approximately 22.3 miles northwest of the Project site. The American Avenue Landfill provides service for solid waste for Riverdale and has a remaining capacity of 29,358,535 tons.[22]

## 4.19.2 Impact Analysis

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

**Less than Significant Impact.** The Project would not exceed wastewater treatment requirements or require new facilities. The Project entails the construction of a new groundwater well and associated infrastructure, which will not generate wastewater or require expansion of existing facilities.

The Project will incorporate the construction of an on-site retention basin for site drainage. The basin will be constructed on the northwest portion of the well site. The basin will be designed per Fresno Metropolitan Flood Control District design standards for a 100-year, 10-day storm (approximately 6 inches of rainfall depth) and will retain approximately 0.75 acre-feet of water. Drainage infrastructure will be constructed (inlets and piping) as needed for runoff and well flushing and will outlet to the basin.

As the Well No. 8 site is currently undeveloped a Rule 16 application will be required to provide a new electrical service to the well site. A 480v 3 Phase electrical service will likely be required to operate the Well No. 8 site. It is assumed that service to Well No. 8 will be supplied from Feland Avenue.

Additionally, the Project will not require the relocation or construction of natural gas or telecommunications facilities. As a result, any impacts would be less than significant.

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

**Less than Significant Impact.** The new groundwater well that will be constructed would be designed with a desired capacity of 1,350 gpm. Combined with the existing water supply from Well No. 6 and Well No. 7, which have a total pumping capacity of 2,350 gpm, the improved system's supply will substantially exceed the current maximum day demand of 1,344 gallons per minute, allowing for a more reliable water supply. Therefore, water supplies are available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years. Impacts would be less than significant.

c) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

**No Impact.** The Project would include the construction and operation of a groundwater well in the community of Riverdale. The construction of the groundwater well to provide safe drinking water to Riverdale residents will not increase demand on wastewater treatment facilities or services. Therefore, no impact would occur.

[22] (California Department of Resources Recycling and Recovery 2023)

d) Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

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

**d-e) Less than Significant Impact.** Project construction would generate minimal amounts of solid waste. Apart from occasional routine maintenance, Project operation will be un-manned and therefore would not generate waste on an ongoing basis. The Project would comply with all federal, State, and local statutes and regulations related to solid waste during construction. Any impact would be less than significant.

# 4.20 WILDFIRE

Table 4-33: Wildfire Impacts

| If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: | Potentially Significant Impact | Less than Significant with Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a) Substantially impair an adopted emergency response plan or emergency evacuation plan? | ☐ | ☐ | ☐ | ☒ |
| b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrollable spread of wildfire? | ☐ | ☐ | ☐ | ☒ |
| c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? | ☐ | ☐ | ☐ | ☒ |
| d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes? | ☐ | ☐ | ☐ | ☒ |

## 4.20.1 Baseline Conditions

The Project is located in the community of Riverdale in Fresno County. The Project site would be served by the Fresno County Fire Protection District, and the Riverdale Volunteer Fire Department. The Project site is not located in or near a State Responsibility Area. Additionally, the Project is not on or near land classified as a very high fire hazard severity zone. The nearest very high fire hazard severity zone is located approximately 25 miles northeast.

## 4.20.2 Impact Analysis

a) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

b) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

c) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads,

fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

d) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

**a-d) No Impact.** The Project is not located in or near State Responsibility Areas or lands classified as very high fire hazard severity zones. The nearest State Responsibility Area (SRA) is approximately 25 miles southwest of the Project site.[23] Additionally, the site is located approximately 30 miles north northeast from the nearest Very High classification of Fire Hazard Severity Zone. There would be no impact.

[23] (CAL FIRE 2022)

# 4.21 CEQA MANDATORY FINDINGS OF SIGNIFICANCE

Table 4-34: CEQA Mandatory Findings of Significance

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

## 4.21.1 Statement of Findings

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

**Less than Significant with Mitigation Incorporated.** The analysis conducted in this Initial Study/Mitigated Negative Declaration results in a determination that the Project, with incorporation of mitigation measures, will have a less than significant effect on the environment. The potential for impacts to biological resources, geology and soil resources, cultural resources, and tribal cultural resources from the implementation of the proposed Project will be less than significant with the incorporation of the mitigation measures discussed in Chapter 4. Accordingly, the Project will involve no potential for significant impacts through the degradation of the quality of the environment, the reduction of habitat or population of fish or wildlife, including endangered plants or animals, the elimination of a plant or animal community or example of a major period of California history or prehistory.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

**Less Than Significant Impact with Mitigation Incorporated.** CEQA Guidelines Section 15064(i) states that a Lead Agency shall consider whether the cumulative impact of a project is significant and whether the effects of the Project are cumulatively considerable. The assessment of the significance of the cumulative effects of a project must, therefore, be conducted in connection with the effects of past projects, other current projects, and probable future projects. The Project would consist of the construction of a new groundwater well and associated infrastructure for additional water supply to provide drinking water to residents. No additional roads would be constructed as a result of the Project, nor would any additional public services be required. The Project is intended to supplement District water supplies and would not result in direct or indirect population growth beyond what is planned for in the General Plan. Therefore, implementation of the Project would not result in significant cumulative impacts and all potential impacts would be reduced to less than significant through the implementation of mitigation measures and basic regulatory requirements incorporated into future Project design.

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

**Less than Significant Impact.** The Project would include the construction of a new groundwater well and associated infrastructure. The Project in and of itself would not create a significant hazard to the public or the environment. Construction related air quality exposure impacts could occur as a result of project construction. However, implementation of basic regulatory requirements identified in this IS/MND would ensure that impact are less than significant. Therefore, the Project would not have any direct or indirect adverse impact on humans. This impact would be less than significant.

# CHAPTER 5 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 Project in the Riverdale Public Utility District. The MMRP lists mitigation measures recommended in the IS/MND for the Project and identifies monitoring and reporting requirements.

Table 5-1: Mitigation, Monitoring, and Reporting Program presents the mitigation measures identified for the Project. Each mitigation measure is numbered with a symbol indicating the topical section to which it pertains, a hyphen, and the impact number. For example, AIR-2 would be the second mitigation measure identified in the Air Quality analysis of the IS/MND.

The first column of Table 5-1: Mitigation, Monitoring, and Reporting Program identifies the mitigation measure. The second column, entitled “When Monitoring is to Occur,” identifies the time the mitigation measure should be initiated. The third column, “Frequency of Monitoring,” identifies the frequency of the monitoring of the mitigation measure. The fourth column, “Agency Responsible for Monitoring,” names the party ultimately responsible for ensuring that the mitigation measure is implemented. The last columns will be used by the Lead and Responsible Agencies to ensure that individual mitigation measures have been complied with and monitored

Table 5-1: Mitigation, Monitoring, and Reporting Program

| Mitigation, Monitoring, and Reporting Program | | | | | | |
|---|---|---|---|---|---|---|
| Item | Mitigation Measure | When Monitoring is to Occur | Frequency of Monitoring | Agency Responsible for Monitoring | Method to Verify Compliance | Verification of Compliance |
| Biological Resources | | | | | | |
| BIO 1 | **(Avoidance):** The project's construction activities will occur, if feasible, between September 16 and January 31 (outside of the nesting bird season) to avoid impacts to nesting birds. | Prior to the start of construction activities | Daily | RPUD | Contractor's construction schedule | |
| BIO 2 | **(Pre-construction Surveys):** If activities must occur within the nesting bird season (February 1 to September 15), a qualified biologist will conduct a pre-construction survey for active nests within ten (10) calendar days prior to the start of construction. It will be completed within the project site, and up to 100 feet outside of the project site for nesting migratory birds and up to 500 feet outside of the project site for nesting raptors. Raptor nests would be considered "active" upon the nest-building stage. If no active nests are observed, no further mitigation is required. | Prior to the start of construction activities | 7 days prior to the start of construction | RPUD | Qualified Biologist report of pre-construction survey | |
| BIO 3 | **(Avoidance Buffers):** On discovery of any active nests or breeding colonies near work areas, a qualified biologist will determine appropriate avoidance buffer distances based on applicable CDFW and/or USFWS guidelines, the biology of the species, conditions of the nest(s), and the level of project disturbance. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged. | Prior to the start of construction activities | 7 days prior to the start of construction | RPUD | Qualified Biologist report of pre-construction survey | |
| Cultural Resources | | | | | | |
| CUL-1 | **(Archaeological Remains)** Should archeological remains or artifacts be unearthed during any stage of project activities, work in the area of the discovery shall cease until the area is evaluated by a qualified archaeologist. If mitigation is warranted, | During construction activities | Daily | RPUD | RPUD with assistance of a qualified archaeologist | |

| Mitigation, Monitoring, and Reporting Program | | | | | | |
|---|---|---|---|---|---|---|
| Item | Mitigation Measure | When Monitoring is to Occur | Frequency of Monitoring | Agency Responsible for Monitoring | Method to Verify Compliance | Verification of Compliance |
| | the project proponent shall abide by recommendations of the archaeologist. | | | | | |
| CUL-2 | **(Human Remains)** In the event that human remains are discovered on the Project site, the Fresno County Coroner must be notified of that discovery (California Health and Safety Code, Section 7050.5) and all activities in the immediate area if the find or in any nearby area reasonably suspected of overlie adjacent human remains must cease until appropriate and lawful measures have been implemented. If the Coroner determines that the remains are not recent, but rather of Native American origin, the Coroner shall notify the NAHC in Sacramento within 24 hours to permit the NAHC to determine the most likely descendent of the deceased Native American. | During construction activities | Daily | RPUD | RPUD with assistance of County Coroner | |
| | | Geology and Soils | | | | |
| GEO-1 | **(Paleontological Resources)** Should paleontological resources be encountered on the Project site, all ground disturbing activities in the area shall stop. A qualified paleontologist shall be contacted to assess the discovery. Mitigation may include monitoring, recording the fossil locality, data recovery and analysis, and a final report. Public educational outreach may also be appropriate. Upon completion of the assessment, a report documenting methods, findings, and recommendations shall be prepared and submitted to the County of Fresno for review, and (if paleontological materials are recovered) a paleontological repository, such as the University of California Museum of Paleontology | During construction activities | Daily | RPUD | RPUD with assistance of a qualified geologist and/or paleontologist | |
| | | Tribal Cultural Resources | | | | |
| TCR-1 | **(Sensitivity and Awareness Training)**: Prior to construction the applicant/contractor shall be required to provide a cultural resources and tribal cultural resources sensitivity and awareness training program (Worker Environmental Awareness | Prior to Construction | Once | RPUD | RPUD | |

| Mitigation, Monitoring, and Reporting Program | | | | | | |
|---|---|---|---|---|---|---|
| Item | Mitigation Measure | When Monitoring is to Occur | Frequency of Monitoring | Agency Responsible for Monitoring | Method to Verify Compliance | Verification of Compliance |
| | Program [WEAP]) for all personnel involved in project construction, including field consultants and construction workers. The WEAP will be developed in coordination with an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology, as well as culturally affiliated Native American tribes. The WEAP shall be conducted before any project-related construction activities begin in the project site. The WEAP will include relevant information regarding sensitive cultural resources and tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The WEAP will also describe appropriate avoidance and impact minimization measures for cultural resources and tribal cultural resources that could be located at the project site and will outline what to do and who to contact if any potential cultural resources or tribal cultural resources are encountered. The WEAP will emphasize the requirement for confidentiality and culturally appropriate treatment of any discovery of significance to Native Americans and will discuss appropriate behaviors and responsive actions, consistent with Native American tribal values | | | | | |
| TCR-2 | (**Inadvertent Discoveries**): In the case of any inadvertent discoveries at any time during the duration of construction or implementation, RPUD shall contact the Santa Rosa Rancheria Tachi-Yokut Tribe for further information, investigation, and guidance on the process for handling such discoveries. | During Construction | During ground disturbing activities | RPUD | RPUD | |

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# Riverdale PUD Well 8 Custom Report

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# 1. Basic Project Information

## 1.1. Basic Project Information

| Data Field | Value |
|---|---|
| Project Name | Riverdale PUD Well 8 |
| Construction Start Date | 7/1/2023 |
| Operational Year | 2024 |
| Lead Agency | — |
| Land Use Scale | Project/site |
| Analysis Level for Defaults | County |
| Windspeed (m/s) | 3.50 |
| Precipitation (days) | 20.0 |
| Location | 36.42951820096948, -119.85395285169443 |
| County | Fresno |
| City | Unincorporated |
| Air District | San Joaquin Valley APCD |
| Air Basin | San Joaquin Valley |
| TAZ | 2521 |
| EDFZ | 5 |
| Electric Utility | Pacific Gas & Electric Company |
| Gas Utility | Southern California Gas |
| App Version | 2022.1.1.13 |

## 1.2. Land Use Types

| Land Use Subtype | Size | Unit | Lot Acreage | Building Area (sq ft) | Landscape Area (sq ft) | Special Landscape Area (sq ft) | Population | Description |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Other Asphalt Surfaces | 2.39 | Acre | 2.39 | 0.00 | 0.00 | — | — | — |
| User Defined Linear | 1.17 | Mile | 5.70 | 0.00 | 0.00 | — | — | — |

### 1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

# 2. Emissions Summary

### 2.1. Construction Emissions Compared Against Thresholds

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

| Un/Mit. | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 5.24 | 4.42 | 43.1 | 41.3 | 0.06 | 1.94 | 19.8 | 21.7 | 1.79 | 10.1 | 11.9 | — | 6,180 | 6,180 | 0.25 | 0.06 | 0.75 | 6,204 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 1.50 | 1.26 | 11.8 | 13.2 | 0.02 | 0.55 | 0.00 | 0.55 | 0.51 | 0.00 | 0.51 | — | 2,398 | 2,398 | 0.10 | 0.02 | 0.00 | 2,406 |
| Average Daily (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.76 | 0.64 | 5.97 | 6.41 | 0.01 | 0.27 | 0.29 | 0.56 | 0.25 | 0.14 | 0.39 | — | 1,075 | 1,075 | 0.04 | 0.01 | 0.03 | 1,079 |
| Annual (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.14 | 0.12 | 1.09 | 1.17 | < 0.005 | 0.05 | 0.05 | 0.10 | 0.05 | 0.03 | 0.07 | — | 178 | 178 | 0.01 | < 0.005 | 0.01 | 179 |

### 2.2. Construction Emissions by Year, Unmitigated

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

| Year | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily - Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2023 | 5.24 | 4.42 | 43.1 | 41.3 | 0.06 | 1.94 | 19.8 | 21.7 | 1.79 | 10.1 | 11.9 | — | 6,180 | 6,180 | 0.25 | 0.06 | 0.75 | 6,204 |
| 2024 | 1.44 | 3.04 | 11.2 | 13.1 | 0.02 | 0.50 | 0.08 | 0.50 | 0.46 | 0.02 | 0.46 | — | 2,398 | 2,398 | 0.10 | 0.02 | 0.37 | 2,406 |
| Daily - Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2023 | 1.50 | 1.26 | 11.8 | 13.2 | 0.02 | 0.55 | 0.00 | 0.55 | 0.51 | 0.00 | 0.51 | — | 2,397 | 2,397 | 0.10 | 0.02 | 0.00 | 2,406 |
| 2024 | 1.44 | 1.20 | 11.2 | 13.1 | 0.02 | 0.50 | 0.00 | 0.50 | 0.46 | 0.00 | 0.46 | — | 2,398 | 2,398 | 0.10 | 0.02 | 0.00 | 2,406 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2023 | 0.76 | 0.64 | 5.97 | 6.41 | 0.01 | 0.27 | 0.29 | 0.56 | 0.25 | 0.14 | 0.39 | — | 1,075 | 1,075 | 0.04 | 0.01 | 0.03 | 1,079 |
| 2024 | 0.51 | 0.48 | 3.93 | 4.63 | 0.01 | 0.18 | < 0.005 | 0.18 | 0.16 | < 0.005 | 0.16 | — | 836 | 836 | 0.03 | 0.01 | < 0.005 | 839 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 2023 | 0.14 | 0.12 | 1.09 | 1.17 | < 0.005 | 0.05 | 0.05 | 0.10 | 0.05 | 0.03 | 0.07 | — | 178 | 178 | 0.01 | < 0.005 | 0.01 | 179 |
| 2024 | 0.09 | 0.09 | 0.72 | 0.85 | < 0.005 | 0.03 | < 0.005 | 0.03 | 0.03 | < 0.005 | 0.03 | — | 138 | 138 | 0.01 | < 0.005 | < 0.005 | 139 |

## 2.4. Operations Emissions Compared Against Thresholds

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

| Un/Mit. | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 183 | 183 | 0.03 | < 0.005 | 0.00 | 184 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 183 | 183 | 0.03 | < 0.005 | 0.00 | 184 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average Daily (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.10 | 0.10 | 0.27 | 0.33 | < 0.005 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 229 | 229 | 0.03 | < 0.005 | 0.00 | 231 |
| Annual (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Unmit. | 0.02 | 0.02 | 0.05 | 0.06 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | 0.00 | 37.8 | 37.8 | 0.01 | < 0.005 | 0.00 | 38.2 |

## 2.5. Operations Emissions by Sector, Unmitigated

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

| Sector | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Mobile | 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 | 0.00 |
| Area | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 183 | 183 | 0.03 | < 0.005 | — | 184 |
| Water | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Waste | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Stationary | 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 | 0.00 | 0.00 |
| Total | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 183 | 183 | 0.03 | < 0.005 | 0.00 | 184 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Mobile | 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 | 0.00 |
| Area | — | 0.01 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 183 | 183 | 0.03 | < 0.005 | — | 184 |
| Water | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Waste | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stationar | 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 | 0.00 | 0.00 |
| Total | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 183 | 183 | 0.03 | < 0.005 | 0.00 | 184 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Mobile | 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 | 0.00 |
| Area | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 183 | 183 | 0.03 | < 0.005 | — | 184 |
| Water | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Waste | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Stationary | 0.10 | 0.09 | 0.27 | 0.33 | < 0.005 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 46.0 | 46.0 | < 0.005 | < 0.005 | 0.00 | 46.2 |
| Total | 0.10 | 0.10 | 0.27 | 0.33 | < 0.005 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 229 | 229 | 0.03 | < 0.005 | 0.00 | 231 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Mobile | 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 | 0.00 |
| Area | 0.00 | < 0.005 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 30.2 | 30.2 | < 0.005 | < 0.005 | — | 30.5 |
| Water | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Waste | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Stationary | 0.02 | 0.02 | 0.05 | 0.06 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | 0.00 | 7.62 | 7.62 | < 0.005 | < 0.005 | 0.00 | 7.64 |
| Total | 0.02 | 0.02 | 0.05 | 0.06 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | 0.00 | 37.8 | 37.8 | 0.01 | < 0.005 | 0.00 | 38.2 |

# 3. Construction Emissions Details

## 3.1. Linear, Grading & Excavation (2023) - Unmitigated

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

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

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.40 | 0.34 | 3.33 | 4.65 | 0.01 | 0.14 | — | 0.14 | 0.12 | — | 0.12 | — | 711 | 711 | 0.03 | 0.01 | — | 713 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.03 | 0.02 | 0.25 | 0.34 | < 0.005 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 52.6 | 52.6 | < 0.005 | < 0.005 | — | 52.8 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | < 0.005 | 0.04 | 0.06 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 8.71 | 8.71 | < 0.005 | < 0.005 | — | 8.74 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.05 | 0.05 | 0.03 | 0.44 | 0.00 | 0.00 | 0.05 | 0.05 | 0.00 | 0.01 | 0.01 | — | 63.3 | 63.3 | < 0.005 | < 0.005 | 0.27 | 64.4 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.03 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 4.30 | 4.30 | < 0.005 | < 0.005 | 0.01 | 4.37 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 0.71 | 0.71 | < 0.005 | < 0.005 | < 0.005 | 0.72 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.3. Linear, Drainage, Utilities, & Sub-Grade (2023) - Unmitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.40 | 0.34 | 3.33 | 4.65 | 0.01 | 0.14 | — | 0.14 | 0.12 | — | 0.12 | — | 711 | 711 | 0.03 | 0.01 | — | 713 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.03 | 0.02 | 0.25 | 0.34 | < 0.005 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 52.6 | 52.6 | < 0.005 | < 0.005 | — | 52.8 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | < 0.005 | 0.04 | 0.06 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 8.71 | 8.71 | < 0.005 | < 0.005 | — | 8.74 |
| Dust From Material Movement | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.05 | 0.05 | 0.03 | 0.44 | 0.00 | 0.00 | 0.05 | 0.05 | 0.00 | 0.01 | 0.01 | — | 63.3 | 63.3 | < 0.005 | < 0.005 | 0.27 | 64.4 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.03 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 4.30 | 4.30 | < 0.005 | < 0.005 | 0.01 | 4.37 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 0.71 | 0.71 | < 0.005 | < 0.005 | < 0.005 | 0.72 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.5. Linear, Paving (2023) - Unmitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.40 | 0.34 | 3.33 | 4.65 | 0.01 | 0.14 | — | 0.14 | 0.12 | — | 0.12 | — | 711 | 711 | 0.03 | 0.01 | — | 713 |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | 0.01 | 0.05 | 0.08 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 11.7 | 11.7 | < 0.005 | < 0.005 | — | 11.7 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | < 0.005 | 0.01 | 0.01 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 1.94 | 1.94 | < 0.005 | < 0.005 | — | 1.94 |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.05 | 0.05 | 0.03 | 0.44 | 0.00 | 0.00 | 0.05 | 0.05 | 0.00 | 0.01 | 0.01 | — | 63.3 | 63.3 | < 0.005 | < 0.005 | 0.27 | 64.4 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.01 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 0.96 | 0.96 | < 0.005 | < 0.005 | < 0.005 | 0.97 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 0.16 | 0.16 | < 0.005 | < 0.005 | < 0.005 | 0.16 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.7. Demolition (2023) - Unmitigated

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

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

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 3.39 | 2.84 | 27.3 | 23.5 | 0.03 | 1.20 | — | 1.20 | 1.10 | — | 1.10 | — | 3,425 | 3,425 | 0.14 | 0.03 | — | 3,437 |
| Demolition | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.19 | 0.16 | 1.50 | 1.29 | < 0.005 | 0.07 | — | 0.07 | 0.06 | — | 0.06 | — | 188 | 188 | 0.01 | < 0.005 | — | 188 |
| Demolition | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.03 | 0.03 | 0.27 | 0.23 | < 0.005 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 31.1 | 31.1 | < 0.005 | < 0.005 | — | 31.2 |
| Demolition | — | — | — | — | — | — | 0.00 | 0.00 | — | 0.00 | 0.00 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.08 | 0.08 | 0.04 | 0.67 | 0.00 | 0.00 | 0.08 | 0.08 | 0.00 | 0.02 | 0.02 | — | 94.9 | 94.9 | 0.01 | < 0.005 | 0.41 | 96.6 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.03 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 4.78 | 4.78 | < 0.005 | < 0.005 | 0.01 | 4.86 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.01 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 0.79 | 0.79 | < 0.005 | < 0.005 | < 0.005 | 0.80 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.9. Site Preparation (2023) - Unmitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 4.70 | 3.95 | 39.7 | 35.5 | 0.05 | 1.81 | — | 1.81 | 1.66 | — | 1.66 | — | 5,295 | 5,295 | 0.21 | 0.04 | — | 5,314 |
| Dust From Material Movement | — | — | — | — | — | — | 19.7 | 19.7 | — | 10.1 | 10.1 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.04 | 0.03 | 0.33 | 0.29 | < 0.005 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 43.5 | 43.5 | < 0.005 | < 0.005 | — | 43.7 |
| Dust From Material Movement | — | — | — | — | — | — | 0.16 | 0.16 | — | 0.08 | 0.08 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | 0.01 | 0.06 | 0.05 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 7.21 | 7.21 | < 0.005 | < 0.005 | — | 7.23 |
| Dust From Material Movement | — | — | — | — | — | — | 0.03 | 0.03 | — | 0.02 | 0.02 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.09 | 0.09 | 0.05 | 0.78 | 0.00 | 0.00 | 0.10 | 0.10 | 0.00 | 0.02 | 0.02 | — | 111 | 111 | 0.01 | < 0.005 | 0.48 | 113 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.01 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 0.84 | 0.84 | < 0.005 | < 0.005 | < 0.005 | 0.85 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 0.14 | 0.14 | < 0.005 | < 0.005 | < 0.005 | 0.14 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.11. Grading (2023) - Unmitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 2.43 | 2.04 | 20.0 | 19.7 | 0.03 | 0.94 | — | 0.94 | 0.87 | — | 0.87 | — | 2,958 | 2,958 | 0.12 | 0.02 | — | 2,968 |
| Dust From Material Movement | — | — | — | — | — | — | 7.08 | 7.08 | — | 3.42 | 3.42 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.04 | 0.03 | 0.33 | 0.32 | < 0.005 | 0.02 | — | 0.02 | 0.01 | — | 0.01 | — | 48.6 | 48.6 | < 0.005 | < 0.005 | — | 48.8 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dust From Material Movement | — | — | — | — | — | — | 0.12 | 0.12 | — | 0.06 | 0.06 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | 0.01 | 0.06 | 0.06 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 8.05 | 8.05 | < 0.005 | < 0.005 | — | 8.08 |
| Dust From Material Movement | — | — | — | — | — | — | 0.02 | 0.02 | — | 0.01 | 0.01 | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.08 | 0.08 | 0.04 | 0.67 | 0.00 | 0.00 | 0.08 | 0.08 | 0.00 | 0.02 | 0.02 | — | 94.9 | 94.9 | 0.01 | < 0.005 | 0.41 | 96.6 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.01 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 1.43 | 1.43 | < 0.005 | < 0.005 | < 0.005 | 1.46 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 0.24 | 0.24 | < 0.005 | < 0.005 | < 0.005 | 0.24 |
| Vendor | 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 | 0.00 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hauling | 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 | 0.00 |

## 3.13. Building Construction (2023) - Unmitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.50 | 1.26 | 11.8 | 13.2 | 0.02 | 0.55 | — | 0.55 | 0.51 | — | 0.51 | — | 2,397 | 2,397 | 0.10 | 0.02 | — | 2,406 |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.50 | 1.26 | 11.8 | 13.2 | 0.02 | 0.55 | — | 0.55 | 0.51 | — | 0.51 | — | 2,397 | 2,397 | 0.10 | 0.02 | — | 2,406 |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.42 | 0.35 | 3.26 | 3.63 | 0.01 | 0.15 | — | 0.15 | 0.14 | — | 0.14 | — | 662 | 662 | 0.03 | 0.01 | — | 664 |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.08 | 0.06 | 0.59 | 0.66 | < 0.005 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 110 | 110 | < 0.005 | < 0.005 | — | 110 |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.15. Building Construction (2024) - Unmitigated

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

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

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road Equipment | 1.44 | 1.20 | 11.2 | 13.1 | 0.02 | 0.50 | — | 0.50 | 0.46 | — | 0.46 | — | 2,398 | 2,398 | 0.10 | 0.02 | — | 2,406 |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.44 | 1.20 | 11.2 | 13.1 | 0.02 | 0.50 | — | 0.50 | 0.46 | — | 0.46 | — | 2,398 | 2,398 | 0.10 | 0.02 | — | 2,406 |
| Onsite truck | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.47 | 0.40 | 3.69 | 4.31 | 0.01 | 0.16 | — | 0.16 | 0.15 | — | 0.15 | — | 788 | 788 | 0.03 | 0.01 | — | 791 |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.09 | 0.07 | 0.67 | 0.79 | < 0.005 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 131 | 131 | 0.01 | < 0.005 | — | 131 |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.17. Paving (2024) - Unmitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 1.01 | 0.85 | 7.81 | 10.0 | 0.01 | 0.39 | — | 0.39 | 0.36 | — | 0.36 | — | 1,512 | 1,512 | 0.06 | 0.01 | — | 1,517 |
| Paving | — | 2.12 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road Equipment | 0.03 | 0.02 | 0.21 | 0.27 | < 0.005 | 0.01 | — | 0.01 | 0.01 | — | 0.01 | — | 41.4 | 41.4 | < 0.005 | < 0.005 | — | 41.6 |
| Paving | — | 0.06 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.01 | < 0.005 | 0.04 | 0.05 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 6.86 | 6.86 | < 0.005 | < 0.005 | — | 6.88 |
| Paving | — | 0.01 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 0.07 | 0.07 | 0.04 | 0.61 | 0.00 | 0.00 | 0.08 | 0.08 | 0.00 | 0.02 | 0.02 | — | 92.9 | 92.9 | 0.01 | < 0.005 | 0.37 | 94.6 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | 0.01 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 2.34 | 2.34 | < 0.005 | < 0.005 | < 0.005 | 2.38 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | < 0.005 | < 0.005 | < 0.005 | < 0.005 | 0.00 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | — | 0.39 | 0.39 | < 0.005 | < 0.005 | < 0.005 | 0.39 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

## 3.19. Architectural Coating (2024) - Unmitigated

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

| Location | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | 0.17 | 0.14 | 0.91 | 1.15 | < 0.005 | 0.03 | — | 0.03 | 0.03 | — | 0.03 | — | 134 | 134 | 0.01 | < 0.005 | — | 134 |
| Architectural Coatings | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | < 0.005 | 0.02 | 0.03 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 3.66 | 3.66 | < 0.005 | < 0.005 | — | 3.67 |
| Architectural Coatings | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Onsite truck | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Off-Road Equipment | < 0.005 | < 0.005 | < 0.005 | 0.01 | < 0.005 | < 0.005 | — | < 0.005 | < 0.005 | — | < 0.005 | — | 0.61 | 0.61 | < 0.005 | < 0.005 | — | 0.61 |
| Architectural Coatings | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Onsite truck | 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 | 0.00 |
| Offsite | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Average Daily | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Worker | 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 | 0.00 |
| Vendor | 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 | 0.00 |
| Hauling | 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 | 0.00 |

# 4. Operations Emissions Details

## 4.1. Mobile Emissions by Land Use

### 4.1.1. Unmitigated

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

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

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Other Asphalt Surfaces | 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 | 0.00 |
| Total | 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 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Other Asphalt Surfaces | 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 | 0.00 |
| Total | 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 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Other Asphalt Surfaces | 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 | 0.00 |
| Total | 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 | 0.00 |

## 4.2. Energy

### 4.2.1. Electricity Emissions By Land Use - Unmitigated

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

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Other Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | — | 183 | 183 | 0.03 | < 0.005 | — | 184 |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | 183 | 183 | 0.03 | < 0.005 | — | 184 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Other Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | — | 183 | 183 | 0.03 | < 0.005 | — | 184 |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | 183 | 183 | 0.03 | < 0.005 | — | 184 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Other Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | — | 30.2 | 30.2 | < 0.005 | < 0.005 | — | 30.5 |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | 30.2 | 30.2 | < 0.005 | < 0.005 | — | 30.5 |

### 4.2.3. Natural Gas Emissions By Land Use - Unmitigated

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

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

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Other Asphalt Surfaces | 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 |
| Total | 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 |

## 4.3. Area Emissions by Source

### 4.3.2. Unmitigated

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

| Source | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Consumer Products | — | 0.01 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Landscape Equipment | 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 |
| Total | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Consumer Products | — | 0.01 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | 0.01 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Consumer Products | — | < 0.005 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Architectural Coatings | — | 0.00 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Landscape Equipment | 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 |
| Total | 0.00 | < 0.005 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 | 0.00 | — | 0.00 | — | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

## 4.4. Water Emissions by Land Use

### 4.4.2. Unmitigated

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

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Other Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Other Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Other Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

## 4.5. Waste Emissions by Land Use

### 4.5.2. Unmitigated

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

| Land Use | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Other Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Other Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Other Asphalt Surfaces | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |
| Total | — | — | — | — | — | — | — | — | — | — | — | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | — | 0.00 |

## 4.6. Refrigerant Emissions by Land Use

### 4.6.1. Unmitigated

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

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

## 4.7. Offroad Emissions By Equipment Type

### 4.7.1. Unmitigated

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

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

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

## 4.8. Stationary Emissions By Equipment Type

### 4.8.1. Unmitigated

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

| Equipment Type | TOG | ROG | NOx | CO | SO2 | PM10E | PM10D | PM10T | PM2.5E | PM2.5D | PM2.5T | BCO2 | NBCO2 | CO2T | CH4 | N2O | R | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily, Summer (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Emergency Generator | 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 | 0.00 | 0.00 |
| Total | 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 | 0.00 | 0.00 |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Emergency Generator | 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 | 0.00 | 0.00 |
| Total | 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 | 0.00 | 0.00 |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Emergency Generator | 0.02 | 0.02 | 0.05 | 0.06 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | 0.00 | 7.62 | 7.62 | < 0.005 | < 0.005 | 0.00 | 7.64 |
| Total | 0.02 | 0.02 | 0.05 | 0.06 | < 0.005 | < 0.005 | 0.00 | < 0.005 | < 0.005 | 0.00 | < 0.005 | 0.00 | 7.62 | 7.62 | < 0.005 | < 0.005 | 0.00 | 7.64 |

## 4.9. User Defined Emissions By Equipment Type

### 4.9.1. Unmitigated

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

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

## 4.10. Soil Carbon Accumulation By Vegetation Type

### 4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

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

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

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

### 4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Remove | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Daily, Winter (Max) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Annual | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Avoided | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sequestered | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Removed | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Subtotal | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

# 5. Activity Data

## 5.1. Construction Schedule

| Phase Name | Phase Type | Start Date | End Date | Days Per Week | Work Days per Phase | Phase Description |
|---|---|---|---|---|---|---|
| Linear, Grading & Excavation | Linear, Grading & Excavation | 7/4/2023 | 8/9/2023 | 5.00 | 27.0 | — |
| Linear, Drainage, Utilities, & Sub-Grade | Linear, Drainage, Utilities, & Sub-Grade | 8/10/2023 | 9/15/2023 | 5.00 | 27.0 | — |
| Linear, Paving | Linear, Paving | 9/16/2023 | 9/25/2023 | 5.00 | 6.00 | — |
| Demolition | Demolition | 7/1/2023 | 7/29/2023 | 5.00 | 20.0 | — |
| Site Preparation | Site Preparation | 7/30/2023 | 8/3/2023 | 5.00 | 3.00 | — |
| Grading | Grading | 8/4/2023 | 8/12/2023 | 5.00 | 6.00 | — |
| Building Construction | Building Construction | 8/13/2023 | 6/16/2024 | 5.00 | 220 | — |
| Paving | Paving | 6/17/2024 | 7/1/2024 | 5.00 | 10.0 | — |
| Architectural Coating | Architectural Coating | 7/2/2024 | 7/16/2024 | 5.00 | 10.0 | — |

## 5.2. Off-Road Equipment

### 5.2.1. Unmitigated

| Phase Name | Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|---|---|
| Linear, Grading & Excavation | Excavators | Diesel | Average | 1.00 | 8.00 | 36.0 | 0.38 |
| Linear, Grading & Excavation | Plate Compactors | Diesel | Average | 1.00 | 8.00 | 8.00 | 0.43 |
| Linear, Grading & Excavation | Skid Steer Loaders | Diesel | Average | 1.00 | 8.00 | 71.0 | 0.37 |
| Linear, Grading & Excavation | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 8.00 | 84.0 | 0.37 |
| Linear, Drainage, Utilities, & Sub-Grade | Excavators | Diesel | Average | 1.00 | 8.00 | 36.0 | 0.38 |
| Linear, Drainage, Utilities, & Sub-Grade | Plate Compactors | Diesel | Average | 1.00 | 8.00 | 8.00 | 0.43 |
| Linear, Drainage, Utilities, & Sub-Grade | Skid Steer Loaders | Diesel | Average | 1.00 | 8.00 | 71.0 | 0.37 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Linear, Drainage, Utilities, & Sub-Grade | Tractors/Loaders/Backh | Diesel | Average | 1.00 | 8.00 | 84.0 | 0.37 |
| Linear, Paving | Excavators | Diesel | Average | 1.00 | 8.00 | 36.0 | 0.38 |
| Linear, Paving | Plate Compactors | Diesel | Average | 1.00 | 8.00 | 8.00 | 0.43 |
| Linear, Paving | Skid Steer Loaders | Diesel | Average | 1.00 | 8.00 | 71.0 | 0.37 |
| Linear, Paving | Tractors/Loaders/Backhoes | Diesel | Average | 1.00 | 8.00 | 84.0 | 0.37 |
| Demolition | Concrete/Industrial Saws | Diesel | Average | 1.00 | 8.00 | 33.0 | 0.73 |
| Demolition | Excavators | Diesel | Average | 3.00 | 8.00 | 36.0 | 0.38 |
| Demolition | Rubber Tired Dozers | Diesel | Average | 2.00 | 8.00 | 367 | 0.40 |
| Site Preparation | Rubber Tired Dozers | Diesel | Average | 3.00 | 8.00 | 367 | 0.40 |
| Site Preparation | Tractors/Loaders/Backhoes | Diesel | Average | 4.00 | 8.00 | 84.0 | 0.37 |
| Grading | Excavators | Diesel | Average | 1.00 | 8.00 | 36.0 | 0.38 |
| Grading | Graders | Diesel | Average | 1.00 | 8.00 | 148 | 0.41 |
| Grading | Rubber Tired Dozers | Diesel | Average | 1.00 | 8.00 | 367 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | Diesel | Average | 3.00 | 8.00 | 84.0 | 0.37 |
| Building Construction | Cranes | Diesel | Average | 1.00 | 7.00 | 367 | 0.29 |
| Building Construction | Forklifts | Diesel | Average | 3.00 | 8.00 | 82.0 | 0.20 |
| Building Construction | Generator Sets | Diesel | Average | 1.00 | 8.00 | 14.0 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | Diesel | Average | 3.00 | 7.00 | 84.0 | 0.37 |
| Building Construction | Welders | Diesel | Average | 1.00 | 8.00 | 46.0 | 0.45 |
| Paving | Pavers | Diesel | Average | 2.00 | 8.00 | 81.0 | 0.42 |
| Paving | Paving Equipment | Diesel | Average | 2.00 | 8.00 | 89.0 | 0.36 |
| Paving | Rollers | Diesel | Average | 2.00 | 8.00 | 36.0 | 0.38 |
| Architectural Coating | Air Compressors | Diesel | Average | 1.00 | 6.00 | 37.0 | 0.48 |

## 5.3. Construction Vehicles

### 5.3.1. Unmitigated

| Phase Name | Trip Type | One-Way Trips per Day | Miles per Trip | Vehicle Mix |
|---|---|---|---|---|
| Demolition | — | — | — | — |
| Demolition | Worker | 15.0 | 7.70 | LDA,LDT1,LDT2 |
| Demolition | Vendor | — | 4.00 | HHDT,MHDT |
| Demolition | Hauling | 0.00 | 20.0 | HHDT |
| Demolition | Onsite truck | — | — | HHDT |
| Site Preparation | — | — | — | — |
| Site Preparation | Worker | 17.5 | 7.70 | LDA,LDT1,LDT2 |
| Site Preparation | Vendor | — | 4.00 | HHDT,MHDT |
| Site Preparation | Hauling | 0.00 | 20.0 | HHDT |
| Site Preparation | Onsite truck | — | — | HHDT |
| Grading | — | — | — | — |
| Grading | Worker | 15.0 | 7.70 | LDA,LDT1,LDT2 |
| Grading | Vendor | — | 4.00 | HHDT,MHDT |
| Grading | Hauling | 0.00 | 20.0 | HHDT |
| Grading | Onsite truck | — | — | HHDT |
| Building Construction | — | — | — | — |
| Building Construction | Worker | 0.00 | 7.70 | LDA,LDT1,LDT2 |
| Building Construction | Vendor | 0.00 | 4.00 | HHDT,MHDT |
| Building Construction | Hauling | 0.00 | 20.0 | HHDT |
| Building Construction | Onsite truck | — | — | HHDT |
| Paving | — | — | — | — |
| Paving | Worker | 15.0 | 7.70 | LDA,LDT1,LDT2 |
| Paving | Vendor | — | 4.00 | HHDT,MHDT |

| | | | | |
|---|---|---|---|---|
| Paving | Hauling | 0.00 | 20.0 | HHDT |
| Paving | Onsite truck | — | — | HHDT |
| Architectural Coating | — | — | — | — |
| Architectural Coating | Worker | 0.00 | 7.70 | LDA,LDT1,LDT2 |
| Architectural Coating | Vendor | — | 4.00 | HHDT,MHDT |
| Architectural Coating | Hauling | 0.00 | 20.0 | HHDT |
| Architectural Coating | Onsite truck | — | — | HHDT |
| Linear, Grading & Excavation | — | — | — | — |
| Linear, Grading & Excavation | Worker | 10.0 | 7.70 | LDA,LDT1,LDT2 |
| Linear, Grading & Excavation | Vendor | 0.00 | 4.00 | HHDT,MHDT |
| Linear, Grading & Excavation | Hauling | 0.00 | 20.0 | HHDT |
| Linear, Grading & Excavation | Onsite truck | — | — | HHDT |
| Linear, Drainage, Utilities, & Sub-Grade | — | — | — | — |
| Linear, Drainage, Utilities, & Sub-Grade | Worker | 10.0 | 7.70 | LDA,LDT1,LDT2 |
| Linear, Drainage, Utilities, & Sub-Grade | Vendor | 0.00 | 4.00 | HHDT,MHDT |
| Linear, Drainage, Utilities, & Sub-Grade | Hauling | 0.00 | 20.0 | HHDT |
| Linear, Drainage, Utilities, & Sub-Grade | Onsite truck | — | — | HHDT |
| Linear, Paving | — | — | — | — |
| Linear, Paving | Worker | 10.0 | 7.70 | LDA,LDT1,LDT2 |
| Linear, Paving | Vendor | 0.00 | 4.00 | HHDT,MHDT |
| Linear, Paving | Hauling | 0.00 | 20.0 | HHDT |
| Linear, Paving | Onsite truck | — | — | HHDT |

## 5.4. Vehicles

### 5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

## 5.5. Architectural Coatings

| Phase Name | Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|---|---|---|---|---|---|
| Architectural Coating | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 5.6. Dust Mitigation

### 5.6.1. Construction Earthmoving Activities

| Phase Name | Material Imported (cy) | Material Exported (cy) | Acres Graded (acres) | Material Demolished (sq. ft.) | Acres Paved (acres) |
|---|---|---|---|---|---|
| Linear, Grading & Excavation | — | — | 5.70 | 0.00 | — |
| Linear, Drainage, Utilities, & Sub-Grade | — | — | 5.70 | 0.00 | — |
| Demolition | 0.00 | 0.00 | 0.00 | — | — |
| Site Preparation | — | — | 4.50 | 0.00 | — |
| Grading | — | — | 6.00 | 0.00 | — |
| Paving | 0.00 | 0.00 | 0.00 | 0.00 | 8.09 |

### 5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

## 5.7. Construction Paving

| Land Use | Area Paved (acres) | % Asphalt |
|---|---|---|
| Other Asphalt Surfaces | 2.39 | 100% |
| User Defined Linear | 5.70 | 100% |

## 5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

| Year | kWh per Year | CO2 | CH4 | N2O |
|---|---|---|---|---|
| 2023 | 0.00 | 204 | 0.03 | < 0.005 |
| 2024 | 0.00 | 204 | 0.03 | < 0.005 |

## 5.9. Operational Mobile Sources

### 5.9.1. Unmitigated

| Land Use Type | Trips/Weekday | Trips/Saturday | Trips/Sunday | Trips/Year | VMT/Weekday | VMT/Saturday | VMT/Sunday | VMT/Year |
|---|---|---|---|---|---|---|---|---|
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 5.10. Operational Area Sources

### 5.10.1. Hearths

#### 5.10.1.1. Unmitigated

### 5.10.2. Architectural Coatings

| Residential Interior Area Coated (sq ft) | Residential Exterior Area Coated (sq ft) | Non-Residential Interior Area Coated (sq ft) | Non-Residential Exterior Area Coated (sq ft) | Parking Area Coated (sq ft) |
|---|---|---|---|---|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |

### 5.10.3. Landscape Equipment

| Season | Unit | Value |
|---|---|---|
| Snow Days | day/yr | 0.00 |
| Summer Days | day/yr | 180 |

## 5.11. Operational Energy Consumption

### 5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

| Land Use | Electricity (kWh/yr) | CO2 | CH4 | N2O | Natural Gas (kBTU/yr) |
|---|---|---|---|---|---|
| Other Asphalt Surfaces | 326,748 | 204 | 0.0330 | 0.0040 | 0.00 |

## 5.12. Operational Water and Wastewater Consumption

### 5.12.1. Unmitigated

| Land Use | Indoor Water (gal/year) | Outdoor Water (gal/year) |
|---|---|---|
| Other Asphalt Surfaces | 0.00 | 0.00 |

## 5.13. Operational Waste Generation

### 5.13.1. Unmitigated

| Land Use | Waste (ton/year) | Cogeneration (kWh/year) |
|---|---|---|
| Other Asphalt Surfaces | 0.00 | — |

## 5.14. Operational Refrigeration and Air Conditioning Equipment

### 5.14.1. Unmitigated

| Land Use Type | Equipment Type | Refrigerant | GWP | Quantity (kg) | Operations Leak Rate | Service Leak Rate | Times Serviced |
|---|---|---|---|---|---|---|---|

## 5.15. Operational Off-Road Equipment

### 5.15.1. Unmitigated

| Equipment Type | Fuel Type | Engine Tier | Number per Day | Hours Per Day | Horsepower | Load Factor |
|---|---|---|---|---|---|---|

## 5.16. Stationary Sources

### 5.16.1. Emergency Generators and Fire Pumps

| Equipment Type | Fuel Type | Number per Day | Hours per Day | Hours per Year | Horsepower | Load Factor |
|---|---|---|---|---|---|---|
| Emergency Generator | Diesel | 1.00 | — | 100 | 100 | 0.73 |

### 5.16.2. Process Boilers

| Equipment Type | Fuel Type | Number | Boiler Rating (MMBtu/hr) | Daily Heat Input (MMBtu/day) | Annual Heat Input (MMBtu/yr) |
|---|---|---|---|---|---|

## 5.17. User Defined

| Equipment Type | Fuel Type |
|---|---|

## 5.18. Vegetation

### 5.18.1. Land Use Change

#### 5.18.1.1. Unmitigated

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

### 5.18.1. Biomass Cover Type

#### 5.18.1.1. Unmitigated

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

### 5.18.2. Sequestration

#### 5.18.2.1. Unmitigated

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

# 8. User Changes to Default Data

| Screen | Justification |
|---|---|
| Construction: Construction Phases | Construction schedule |
| Construction: Off-Road Equipment | Added construction equipment for linear project area |
| Construction: Architectural Coatings | No parking lot area |
| Operations: Architectural Coatings | No parking lot |
| Operations: Energy Use | Assuming 100hp pump operating at 50% load 8,760 hours per year. |

# Appendix B: Biological Evaluation

# Biological Evaluation

## RIVERDALE PUD

## WELL 8 IMPROVEMENTS PROJECT

## MAY 2023

Rene De La Fuente, Biologist
PROVOST & PRITCHARD CONSULTING GROUP | 455 W. FIR AVE, CLOVIS CA 93611

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# I. Introduction

The following technical report prepared by Provost & Pritchard Consulting Group (Provost & Pritchard) in compliance with the California Environmental Quality Act (CEQA) includes a description of the biological resources present or with potential to occur within the proposed Well 8 Improvements Project (or "project") and evaluates potential project-related impacts to those resources.

## Project Description

The project site (or "site") is located on the floor of the San Joaquin Valley and in Fresno County, within the unincorporated community of Riverdale (see **Figure 1**). Within the Riverdale Public Utility District (PUD), the site is located along S. Feland Avenue, W. Kruger Avenue, S. Marks Avenue, and W. Wood Avenue, and within a parcel south of W. Mount Whitney Avenue and north of Burrel Ditch (see **Figure 2**). The project includes upsizing an existing water distribution system and installing a new well and associated facilities. An approximately 6,200 linear foot (LF) water main will be replaced along W. Wood Avenue, S. Marks Avenue, W. Kruger Avenue, and S. Feland Avenue. A new approximately 600 LF water main will be installed along the north side of the Burrel Ditch from S. Feland Avenue to connect the replaced line to the proposed Well No. 8. Well No. 8 and its associated facilities would be constructed on the parcel (APN 053-260-21) between W. Mount Whitney Avenue and Burrel Ditch.

## Report Objectives

Construction activities such as those proposed by the project could potentially impact biological resources or habitats that are crucial for sensitive plant and wildlife species. In cases such as these, development may be regulated by state or federal agencies, and/or addressed by local regulatory agencies.

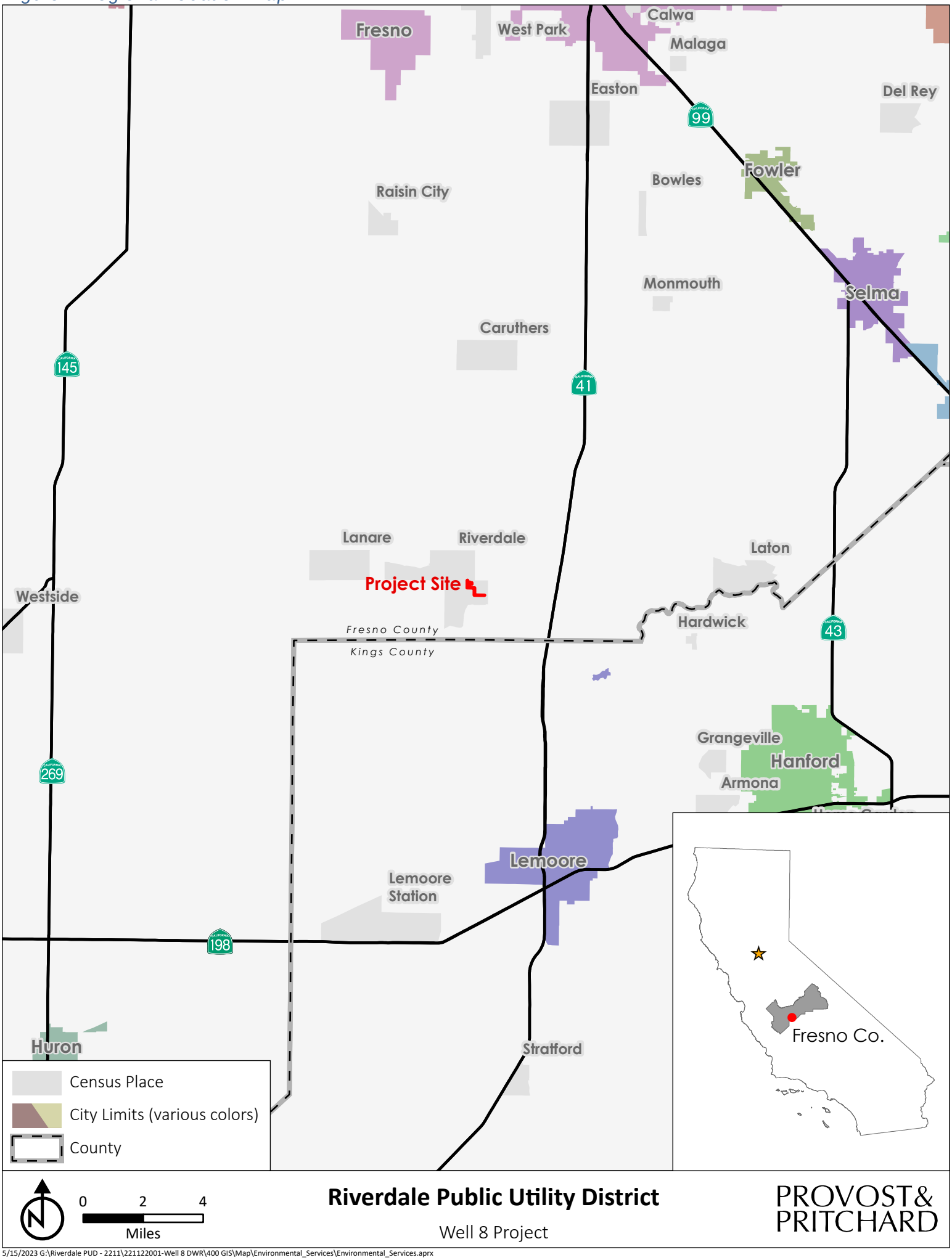
This report addresses issues related to the following:

1. The presence of sensitive biological resources on the project site, or with the potential to occur on the project site.
2. The federal, state, and local regulations regarding these resources.
3. Mitigation measures that may be required to reduce the magnitude of anticipated impacts and/or comply with permit requirements of state and federal resource agencies.

Therefore, the objectives of this report are:

1. Summarize all project site-specific information related to existing biological resources.
2. Make reasonable inferences about the biological resources that could occur on the project site based on habitat suitability and the proximity of the project site to a species' known range.

*Figure 1. Regional Location Map*




**Riverdale Public Utility District**

Well 8 Project

PROVOST& PRITCHARD

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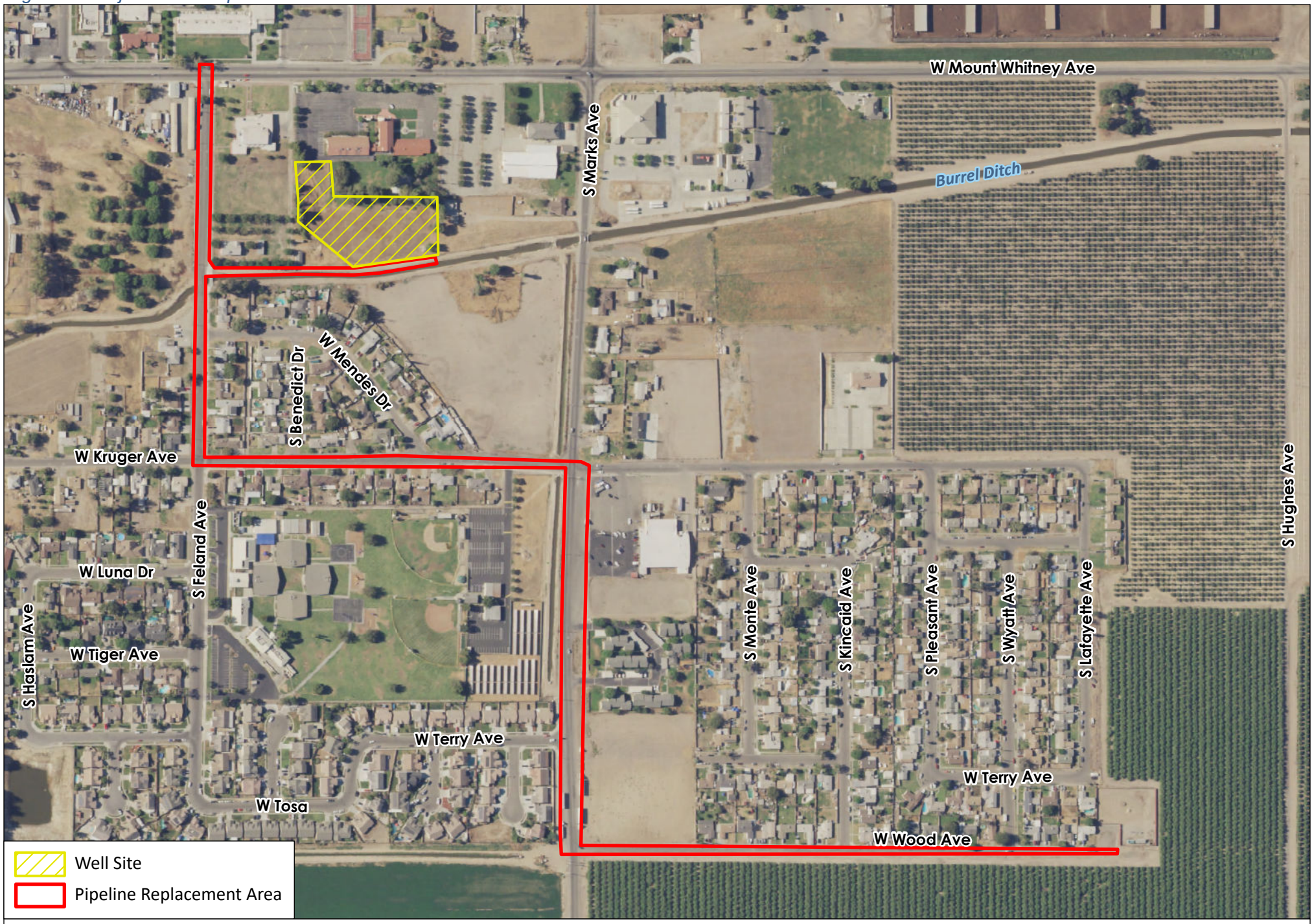
*Figure 2. Project Site Map*

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Well 8 Project

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# Study Methodology

A reconnaissance-level field survey of the project site was conducted on April 27, 2023, by Provost & Pritchard biologist, Roman Endicott. The survey consisted of walking and driving throughout the project site while identifying and noting land uses, biological habitats and communities, and plant and animal species encountered, and assessing habitats that could be suitable for various rare or protected plant and animal species wildlife species. Representative photographs of the site were taken and are presented in **Appendix A**.

We conducted an analysis of potential project-related impacts to biological resources based on the resources known to occur or with potential to occur within the project site. Sources of information used in preparation of this analysis included: the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB; see **Appendix B** for the Species List) and California Wildlife Habitat Relationships (CWHR) database; California Native Plant Society's (CNPS) Online Inventory of Rare and Endangered Vascular Plants of California; CalFlora's online database of California native plants; Jepson Herbarium's online database (i.e., Jepson eFlora); United States Fish and Wildlife Service's (USFWS) Environmental Conservation Online System (ECOS), Information for Planning and Consultation (IPaC; see **Appendix C** for the Species List) system, and National Wetlands Inventory (NWI); iNaturalist; NatureServe Explorer's online database; United States Department of Agriculture (USDA) Natural Resources Conservation Service's (NRCS) Web Soil Survey (see **Appendix D** for the Web Soil Survey Report); California Herps website; and various manuals, reports, and references related to plants and animals of the San Joaquin Valley region.

The field survey did not include focused surveys for special status species. The field survey conducted included the appropriate level of detail to assess the significance of potential impacts to sensitive biological resources resulting from implementing the project. Furthermore, the field survey was sufficient to generally describe those features of the project that could be subject to the jurisdiction of federal and/or state agencies, such as the United States Army Corps of Engineers (USACE), CDFW, Regional Water Quality Control Board (RWQCB) and the State Water Resources Control Board (SWRCB).

# II. Existing Conditions

## Regional Setting

### Topography

The topography of the site is relatively flat with elevations ranging from approximately 210 to 220 feet (see **Figure 3**).

### Climate

Like most of California, the project site experiences a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. In the summer, average high temperatures range between 96- and 104-degrees Fahrenheit (°F), and the humidity is generally low. Winter temperatures are often below 60 °F during the day and rarely exceed 70 °F. On average, the Riverdale area receives approximately 4.9 inches of precipitation in the form of rainfall yearly, most of which occurs between October and March, and the project site would be expected to receive similar amounts of precipitation.

### Hydrology

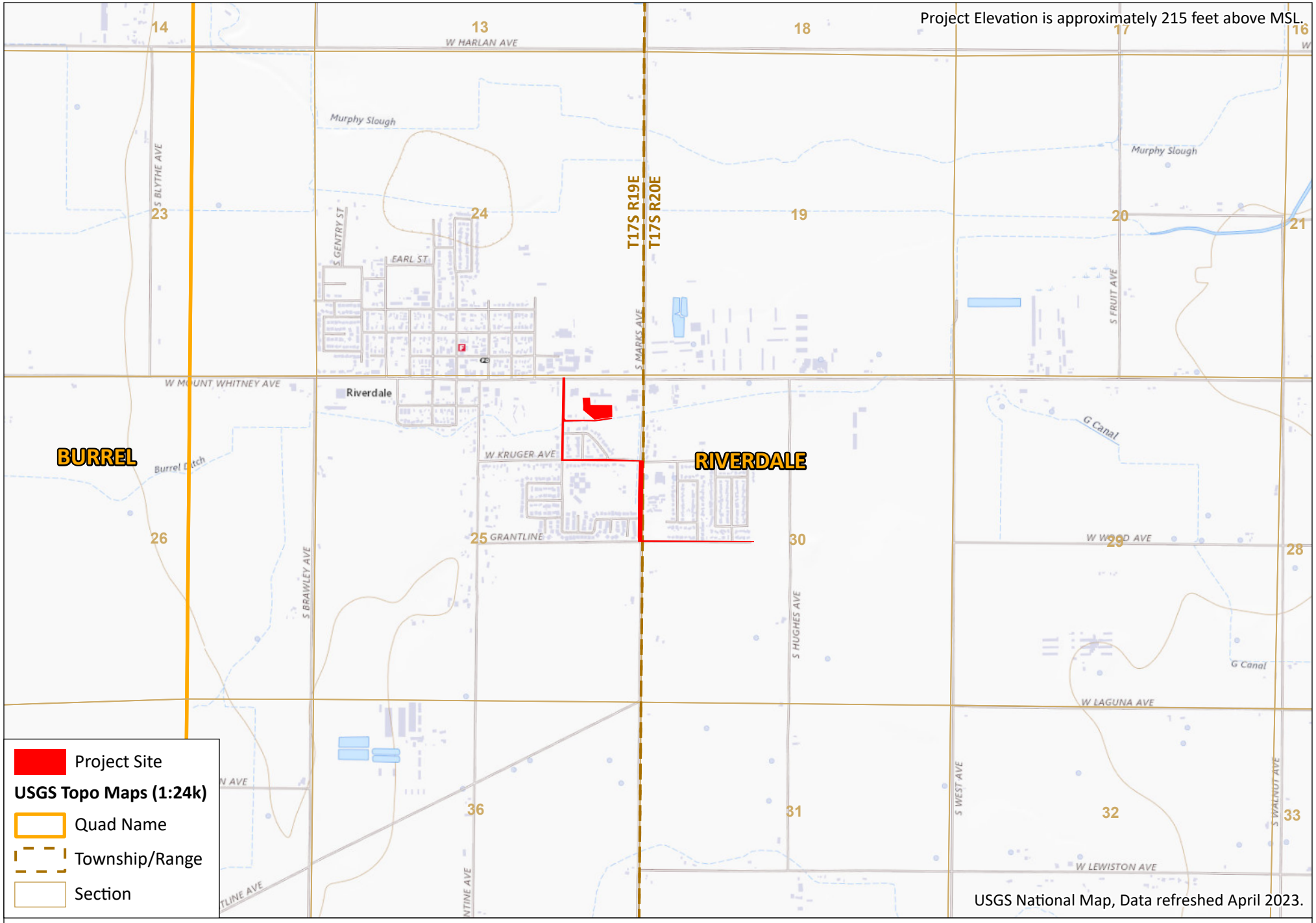
A watershed is the topographic region that drains into a stream, river, or lake. Watersheds are made up of many smaller subwatersheds that drain into a particular stream, river, or lake. The project site lies within the Murphy Slough-Fresno Slough watershed; Hydrologic Unit Code (HUC): 1803000901 and is within the Turner Ditch-Fresno Slough subwatershed; HUC: 180300090103 and Boggs Slough-Fresno Slough subwatershed; HUC: 180300090101. The nearest surface water to the project is the Burrel Ditch which runs through the project site, south of the well site.

The Murph Slough-Fresno Slough watershed is fed by stormwater or snowmelt runoff from nearby areas which flows into Murphy Slough, Turner Ditch, and Boggs Slough which flow into the Fresno Slough.

#### *Soils*

Five soil mapping units representing two soil types were identified within the project site and are listed in **Table 1** (see **Appendix D** for the Web Soil Survey Report). The soils are displayed with their core properties in the table below, according to the Major Land Resource Area of California. All five soils are primarily used for grazing and agriculture.

*Figure 3. Topographic Quadrangle Map*




**Riverdale Public Utility District**

Well 8 Project

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*Table 1. List of Soils Located On the project site and Their Basic Properties*

| Soil | Soil Map Unit | Percent of Project Site | Major Com-ponent Hydric Soil | Minor Com-ponent Hydric | Drainage | Permeability | Runoff |
|---|---|---|---|---|---|---|---|
| ***Chino*** | Sandy loam | 14.5% | Yes | No | Somewhat poorly drained | Moderately slow | Slow to very low runoff |
| ***Chino*** | Sandy loam, saline-alkali | 13.3% | Yes | No | Somewhat poorly drained | Moderately slow | Slow to very low runoff |
| ***Chino*** | Loam | 2.6% | Yes | Yes | Somewhat poorly drained | Moderately slow | Slow to very low runoff |
| ***Grangeville*** | Sandy loam | 63.4% | Yes | No | Somewhat poorly drained | Moderately rapid permeability | Negligible to very low runoff |
| ***Grangeville*** | Fine sandy loam, 0 to 1 percent slopes | 6.1% | Yes | Yes | Somewhat poorly drained | Moderately rapid permeability | Negligible to very low runoff |

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions such that under sufficiently wet conditions, hydrophytic vegetation can be supported. Two of the soil mapping units (Chino loam and Grangeville fine sandy loam, 0 to 1 percent slopes) have major and minor components identified as hydric, which categorizes these as hydric soils. The remaining three soil mapping units (Chino sandy loam, Chino sandy loam, saline alkali, and Grangeville sandy loam) have major components identified as hydric with the minor components identified as non-hydric, which categorizes them as predominantly hydric soils.

# Biotic Habitats

Three biotic habitats were observed on the project site, and included annual grassland, ruderal/canal, and urban. These habitats and their constituent plant and animal species are described in more detail in the following sections.

## *Annual Grassland*

The annual grassland portion of the project site was located within the parcel south of W. Mount Whitney Avenue and north of Burrel Ditch. It was bordered by a church with a paved parking lot to the north, residential/landscaped areas to the east and west, and Burrel Ditch to the south. The dominant plant species observed included cheeseweed mallow (*Malva parviflora*), common fiddleneck (*Amsinckia intermedia*), red stemmed fillaree (*Erodium cicutarium*), foxtail barley (*Hordeum jubatum*), and ripgut brome (*Bromus diandrus*). In addition, Fremont cottonwood (*Populus fremontii*), and red pine (*Pinus resinosa*) trees were located around the borders of this habitat. Bird species observed within this habitat included Eurasian collared dove (*Streptopelia decaocto*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), and red-shouldered hawk (*Buteo lineatus*). No small mammal burrows or other mammal sign was observed.

### *Ruderal/Canal*

A portion of the project area lies adjacent to the Burrel Ditch, which runs through Riverdale. The ditch had high water levels at the time of the field survey and supported plant species such as *Bromus* sp., cheeseweed mallow, common fiddleneck, red stemmed filaree, horseweed (*Conyza canadensis*), prickly lettuce (*Lactuca serriola*), and seep monkey flower (*Erythranthe guttata*). A brown-headed cowbird (*Molothrus ater*), and a Swainson's hawk (*Buteo swainsoni*) were seen flying over this habitat. No small mammal burrows or other mammal signs were observed.

### *Urban*

The remainder of the project area lies within urban areas of Riverdale, which include residential neighborhoods and paved roadways. Many single-family homes adjacent to the project area and have various ornamental trees, shrubs, and landscaping within their front yards. Bird species observed while surveying this habitat included American crow (*Corvus brachyrhynchos*), American pipit (*Anthus rubescens*), American robin (*Turdus migratorius*), black phoebe (*Sayornis nigricans*), European starling, house finch (*Haemorhous mexicanus*), and house sparrow.

## Natural Communities of Special Concern and Riparian Habitat

Natural communities of special concern are those that are of limited distribution, distinguished by significant biological diversity, or home to special status species. CDFW is responsible for the classification and mapping of all-natural communities in California. Just as the special status plant and animal species, these natural communities of special concern can be found within the CNDDB. There were no recorded observations of natural communities of special concern mapped within, or adjacent to, the project site. Additionally, no natural communities of special concern were observed during the field survey.

Riparian habitat is composed of plant communities that occur along the banks, and sometimes over the banks, of most waterways and is an important habitat for numerous wildlife species. CDFW has jurisdiction over most riparian habitat in California. Riparian habitat was not observed within or adjacent to the project site.

## Designated Critical Habitat

The USFWS often designates areas of "critical habitat" when it lists species as threatened or endangered. Critical habitat is a specific geographic area that contains features essential for the conservation of a threatened or endangered species, which may require special management and protection. According to the CNDDB and IPaC, designated critical habitat is absent from the project site and vicinity.

## Wildlife Movement Corridors and Native Wildlife Nursery Sites

Wildlife movement corridors are routes that animals regularly and predictably follow during seasonal migration, dispersal from native ranges, daily travel within home ranges, and inter-population movements. Movement corridors in California are typically associated with valleys, ridgelines, and rivers and creeks supporting riparian vegetation. The residential habitat of the project site and surrounding areas consisted of a fractured landscape that is unlikely to function as a wildlife movement corridor. The portion of the project site that was ruderal/canal habitat may be suitable to function as a wildlife corridor as it can be accessible to animals when the canal is dry. The annual grassland habitat within the project site likely does not act as a corridor for aquatic wildlife because of the high levels of disturbance within it as it is confined by a church, preschool, a social hall, and an agricultural field.

Native wildlife nursery sites are areas where a species or group of similar species raise their young in a concentrated place, such as maternity bat roosts. No native wildlife nursery sites were found within the project site.

# Special Status Plants and Animals

California contains several rare plant and animal species. In this context, "rare" is defined as species known to have low populations or limited distributions. As the human population grows, urban expansion encroaches on the already-limited suitable habitat for rare species. This results in sensitive species becoming increasingly more vulnerable to extirpation. State and federal regulations have provided the CDFW and the USFWS with a mechanism for conserving and protecting the diversity of plant and animal species native to California. Numerous native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Other formal designations include "candidate" for listing or "species of special concern" by CDFW. The CNPS has its list of native plants considered rare, threatened, or endangered. Collectively these plants and animals are referred to as "special status species."

A query of the CNDDB for occurrences of special status plant and animal species was conducted for the *Riverdale* 7.5-minute U.S. Geological Survey (USGS) quadrangle that contains the project site, and for the 8 surrounding USGS quadrangles: *Raisin, Caruthers, Conejo, Burrel, Laton, Vanguard, Lemoore, and Hanford*. These species, and their potential to occur within the project site, are listed in **Table 2** and **Table 3** on the following pages. Other special status species that did not show up in the CNDDB query, but have the potential to occur in the vicinity, are also included in **Table 2**. Species lists obtained from CNDDB and IPaC are available in **Appendix B** and **Appendix C**, respectively. All relevant sources of information, as discussed in the *Study Methodology* section of this report, as well as field observations, were used to determine if any special status species are known to be within the project site.

***Table 2. List of Special Status Animals with Potential to Occur on the Project Site and/or in the Vicinity***

| Species | Status* | Habitat | Occurrence within the Project Site |
|---|---|---|---|
| **Buena Vista Lake Shrew (*Sorex ornatus relictus*)** | FE, CSSC | Prefers moist soils, inhabiting marshes, swamps, and riparian shrublands. Uses stumps, logs, and leaf litter for cover. | **Unlikely**. Habitat required for this species was unavailable within or near the project site. |
| **Burrowing Owl (*Athene cunicularia*)** | CSSC | Resides in open, dry annual or perennial grasslands, deserts, and scrublands with low growing vegetation. Nests underground in existing burrows created by mammals, most often ground squirrels. | **Unlikely**. While annual grasslands were present within the project site, no small mammal burrows were observed. Regular human disturbance adjacent to the project site likely deters this species from utilizing the site. |
| **California Glossy Snake (*Arizona elegans occidentalis*)** | CSSC | Inhabits arid scrub, rocky washes, grasslands, and chaparral. Prefers open areas with loose soil for easy burrowing. | **Unlikely**. Open areas with loose soil required by this species was absent within or near the project site. This species was last observed in 1939, 20 miles northeast of the project site. |
| **California Tiger Salamander (*Ambystoma californiense*)** | FT, CT | Requires vernal pools or seasonal ponds for breeding and small mammal burrows for aestivation. Generally found in grassland and oak savannah plant communities in central California from sea level to 1500 feet in elevation. Can migrate up to 1.3 miles to breed. | **Absent**. Breeding and aestivation habitats were absent from the project site and vicinity. |
| **Crotch Bumble Bee (*Bombus crotchii*)** | CCE | Occurs throughout coastal California, as well as east to the Sierra-Cascade crest, and south into Mexico. Food plant genera include | **Unlikely**. Habitats and food plants required by this species were absent from the project site and vicinity. |

| Species | Status* | Habitat | Occurrence within the Project Site |
|---|---|---|---|
| | | *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia*, and *Eriogonum*. | |
| **Fresno Kangaroo Rat (*Dipodomys nitratoides exilis*)** | FE, CE | An inhabitant of alkali sinks and open grassland habitats in Merced, Kings Fresno, and Madera counties. Prefers bare, alkaline, clay-based soils subject to seasonal inundation with more friable soil mounds around shrubs and grasses. The most recent recorded observation of this species in California was in 1992 in Fresno County. | **Absent**. Habitats required by this species were absent from the project site and vicinity. |
| **Giant Gartersnake (*Thamnophis gigas*)** | FT, CT | Occurs in marshes, sloughs, drainage canals, irrigation ditches, rice fields, and adjacent uplands. Prefers locations with emergent vegetation for cover and open areas for basking. This species uses small mammal burrows adjacent to aquatic habitats for hibernation in the winter and to escape from excessive heat in the summer. | **Unlikely**. Habitats required by this species were absent from the site and marginally adjacent to the site, in the form of Burrel Ditch. Emergent vegetation and small mammal burrows were absent from the project site and vicinity. |
| **Monarch Butterfly (*Danaus plexippus)*** | FC | Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby. Larval host plants consist of milkweeds (*Asclepias* sp.). Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. | **Unlikely**. Habitats and tree species required by this species were absent from the project site and vicinity. |
| **San Joaquin Kit Fox (*Vulpes macrotis mutica*)** | FE, CT | Underground dens with multiple entrances in alkali sink, valley grassland, and woodland in valleys and adjacent foothills. | **Unlikely**. The annual grassland habitat of the site was marginal and lacked suitable small mammal prey and burrows for this species. |
| **Swainson's Hawk (*Buteo swainsoni*)** | CT | Nests in large trees in open areas adjacent to grasslands, grain or alfalfa fields, or livestock pastures suitable for supporting rodent populations. | **Unlikely**. There were some large trees in the project site that may provide nesting habitat for this species. Lack of prey within the project site makes it unlikely for species to occur there. May occur as a transient. |
| **Tipton Kangaroo Rat (*Dipodomys nitratoides nitratoides*)** | FE, CE | Saltbush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. Needs soft friable soils. | **Absent**. The project site is outside of the historical range of this species. Soft friable soils required by this species are absent from the project site. |
| **Tricolored Blackbird (*Agelaius tricolor*)** | CT, CSSC | Nests colonially near fresh water in dense cattails or tules, or in thickets of riparian shrubs. Forages in grassland and cropland. Large colonies are often found on dairy farm forage fields. | **Unlikely**. Nesting habitat required by this species was absent from the project site and vicinity. |
| **Valley Elderberry Longhorn Beetle** | FT | Lives in mature elderberry shrubs of the Central Valley and foothills. | **Unlikely**. Elderberry shrubs required by this species were absent |

| Species | Status* | Habitat | Occurrence within the Project Site |
|---|---|---|---|
| **(*Desmocerus californicus dimorphus*)** | | Adults are active from March to June. | from the project site and adjacent lands. |
| **Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)** | FT | Occupies vernal pools, clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools. | **Absent**. Habitats required by this species were absent from the project site and adjacent lands. |
| **Vernal Pool Tadpole Shrimp (*Lepidurus packardi*)** | FE | Occurs in vernal pools, clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools. | **Absent**. Habitats required by this species were absent from the project site and adjacent lands. |
| **Western Spadefoot (*Spea hammondii*)** | CSSC | The majority of the time this species is terrestrial and occurs in small mammal burrows and soil cracks, sometimes in the bottom of dried pools. Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Vernal pools or temporary wetlands, lasting a minimum of three weeks are necessary for breeding. | **Absent.** Habitats required for breeding and aestivation were absent from the project site and adjacent lands. |
| **Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)** | FT, CE | Suitable nesting habitat in California includes dense riparian willow-cottonwood and mesquite habitats along a perennial river. Once a common breeding species in riparian habitats of lowland California, this species currently breeds consistently in only two locations in the state: along the Sacramento and South Fork Kern Rivers. | **Absent.** Habitats required for nesting were absent from the project site and adjacent lands. |

### *Table 3. List of Special Status Plants with Potential to Occur on the Project Site and/or in the Vicinity*

| Species | Status* | Habitat | Occurrence within the Project Site |
|---|---|---|---|
| **Alkali-sink Goldfields (*Lasthenia chrysantha*)** | CNPS 1B | Found in vernal pool and wet saline flat habitats. Occurrences documented in the San Joaquin and Sacramento Valleys at elevations below 656 feet. Blooms February - April. | **Absent**. Vernal pools and wet alkaline salt flats required by this species were absent from the project site and vicinity. |
| **Brittlescale (*Atriplex depressa*)** | CNPS 1B | Found in the San Joaquin Valley and Sacramento Valley in alkaline or clay soils, typically in meadows or annual grassland in at elevations below 1050 feet. Sometimes associated with vernal pools. Blooms June–October. | **Unlikely**. The alkaline and clay soils required for this species are absent from the project site were dominated by non-native grasses and forbs. |

| Species | Status* | Habitat | Occurrence within the Project Site |
|---|---|---|---|
| **California Alkali Grass (*Puccinellia simplex*)** | CNPS 1B | Found in the San Joaquin Valley and other parts of California in saline flats and mineral springs within valley grassland and wetland-riparian communities at elevations below 3000 feet. Blooms March–May. | **Absent**. Saline flats and mineral springs required for this species are absent from the project site and vicinity. |
| **Lesser Saltscale (*Atriplex minuscula*)** | CNPS 1B | Found in the San Joaquin Valley in sandy, alkaline soils in alkali scrub, valley and foothill grassland, and alkali sink communities at elevations below 750 feet. Blooms April–October. | **Unlikely**. The project site lacked the alkaline soils required for this species and the project site is dominated by non-native grasses and forbs. |
| **Panoche Pepper-grass (*Lepidium jaredii* ssp. *album*)** | CNPS 1B | Found on steep slopes, washes, alluvial-fans, and clay, sometimes alkaline, within Valley and Foothill Grassland communities in western Fresno County at elevations between 600–2400 feet. Blooms February–June. | **Absent**. The project site is outside of the known range and below the elevation range for this species. |

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

Unlikely: Species not observed on the project site, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed on the project site and precluded from occurring there due to absence of suitable habitat.

**STATUS CODES**

| | | | |
|---|---|---|---|
| FE | Federally Endangered | CE | California Endangered |
| FT | Federally Threatened | CT | California Threatened |
| FC | Federal Candidate | CSSC | California Species of Special Concern |

**CNPS LISTING**

1B Plants Rare, Threatened, or Endangered in California and elsewhere.

# III. Impacts and Mitigation

## Significance Criteria

### CEQA

General plans, area plans, and specific projects are subject to the provisions of CEQA. The purpose of CEQA is to assess the impacts of proposed projects on the environment prior to project implementation. Impacts to biological resources are just one type of environmental impact assessed under CEQA and vary from project to project in terms of scope and magnitude. Projects requiring removal of vegetation may result in the mortality or displacement of animals associated with this vegetation. Animals adapted to humans, roads, buildings, and pets may replace those species formerly occurring on a site. Plants and animals that are rare may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed. Such impacts may be considered either "significant" or "less than significant" under CEQA. According to *CEQA Statute and Guidelines* (AEP 2023), "significant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest. Specific project impacts to biological resources may be considered "significant" if they would:

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

Furthermore, CEQA Guidelines Section 15065(a) states that a project may trigger the requirement to make a "mandatory finding of significance" if the project has the potential to:

> "Substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare or threatened species, or eliminate important examples of the major periods of California history or prehistory."

# Relevant Goals, Policies, and Laws

## Fresno County Ordinance

The Fresno County General Plan Policy Document contain the following goals and policies related to the project:

### Water Quality

Policy OS-A.23

> The County shall protect groundwater resources from contamination and overdraft by pursuing the following efforts: a. Identifying and controlling sources of potential contamination; b. Protecting important groundwater recharge areas; c. Encouraging water conservation efforts and supporting the use of surface water for urban and agricultural uses wherever feasible; d. Encouraging the use of treated wastewater for groundwater recharge and other purposes (e.g., irrigation, landscaping, commercial, and nondomestic uses); e. Supporting consumptive use where it can be demonstrated that this use does not exceed safe yield and is appropriately balanced with surface water supply to the same area; f. Considering areas where recharge potential is determined to be high for designation as open space; and g. Developing conjunctive use of surface and groundwater.

## Threatened and Endangered Species

Permits may be required from CDFW and/or USFWS if activities associated with a project have the potential to result in the "take" of a species listed as threatened or endangered under the California Endangered Species Act (CESA) and/or Endangered Species Act (ESA), respectively. Take is defined by CESA as, "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86). Take is more broadly defined by the ESA to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3). CDFW and USFWS are responsible agencies under CEQA and NEPA. Both agencies review CEQA and NEPA documents in order to determine the adequacy of the treatment of endangered species issues and to make project-specific recommendations for their conservation.

## Designated Critical Habitat

When species are listed as threatened or endangered, the USFWS often designates areas of "critical habitat" as defined by section 3(5)(A) of the ESA. Critical habitat is a term defined in the ESA as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat is a tool that supports the continued conservation of imperiled species by guiding cooperation with the federal government. Designations only affect federal agency actions or federally funded or permitted activities. Critical habitat does not prevent activities that occur within the designated area. Only activities that involve a federal permit, license, or funding and are likely to destroy or adversely modify critical habitat will be affected.

## Migratory Birds

The Migratory Bird Treaty Act (MBTA: 16 USC 703-712) prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it covers almost all bird's native to the United States, even those that are non-migratory. The MBTA encompasses whole birds, parts of birds, and bird nests and eggs. Additionally, California Fish and Game Code makes it unlawful to take or possess any non-game birds covered by the MBTA (Section 3513), as well as any other native non-game birds (Section 3800).

## Birds of Prey

Birds of prey are protected in California under provisions of California Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs, or take feathers or nests, without a permit issued by the U.S. Secretary of the Interior.

## Nesting Birds

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

## Wetlands and other "Jurisdictional Waters"

The USACE regulates the filling or grading in waters of the United States under the authority of Section 404 of the CWA. The definition of "waters of the United States" often changes from one presidential administration to the next based on the interpretation of the language in the CWA. The current definition, established under the Biden Administration, became effective on March 20, 2023 (i.e. "new rule"), and uses the same longstanding categories of jurisdiction as the Pre-2015 Rule, but makes some slight changes. Traditional navigable waters,

territorial seas, and interstate waters remain covered under the new rule. The most notable difference is the new requirement that any (a)(2) - (a)(5) waters must meet either the relatively permanent standard or the significant nexus standard. Jurisdictional waters of the new rule include the following categories:

- (a)(1) Traditional Navigable Waters - all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- (a)(1) Territorial Seas
- (a)(1) Interstate Waters - waters including lakes, streams, or wetlands that cross or form part of state boundaries;
- (a)(2) Impoundments - impounded waters created in or from "waters of the United States;"
- (a)(3) Tributaries - waters that ultimately flow into traditional navigable waters, territorial seas, interstate waters or (a)(2) impoundments. Tributaries are jurisdictional if they meet either the relatively permanent standard or significant nexus standard;
- (a)(4) Adjacent Wetlands - wetlands adjacent to (a)(1) waters; wetlands adjacent to and with a continuous surface connection to relatively permanent (a)(2) impoundments or relatively permanent jurisdictional tributaries; or wetlands adjacent to (a)(2) impoundments or jurisdictional tributaries when the wetlands meet the significant nexus standard;
- (a)(5) All other waters such as intrastate lakes and ponds, streams or wetlands not defined in (a)(1) - (a)(4) above that meet either the relatively permanent standard or the significant nexus standard.

Familiar and longstanding exclusions have been consolidated under the new rule, which excludes from jurisdiction any feature that satisfies the following terms:

- Waste treatment systems, including treatment ponds or lagoons;
- Prior converted cropland;
- Ditches excavated wholly in and draining only dry land and do not carry a relatively permanent flow of water;
- Artificially irrigated areas that would revert to dry land if irrigation ceased;
- Artificial lakes or ponds created by excavating or diking dry land for the use of stock watering, irrigation, settling basins or rice growing;
- Artificial reflecting or swimming pools;
- Waterfilled depressions created in dry land; and
- Swales and erosional features (ex. gullies and small washes) characterized by low volume, infrequent, or short duration flow.

The new rule has incorporated the best available science, relevant supreme court cases, public comment, technical expertise, and experience gained from more than 45 years of implementing the Pre-2015 "waters of the United States" framework to inform jurisdictional limits. The U.S. Supreme Court in its 2001 Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers (SWANCC) decision, for example, determined that channels and wetlands isolated from other jurisdictional waters cannot be considered jurisdictional on the basis of their use, hypothetical or observed, by migratory birds. Similarly, in its 2006 consolidated Carabell/Rapanos decision, the U.S. Supreme Court ruled that a significant nexus between a wetland and other navigable waters must exist for the wetland itself to be considered a navigable and therefore jurisdictional water. Furthermore, the U.S. Supreme Court clarified that the United States Environmental Protection Agency (USEPA) and the USACE will not assert jurisdiction over ditches excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

Currently, 23 states, including California, observe the new rule. As of May 10, 2023, ongoing litigation over the interpretation of the "waters of the United States" definition has kept the Pre-2015 Rule in place in 27 states.

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

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

CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1601 and 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the diversion or obstruction of their natural flow, change or use of any material from their bed or bank, or the deposition of debris require a notification of a Lake or Streambed Alteration. If CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

# Potentially Significant Project-Related Impacts and Mitigation

Species protected by California Fish and Game Code, CDFW, USFWS, or CEQA that have the potential to be impacted by project activities include nesting migratory birds and raptors. The corresponding mitigation measure can be found below.

## Project-Related Mortality and/or Nest Abandonment of Migratory Birds and Raptors

The project site contains suitable nesting and foraging habitat for a variety of protected bird species, such as migratory birds and raptors. Protected birds nesting within or adjacent to the project site during construction have the potential to be injured or killed by project-related activities. In addition to the direct "take" of protected birds within the project site or adjacent areas, these birds nesting in these areas could be disturbed by project-related activities resulting in nest abandonment. Projects that adversely affect the nesting success of protected birds or result in the mortality of these birds would be a violation of state and federal laws and considered a potentially significant impact under CEQA.

While foraging habitat for protected birds is present on the site, suitable foraging habitat is located adjacent to the site and within the vicinity of the site. Loss of the foraging habitat from implementation of the project is not considered a significant impact.

**Mitigation.** Implementation of the following measures will reduce potential impacts to nesting protected birds to a less than significant level under CEQA and will ensure compliance with state and federal laws protecting these species.

> **Mitigation Measure BIO-1a (Avoidance):** The project's construction activities will occur, if feasible, between September 16 and January 31 (outside of the nesting bird season) to avoid impacts to nesting birds.
>
> **Mitigation Measure BIO-1b (Pre-construction Surveys):** If activities must occur within the nesting bird season (February 1 to September 15), a qualified biologist will conduct a pre-construction survey for active nests within ten (10) calendar days prior to the start of construction. It will be completed within the project site, and up to 100 feet outside of the project site for nesting migratory birds and up to 500 feet outside of the project site for nesting raptors. Raptor nests would be considered "active" upon the nest-building stage. If no active nests are observed, no further mitigation is required.
>
> **Mitigation Measure BIO-1c (Avoidance Buffers):** On discovery of any active nests or breeding colonies near work areas, a qualified biologist will determine appropriate avoidance buffer distances based on applicable CDFW and/or USFWS guidelines, the biology of the species, conditions of the nest(s), and the level of project disturbance. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.

# Less Than Significant Project-Related Impacts

## Project-Related Impacts to Special Status Animal Species Absent From, or Unlikely to Occur on, the Project Site

All 16 of the regionally occurring special status animal species are considered absent from or unlikely to occur within the project site due to past or ongoing disturbance and/or the absence of suitable habitat. These species include: Buena Vista lake shrew, burrowing owl, California tiger salamander, crotch bumble bee, Fresno kangaroo rat, giant gartersnake, monarch butterfly, San Joaquin kit fox, Swainson's hawk, Tipton kangaroo rat, tricolored blackbird, valley elderberry longhorn beetle, vernal pool fairy shrimp, vernal pool tadpole shrimp, western spadefoot, and western yellow-billed cuckoo.

Since it is unlikely that these species would occur onsite, implementation of the project should have no impact on these 16 special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

## Project-Related Impacts to Special Status Plant Species Absent From, or Unlikely to Occur on, the Project Site

Of the 5 regionally occurring special status plant species, all are considered absent from or unlikely to occur within the project site due to past or ongoing disturbance and/or the absence of suitable habitat. These species include: alkali-sink goldfields, brittlescale. California alkali grass, lesser saltscale, and Panoche pepper-grass.

Since it is unlikely that these species would occur onsite, implementation of the project should have no impact on these 5 special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

## Project-Related Impacts to Riparian Habitat and Natural Communities of Special Concern

Riparian habitat was absent from the project site and adjacent lands. There were no CNDDB-designated "natural communities of special concern" recorded within the project site or surrounding lands. Mitigation is not warranted.

## Project-Related Impacts to Regulated Waters, Wetlands, and Water Quality

Typical wetlands, vernal pools, and other naturally occurring bodies of water were not observed onsite at the time of the field survey. The project site would not be considered Waters of the United States and state. The nearest water feature is the Burrel Ditch located south of the project site.

Since construction would involve ground disturbance over an area greater than one acre, the project would be required to obtain a Construction General Permit under the Construction Storm Water Program administered by the RWQCB. A prerequisite for this permit is the development of a Storm Water Pollution Prevention Plan (SWPPP) to ensure construction activities do not adversely affect water quality.

There are no designated wild and scenic rivers within the project site; therefore, the project would not result in direct impacts to wild and scenic rivers. Compliance with Construction General Permit permit would ensure there are no indirect downstream effects to jurisdictional waters.

## Project-Related Impacts to Wildlife Movement Corridors and Native Wildlife Nursery Sites

The project site is adjacent to the Burrel Ditch, which may be used as a wildlife corridor. Because the project does not propose to impact this ditch, wildlife would be able to continue to utilize the ditch as a movement corridor during project activities. No native wildlife nursery sites were present on, or adjacent to, the project site.

Therefore, the project would have no impact on wildlife movement corridors or other native wildlife nursery sites, and no additional mitigation measures are warranted.

## Project-Related Impacts to Critical Habitat

Designated critical habitat is absent from the project site and surrounding lands. Therefore, there would be no impact to critical habitat, and mitigation is not warranted.

## Local Policies or Habitat Conservation Plans

The project appears to be consistent with the goals and policies of the Fresno County General Plan. There are no known HCPs or NCCPs in the vicinity of the project. Mitigation measures are not warranted.

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# Appendix A: Representative Photos of the Project Area

RIVERDALE PUD

WELL 8 IMPROVEMENTS


**Photograph 1**

*Overview of the field located south of Saint Ann Church, taken at the west boundary facing southeast. The field was primarily inhabited by annual grasses at the time of the survey.*


**Photograph 2**

*Another overview of the field from the east boundary facing northwest.*


**Photograph 3**

*Overview of the project site which lies along the un-named canal between South Marks Avenue and South Feland Avenue.*


**Photograph 4**

*Overview of South Feland Avenue facing north.*


**Photograph 5**

*Overview West Kruger Avenue facing east.*


**Photograph 6**

*Overview of South Marks Avenue at the intersection with West Kruger Avenue, facing south.*


**Photograph 7**

*Another overview of South Marks Avenue. The entrance to Riverwood Apartments is pictured to the right.*


**Photograph 8**

*Overview of West Wood Avenue facing east.*

# Appendix B: CNDDB 9-Quad Species List

RIVERDALE PUD

WELL 8 IMPROVEMENTS

# Selected Elements by Common Name

## California Department of Fish and Wildlife

## California Natural Diversity Database

**Query Criteria:** Quad IS (Riverdale (3611947) OR Raisin (3611958) OR Caruthers (3611957) OR Conejo (3611956) OR Burrel (3611948) OR Laton (3611946) OR Vanguard (3611938) OR Lemoore (3611937) OR Hanford (3611936))

# Selected Elements by Common Name

## California Department of Fish and Wildlife

## California Natural Diversity Database

| Species | Element Code | Federal Status | State Status | Global Rank | State Rank | Rare Plant Rank/CDFW SSC or FP |
|---|---|---|---|---|---|---|
| **alkali-sink goldfields**<br>*Lasthenia chrysantha* | PDAST5L030 | None | None | G2 | S2 | 1B.1 |
| **brittlescale**<br>*Atriplex depressa* | PDCHE042L0 | None | None | G2 | S2 | 1B.2 |
| **burrowing owl**<br>*Athene cunicularia* | ABNSB10010 | None | None | G4 | S3 | SSC |
| **California alkali grass**<br>*Puccinellia simplex* | PMPOA53110 | None | None | G2 | S2 | 1B.2 |
| **California glossy snake**<br>*Arizona elegans occidentalis* | ARADB01017 | None | None | G5T2 | S2 | SSC |
| **Crotch bumble bee**<br>*Bombus crotchii* | IIHYM24480 | None | Candidate Endangered | G2 | S2 | |
| **Fresno kangaroo rat**<br>*Dipodomys nitratoides exilis* | AMAFD03151 | Endangered | Endangered | G3TH | SH | |
| **giant gartersnake**<br>*Thamnophis gigas* | ARADB36150 | Threatened | Threatened | G2 | S2 | |
| **hoary bat**<br>*Lasiurus cinereus* | AMACC05032 | None | None | G3G4 | S4 | |
| **Hoover's eriastrum**<br>*Eriastrum hooveri* | PDPLM03070 | Delisted | None | G3 | S3 | 4.2 |
| **lesser saltscale**<br>*Atriplex minuscula* | PDCHE042M0 | None | None | G2 | S2 | 1B.1 |
| **Panoche pepper-grass**<br>*Lepidium jaredii ssp. album* | PDBRA1M0G2 | None | None | G2G3T2T3 | S2S3 | 1B.2 |
| **San Joaquin kit fox**<br>*Vulpes macrotis mutica* | AMAJA03041 | Endangered | Threatened | G4T2 | S2 | |
| **Swainson's hawk**<br>*Buteo swainsoni* | ABNKC19070 | None | Threatened | G5 | S4 | |
| **Tipton kangaroo rat**<br>*Dipodomys nitratoides nitratoides* | AMAFD03152 | Endangered | Endangered | G3T1T2 | S1S2 | |
| **tricolored blackbird**<br>*Agelaius tricolor* | ABPBXB0020 | None | Threatened | G1G2 | S2 | SSC |
| **valley elderberry longhorn beetle**<br>*Desmocerus californicus dimorphus* | IICOL48011 | Threatened | None | G3T2T3 | S3 | |
| **western spadefoot**<br>*Spea hammondii* | AAABF02020 | None | None | G2G3 | S3S4 | SSC |
| **western yellow-billed cuckoo**<br>*Coccyzus americanus occidentalis* | ABNRB02022 | Threatened | Endangered | G5T2T3 | S1 | |

**Record Count: 19**

# Appendix C: IPaC Species List

RIVERDALE PUD

WELL 8 IMPROVEMENTS

# 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: May 01, 2023
Project Code: 2023-0076349
Project Name: DWR Well 7 Sand Screen & Well 8 Improvement

Subject: List of threatened and endangered species that may occur in your proposed project location 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, 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 U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

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

**Migratory Birds**: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

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 Code 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

Project Code: 2023-0076349
Project Name: DWR Well 7 Sand Screen & Well 8 Improvement
Project Type: Distribution Line - Maintenance/Modification - Below Ground
Project Description: The intent of this project is to construct a new well site, install a new transmission main, and upsize existing mains to disburse water into the distribution system from Well No. 8 and Well No. 6. The proposed Well No. 8 site will be located on a parcel (APN 053-260-21) newly acquired by the District, located behind the Saint Ann Church on W. Mt Whitney Avenue.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@36.427325550000006,-119.85359654187258,14z


Counties: Fresno County, California

# ENDANGERED SPECIES ACT SPECIES

There is a total of 9 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 Fisheries[1], 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.

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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 |
|---|---|
| Buena Vista Lake Ornate Shrew *Sorex ornatus relictus*<br>There is **final** critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: https://ecos.fws.gov/ecp/species/1610 | Endangered |
| Fresno Kangaroo Rat *Dipodomys nitratoides exilis*<br>There is **final** critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: https://ecos.fws.gov/ecp/species/5150 | Endangered |
| San Joaquin Kit Fox *Vulpes macrotis mutica*<br>No critical habitat has been designated for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/2873 | Endangered |
| Tipton Kangaroo Rat *Dipodomys nitratoides nitratoides*<br>No critical habitat has been designated for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/7247 | Endangered |

## REPTILES

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

## AMPHIBIANS

| NAME | STATUS |
|---|---|
| California Tiger Salamander *Ambystoma californiense* | Threatened |

Population: U.S.A. (Central CA DPS)
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/2076

## INSECTS

| NAME | STATUS |
|---|---|
| Monarch Butterfly *Danaus plexippus* | Candidate |

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

## CRUSTACEANS

| NAME | STATUS |
|---|---|
| Vernal Pool Fairy Shrimp *Branchinecta lynchi* | Threatened |

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/498

| | |
|---|---|
| Vernal Pool Tadpole Shrimp *Lepidurus packardi* | Endangered |

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/2246

## CRITICAL HABITATS

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

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

# IPAC USER CONTACT INFORMATION


| | |
|---|---|
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# Appendix D: NRCS Web Soil Survey Report

RIVERDALE PUD

WELL 8 IMPROVEMENTS

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

# Custom Soil Resource Report for Eastern Fresno Area, California

## Well 8


May 1, 2023

# Preface

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

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

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

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

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

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

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# How Soil Surveys Are Made

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

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

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

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

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

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

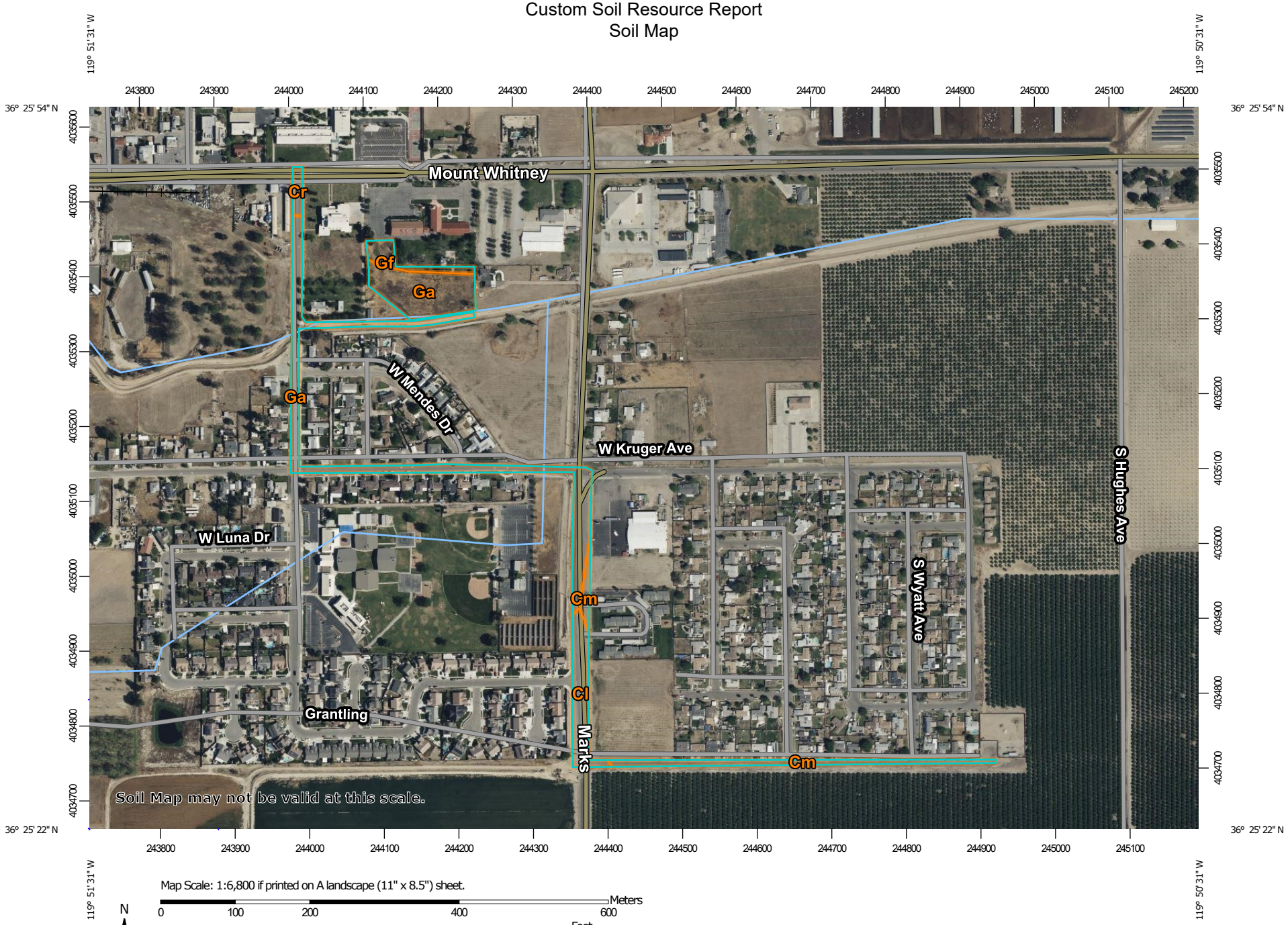
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report
## Soil Map



## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Fresno Area, California
Survey Area Data: Version 15, Sep 1, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 16, 2022—May 30, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| Cl | Chino sandy loam | 1.2 | 14.5% |
| Cm | Chino sandy loam, saline-alkali | 1.1 | 13.3% |
| Cr | Chino loam | 0.2 | 2.6% |
| Ga | Grangeville sandy loam | 5.1 | 63.4% |
| Gf | Grangeville fine sandy loam, 0 to 1 percent slopes, MLRA 17 | 0.5 | 6.1% |
| **Totals for Area of Interest** | | **8.1** | **100.0%** |

# Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

# Eastern Fresno Area, California

## Cl—Chino sandy loam

### Map Unit Setting

*National map unit symbol:* hl2h
*Elevation:* 160 to 500 feet
*Mean annual precipitation:* 6 to 14 inches
*Mean annual air temperature:* 61 to 63 degrees F
*Frost-free period:* 250 to 275 days
*Farmland classification:* Prime farmland if irrigated and drained

### Map Unit Composition

*Chino and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Chino

#### Setting

*Landform:* Flood plains, alluvial fans
*Landform position (two-dimensional):* Toeslope, footslope
*Landform position (three-dimensional):* Base slope
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Alluvium derived from granite

#### Typical profile

*A - 0 to 12 inches:* sandy loam
*AC - 12 to 40 inches:* sandy clay loam
*2C - 40 to 60 inches:* stratified sandy loam to loam

#### Properties and qualities

*Slope:* 0 to 2 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat poorly drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* Rare
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 1 percent
*Maximum salinity:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* Moderate (about 8.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 1
*Land capability classification (nonirrigated):* 4c
*Hydrologic Soil Group:* C
*Ecological site:* R017XY906CA - Non-Alkali San Joaquin Valley Desert
*Hydric soil rating:* Yes

**Minor Components**

**Unnamed, compact substratum**

*Percent of map unit:* 10 percent
*Landform:* Flood plains, alluvial fans
*Hydric soil rating:* No

**Unnamed**

*Percent of map unit:* 5 percent
*Landform:* Flood plains, alluvial fans
*Hydric soil rating:* No

## Cm—Chino sandy loam, saline-alkali

**Map Unit Setting**

*National map unit symbol:* hl2j
*Elevation:* 160 to 200 feet
*Mean annual precipitation:* 6 to 10 inches
*Mean annual air temperature:* 61 to 63 degrees F
*Frost-free period:* 250 to 275 days
*Farmland classification:* Prime farmland if irrigated and reclaimed of excess salts and sodium

**Map Unit Composition**

*Chino and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Chino**

**Setting**

*Landform:* Flood plains, alluvial fans
*Landform position (two-dimensional):* Toeslope, footslope
*Landform position (three-dimensional):* Base slope
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Alluvium derived from granite

**Typical profile**

*A - 0 to 12 inches:* sandy loam
*AC - 12 to 40 inches:* sandy clay loam
*2C - 40 to 60 inches:* stratified sandy loam to loam

**Properties and qualities**

*Slope:* 0 to 2 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat poorly drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)

*Depth to water table:* More than 80 inches
*Frequency of flooding:* Rare
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 1 percent
*Maximum salinity:* Moderately saline to strongly saline (8.0 to 18.0 mmhos/cm)
*Sodium adsorption ratio, maximum:* 5.0
*Available water supply, 0 to 60 inches:* Low (about 5.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 2s
*Land capability classification (nonirrigated):* 4s
*Hydrologic Soil Group:* C
*Ecological site:* R017XY907CA - Aridic Alkali Desert
*Hydric soil rating:* Yes

**Minor Components**

**Unnamed, strongly saline-alkali**

*Percent of map unit:* 8 percent
*Landform:* Flood plains, alluvial fans
*Hydric soil rating:* No

**Unnamed, non saline-alkali**

*Percent of map unit:* 7 percent
*Landform:* Flood plains, alluvial fans
*Hydric soil rating:* No

## Cr—Chino loam

**Map Unit Setting**

*National map unit symbol:* hl2n
*Elevation:* 160 to 200 feet
*Mean annual precipitation:* 6 to 10 inches
*Mean annual air temperature:* 61 to 63 degrees F
*Frost-free period:* 250 to 275 days
*Farmland classification:* Prime farmland if irrigated and drained

**Map Unit Composition**

*Chino and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Chino**

**Setting**

*Landform:* Flood plains, alluvial fans
*Landform position (two-dimensional):* Toeslope, footslope
*Landform position (three-dimensional):* Base slope
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Alluvium derived from granite

**Typical profile**

*A - 0 to 12 inches:* loam
*AC - 12 to 18 inches:* clay loam
*2C - 18 to 24 inches:* stratified fine sandy loam to clay loam

**Properties and qualities**

*Slope:* 0 to 2 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat poorly drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* Rare
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 1 percent
*Maximum salinity:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* Low (about 3.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 1
*Land capability classification (nonirrigated):* 4c
*Hydrologic Soil Group:* C
*Ecological site:* R017XY906CA - Non-Alkali San Joaquin Valley Desert
*Hydric soil rating:* Yes

**Minor Components**

**Unnamed, compact substratum**

*Percent of map unit:* 10 percent
*Landform:* Flood plains, alluvial fans
*Hydric soil rating:* No

**Unnamed**

*Percent of map unit:* 5 percent
*Landform:* Depressions on alluvial fans
*Hydric soil rating:* Yes

## Ga—Grangeville sandy loam

**Map Unit Setting**

*National map unit symbol:* hl4t
*Elevation:* 160 to 500 feet
*Mean annual precipitation:* 8 to 12 inches
*Mean annual air temperature:* 61 to 63 degrees F
*Frost-free period:* 200 to 250 days
*Farmland classification:* Prime farmland if irrigated and drained

**Map Unit Composition**

*Grangeville and similar soils:* 85 percent

*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Grangeville**

**Setting**

*Landform:* Flood plains, alluvial fans
*Landform position (two-dimensional):* Toeslope, footslope
*Landform position (three-dimensional):* Base slope
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Recent alluvium derived from granite

**Typical profile**

*Ap - 0 to 8 inches:* sandy loam
*C - 8 to 60 inches:* sandy loam

**Properties and qualities**

*Slope:* 0 to 2 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat poorly drained
*Runoff class:* Very low
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* Rare
*Frequency of ponding:* None
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* Moderate (about 8.3 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 2s
*Land capability classification (nonirrigated):* 4s
*Hydrologic Soil Group:* A
*Ecological site:* R017XY906CA - Non-Alkali San Joaquin Valley Desert
*Hydric soil rating:* Yes

**Minor Components**

**Unnamed, loam surface**

*Percent of map unit:* 10 percent
*Landform:* Flood plains, alluvial fans
*Hydric soil rating:* No

**Unnamed, channeled**

*Percent of map unit:* 5 percent
*Landform:* Channels on flood plains, alluvial fans
*Hydric soil rating:* No

## Gf—Grangeville fine sandy loam, 0 to 1 percent slopes, MLRA 17

### Map Unit Setting

*National map unit symbol:* 2vncx
*Elevation:* 30 to 1,760 feet
*Mean annual precipitation:* 8 to 25 inches
*Mean annual air temperature:* 61 to 64 degrees F
*Frost-free period:* 240 to 300 days
*Farmland classification:* Prime farmland if irrigated and drained

### Map Unit Composition

*Grangeville and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Grangeville

#### Setting

*Landform:* Flood plains, alluvial fans
*Landform position (two-dimensional):* Toeslope
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Alluvium derived from granite

#### Typical profile

*A - 0 to 12 inches:* fine sandy loam
*C - 12 to 79 inches:* fine sandy loam

#### Properties and qualities

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat poorly drained
*Runoff class:* Very low
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)
*Depth to water table:* About 0 inches
*Frequency of flooding:* OccasionalNone
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 2 percent
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum:* 3.0
*Available water supply, 0 to 60 inches:* High (about 9.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 2w
*Land capability classification (nonirrigated):* 4w
*Hydrologic Soil Group:* A/D
*Ecological site:* R017XY903CA - Stream Channels and Floodplains
*Hydric soil rating:* Yes

### Minor Components

#### Traver

*Percent of map unit:* 5 percent
*Landform:* Flood plains, alluvial fans
*Landform position (two-dimensional):* Toeslope
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Ecological site:* R017XY903CA - Stream Channels and Floodplains
*Hydric soil rating:* Yes

#### Hanford

*Percent of map unit:* 5 percent
*Landform:* Flood plains, alluvial fans
*Landform position (two-dimensional):* Toeslope
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Ecological site:* R017XY903CA - Stream Channels and Floodplains
*Hydric soil rating:* No

#### Unnamed, hydric

*Percent of map unit:* 3 percent
*Landform:* Flood plains, alluvial fans
*Landform position (two-dimensional):* Toeslope
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Hydric soil rating:* Yes

#### Unnamed, channeled

*Percent of map unit:* 2 percent
*Landform:* Alluvial fans on alluvial fans, channels on flood plains on alluvial fans, channels on flood plains on flood plains
*Landform position (two-dimensional):* Toeslope
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Hydric soil rating:* No

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# Appendix C: Class III Inventory/Phase I Survey

# CLASS III INVENTORY/PHASE I SURVEY, RIVERDALE PUBLIC UTILITY DISTRICT DISTRIBUTION IMPROVEMENTS PROJECT, FRESNO COUNTY, CALIFORNIA

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# MANAGEMENT SUMMARY

An intensive Class III cultural resources inventory/Phase I survey was conducted for the Riverdale Public Utilities Disctict (PUD) Distribution Improvements Project (Project), Fresno County, California. The Project area is located in Riverdale, a census-designated place approximately 23-miles (mi) south of Fresno and 29-mi west-northwest of the Visalia, in Section 25, Township 17 South, Range 19 East (T17S/R19E), Mount Diablo Base and Meridian (MDBM); and Section 30 (T17S/R20E, MDBM). ASM Affiliates (ASM) conducted this study, with Peter A. Carey, M.A., RPA, serving as Principal Investigator. The study was undertaken to assist with the regulatory requirements for compliance with the California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act (NHPA), as amended.

A records search of site files and maps was conducted on 17 April 2023 at the Southern San Joaquin Valley Archaeological Information Center, California State University, Bakersfield. These investigations determined that the Project area had only been partially surveyed previously, and that one built environment resource (P-10-007262/ CA-FRE-3931H, Burrell Ditch) was known to exist within it.

A *Sacred Lands File* search was completed for the Project by the Native American Heritage Commission (NAHC) on 18 May 2023. The results of the search were negative for tribal cultural resources or sacred sites in the vicinity of the Project area. Outreach letters were sent to all tribes listed on the NAHC-provided contact list on 25 April 2023, with follow-up emails sent on 11 August 2023. One response was received from the Santa Rosa Rancheria Tachi-Yokut Tribe on 28 June 2023 requesting continued consultation, as well as the results of the cultural study, to be retained for a cultural presentation prior to work, and to have a tribal monitor present for all ground disturbing activities.

The Project consists of an approximately 4-acre (ac) well site and up to 6,800 linear feet (LF) of pipeline. The Area of Potential Effects (APE) for the Project was defined as the area of potential ground surface disturbance, including all work areas and staging and laydown areas, with a 100-foot (ft) survey buffer. The total acreage for the horizontal APE is approximately 20-ac. The vertical APE, which is the maximum depth of excavation for the new well, is approximately 2,000-ft; however, the depth of trenching is set at approximately 5-ft.

The Class III inventory/Phase I survey fieldwork was conducted on 24 April 2023 with parallel transects spaced at 15-meter intervals walked along the approximately 20-acre APE. No new cultural resources were identified during the current project. A segment of a previously recorded built environment resource was identified and documented during the study. The Burrell Ditch (P-10-007262/CA-FRE-3931H) is a 7.2-mi open irrigation ditch that was constructed in 1890. Applied EarthWorks, Inc. (2021) previously recorded and evaluated the resource for eligibility to the California Register of Historical Resources (CRHR) and recommended it not eligible (NRHP Status Code 6Z).

ASM utilized the CRHR eligibility evaluation conducted by Applied EarthWorks, Inc. (2021) to evaluate the Burrell Ditch for eligibility to the National Register of Historic Places (NRHP) and

the CRHR. As a result of the eligibility evaluation, ASM recommends the Burrell Ditch not eligible for inclusion in the NRHP or the CRHR under any criteria.

Based on these findings, the construction of the Riverdale PUD Distribution Improvements Project does not have the potential to result in adverse impacts or effects to significant historical resources or historic properties, and a finding of no significant impact under CEQA and no adverse effects to historic properties under Section 106 of the NHPA is recommended.

In the unlikely event that cultural resources are identified during the project, it is recommended that a qualified archaeologist be contacted to evaluate the newly discovered resource. No additional archaeological work is recommended for the Project.

# 1. INTRODUCTION AND REGULATORY CONTEXT

ASM Affiliates was retained by Provost and Pritchard Consulting Group, to conduct an intensive Class III inventory/Phase I cultural resources survey for the Riverdale PUD Distribution Improvements Project (Project), Fresno County, California. The Project area is located in Section 25, Township 17 South, Range 19 East (T17S/R19E), Mount Diablo Base and Meridian (MDBM); and Section 30 (T17S/R20E, MDBM) (Figure 1). The study was undertaken to assist with compliance with the regulatory requirements for compliance with the California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act (NHPA), as amended. The investigation was conducted, specifically, to ensure that significant impacts or adverse effects to historical resources or historic properties do not occur as a result of project construction.

This current study included:

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

Peter A. Carey, M.A., RPA, served as principal investigator and ASM Assistant Archaeologist Maria Silva, B.A., conducted the survey for the Riverdale PUD Distribution Improvements Project.

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

## 1.1 PROJECT LOCATION

The Riverdale PUD Distribution Improvements Project is located within rural agricultural fields just northwest of the census designated community of Riverdale located 23-mi south of the City of Fresno and 29-mi west-northwest of the City of Visalia. This places the Project area on the open flats of the San Joaquin Valley. Elevation within the project area, which is flat, ranges between 215-ft above mean sea level (amsl) and 225-ft amsl. The Project area is surrounded by suburban residential and agricultural fields and orchards on all sides.

## 1.2 PROJECT DESCRIPTION AND APE

The purpose of the Project is to improve the capacity of the Riverdale PUD system. The existing water system is currently supplied by two active wells, Well 6 and Well 7. Well 6 is located in the

southeast area of Riverdale and has a capacity of approximately 1350 gallons per minute (gpm). Well 7 is located in the northwest part of the community and, due to recent issues with pumping sand, has a reduced capacity of about 450 gpm. A downhole and above ground sand separator were installed at Well 7, but the well continues to have issues pumping fine sand and is proving to be an unreliable source for the system. If the highest capacity well (Well 6) is out of service, the peak demands of the system cannot be met by the diminished production of Well 7. The addition of Well 8 will allow peak demands to continue to be met with either of the existing wells out of service.

The Project would consist of the construction of a new water well for the community of Riverdale. The Project is intended to supplement the community's water supply system by constructing a new well site and associated infrastructure including but not limited to: well pump, site piping and appurtenant infrastructure, motor control center and structure, electrical connection and transformer, emergency generator, chemical storage enclosure, a ponding basin for site drainage, site lighting, site grading, and site fencing. This project will help address fire flow, system redundancy, pressure, looping concerns throughout the district, and provide additional drought resiliency for the community. The Project site will be located on an approximately 1.8-ac parcel acquired by Riverdale PUD, located behind the Saint Ann Church on W. Mt Whitney Avenue on Assessor's Parcel Number 053-260-21.

Along with construction of the new well site, accompanying infrastructure will include the installation of new water main and the replacement of aging, undersized water main near the Project site and the existing Well No. 6 site. Approximately 6,200 LF of 10-inch water main will be constructed along W. Wood Avenue, S. Marks Avenue, W. Kruger Avenue, and S. Feland Avenue. The proposed water main alignment will replace the existing undersized 4-inch water main and provide a new stretch of 10-inch distribution main for better connectivity between Well 6 in the southeast area and the rest of the system. In order to connect the Project site to the distribution system, approximately 600 LF of 10-inch water main will be installed along the north side of the canal embankment from S. Feland Avenue to Project site.

The design of the Well 8 site will be similar to Well 6 and Well 7 to encourage consistency across Riverdale PUD. Based on prior studies and design of other wells in and around Riverdale, it is expected that Well 8 will be approximately 2,000-ft deep and be sealed down to a depth at least below the Corcoran Clay and will be designed with a desired pumping capacity of 1350 gpm. Arsenic, color, and Total Organic Carbon are expected to be present, but at levels below the current MCL. While it is not anticipated that the water quality at the Well No. 8 site will require treatment, a portion of the site has been planned for future treatment facilities if Riverdale PUD needs additional treatment. Riverdale PUD has also planned space for a water storage tank should the system need additional operational storage capacity at any point in the future.

The APE will contain all construction, staging, and lay-down areas for the Project, and is constrained by the easements along surface streets and the property boundary at the well location on the Burrell Ditch. The APE consists of the proposed 4-ac well site and will also include the area of the installation of the mainline pipe, which runs along existing surface roads for approximately 6,800-ft, and the additional pipeline from the well to the South Feland Avenue tie-in. In total, the proposed horizontal project APE will comprise approximately 20-ac of both developed and

undeveloped land. The vertical APE, which is the maximum depth of excavation for the new well, is approximately 2,000-ft; however, the depth of trenching is set at approximately 5-ft.

# 1.3 REGULATORY CONTEXT

## 1.3.1 California Environmental Quality Act

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

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

(A) Are associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) Are associated with the lives of persons important in our past;

(C) Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values; or

(D) Have yielded, or may be likely to yield, information important in prehistory or history.

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

> An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
>
> (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
>
> (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
>
> (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC § 21083.2(g)).

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

## 1.3.2 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (Title 16 USC 470; 36 CFR Part 800) is applicable to federal undertakings, including projects financed or

permitted by federal agencies, regardless of whether the activities occur on land that is managed by federal agencies, other governmental agencies, or private landowners. Its purpose is to determine whether adverse effects will occur to significant cultural resources, defined as "historical properties" that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP). The criteria for NRHP eligibility are defined at 36 CFR § 60.4 and include:

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

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

> Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the NRHP. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:
>
> > (a) A religious property deriving primary significance from architectural or artistic distinction or historical importance; or,
> >
> > (b) A building or structure removed from its original location, but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or,
> >
> > (c) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or,
> >
> > (d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or,

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

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

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

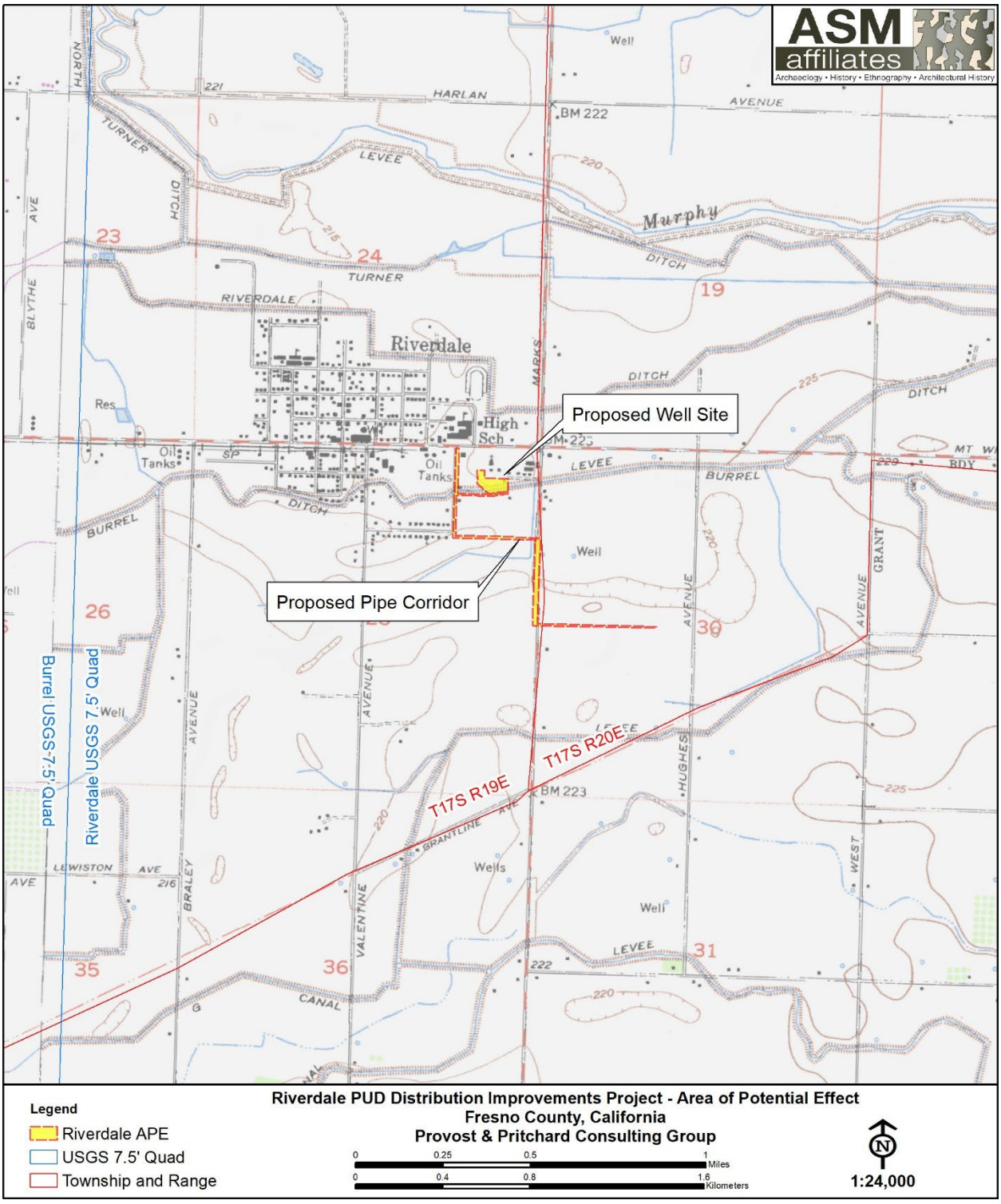


**Figure 1. Location of the Riverdale PUD Distribution Improvements Project, Fresno County, California.**

# 2. ENVIRONMENTAL AND CULTURAL BACKGROUND

## 2.1 ENVIRONMENTAL BACKGROUND AND GEOARCHAEOLOGICAL SENSITIVITY

As noted above, the APE is located at elevations between 215-ft amsl to 225-ft amsl on the open flats of the San Joaquin Valley, approximately 23-mi south of Fresno and 29-mi west-northwest of the Visalia. The APE is situated within Riverdale and the Well 8 site is directly adjacent to the Burrell Ditch.

Prior to the appearance of agriculture, starting in the nineteenth century, this location would have been prairie grasslands, grading into tree savannas in the foothills to the east (Preston 1981). Historically, and likely prehistorically, riparian environments would have been present along the drainages, waterways and marshes. The APE and immediate surroundings would have been farmed and grazed for many years prior to becoming urbanized and no native vegetation is present. Perennial bunchgrasses such as purple needlegrass and nodding needlegrass most likely would have been the dominant plant cover in the APE prior to cultivation.

A Caltrans geoarchaeological study (Meyer et al. 2010) that included the APE was consulted in order to identify the potential for buried archaeological sites in the vicinity of the Project area. This study involved first determining the location and ages of late Pleistocene (>25,000 years old) landforms in the southern San Joaquin Valley. These were identified by combining a synthesis of 2,400 published paleontological, soils and archaeological chronometric dates with geoarchaeological field testing. The ages of surface landforms were then mapped to provide an assessment for the potential for buried archaeological deposits. These ages were derived primarily from the Soil Survey Geographic Database (SSURGO) and the State Soils Geographic (STATSGO) database. A series of maps were created from this information that ranked locations in 7 ordinal classes for sensitivity for buried soils, from Very Low to Very High.

According to the geoarchaeological model developed by Meyer et al. (2010), the vicinity of the APE has a Very High potential for buried archaeological deposits; however, the location of the proposed Project within previously disturbed roadways and urbanized areas within the Riverdale indicates the likelihood that buried archaeological sites are present is Low.

## 2.2 ETHNOGRAPHIC BACKGROUND

Penutian-speaking Yokuts tribal groups occupied the southern San Joaquin Valley region and much of the nearby Sierra Nevada. Ethnographic information about the Yokuts was collected primarily by Powers (1971, 1976 [originally 1877]), Kroeber (1925), Gayton (1930, 1948), Driver (1937), Latta (1977) and Harrington (n.d.). For a variety of historical reasons, existing research information emphasizes the central Yokuts tribes who occupied both the valley and particularly the foothills of the Sierra. The northernmost tribes suffered from the influx of Euro-Americans during the Gold Rush and their populations were in substantial decline by the time ethnographic

studies began in the early twentieth century. In contrast, the southernmost tribes were partially removed by the Spanish to missions and eventually absorbed into multi-tribal communities on the Sebastian Indian Reservation (on Tejon Ranch), and later the Tule River Reservation and Santa Rosa Rancheria, near Lemoore. The result is an unfortunate scarcity of ethnographic detail on southern Valley tribes, especially in relation to the rich information collected from the central foothills tribes where native speakers of the Yokuts dialects are still found. Regardless, the general details of indigenous life-ways were similar across the broad expanse of Yokuts territory, particularly in terms of environmentally influenced subsistence and adaptation and with regard to religion and belief, which were similar everywhere.

Kroeber (1925) and Latta (1977) place the south side of the Kings River in Nutúnutu territory. Latta notes that:

> "The Nutúnutu village at old Kingston, on the south bank of the Kings River below present Laton, was known as Kadistan. Across the river…was the Nutnutu village of Cheo" (1977:164).

No historic villages are recorded for the immediate project area, per se, by Kroeber (1925) or by Latta (1977), however.

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

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

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

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

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

Subsistence practices varied from tribelet to tribelet based on the environment of residence. Throughout Native California, and Yokuts territory in general, the acorn was a primary dietary component, along with a variety of gathered seeds. Valley tribes augmented this resource with lacustrine and riverine foods, especially fish and wildfowl. As with many Native California tribes, the settlement and subsistence rounds included the winter aggregation into a few large villages, where stored resources (like acorns) served as staples, followed by dispersal into smaller camps, often occupied by extended families, where seasonally available resources would be gathered and consumed.

Although population estimates vary and population size was greatly affected by the introduction of Euro-American diseases and social disruption, the Yokuts were one of the largest, most successful groups in Native California. Cook (1978) estimates that the Yokuts region contained 27 percent of the aboriginal population in the state at the time of contact; other estimates are even higher. Many Yokuts people continue to reside in the southern San Joaquin Valley today.

## 2.3 PRE-CONTACT ARCHAEOLOGICAL BACKGROUND

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

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

Both fluted and stemmed points are particularly common around lake margins, suggesting a terminal Pleistocene/early Holocene lakeshore adaptation similar to that found throughout the far west at the same time; little else is known about these earliest peoples. Over 250 fluted points have been recovered from the Witt Site (CA-KIN-32), located along the western shoreline of ancient Tulare Lake south of the APE, demonstrating the importance of this early occupation in the San Joaquin Valley specifically (see Fenenga 1993). Additional finds consist of a Clovis-like projectile point discovered in a flash-flood cut-bank near White Oak Lodge in 1953 on Tejon Ranch

(Glennan 1987a, 1987b). More recently, a similar fluted point was found near Bakersfield (Zimmerman et al. 1989), and a number are known from the Edwards Air Force Base and Boron area of the western Mojave Desert. Although human occupation of the state is well-established during the Late Pleistocene, relatively little can be inferred about the nature and distribution of this occupation with a few exceptions. First, little evidence exists to support the idea that people at that time were big-game hunters, similar to those found on the Great Plains. Second, the western Mojave Desert evidence suggests small, very mobile populations that left a minimal archaeological signature. The evidence from the ancient Tulare Lake shore, in contrast, suggests much more substantial population and settlements which, instead of relying on big game hunting, were tied to the lacustrine lake edge. Variability in subsistence and settlement patterns is thus apparent in California, in contrast to the Great Plains.

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

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

Evidence for Middle Horizon occupation of interior south-central California is substantial. For example, in northern Los Angeles County along the upper Santa Clara River, to the south of the San Joaquin Valley, the Agua Dulce village complex indicates occupation extending back to the Intermediate Period, when the population of the village may have been 50 or more people (King et al n.d.). Similarly, inhabitation of the Hathaway Ranch region near Lake Piru, and the Newhall Ranch near Valencia, appears to date to the Intermediate Period (W & S Consultants 1994). To the

west, little or no evidence exists for pre-Middle Horizon occupation in the upper Sisquoc and Cuyama River drainages; populations first appear there at roughly 3,500 YBP (Horne 1981). The Carrizo Plain, the valley immediately west of the San Joaquin, experienced a major population expansion during the Middle Horizon (W & S Consultants 2004; Whitley et al. 2007), and recently collected data indicates the Tehachapi Mountains region was first significantly occupied during the Middle Horizon (W & S Consultants 2006). A parallel can be drawn to the inland Ventura County region where a similar pattern has been identified (Whitley and Beaudry 1991), as well as the western Mojave Desert (Sutton 1988a, 1988b), the southern Sierra Nevada (W & S Consultants 1999), and the Coso Range region (Whitley et al. 1988). In all of these areas a major expansion in settlement, the establishment of large site complexes and an increase in the range of environments exploited appear to have occurred sometime roughly around 4,000 years ago. Although most efforts to explain this expansion have focused on local circumstances and events, it is increasingly apparent this was a major southern California-wide occurrence, and any explanation must be sought at a larger level of analysis (Whitley 2000). Additionally, evidence from the Carrizo Plain suggests the origins of the tribelet level of political organization developed during this period (W & S Consultants 2004; Whitley et al. 2007). Whether this same demographic process holds for the southern San Joaquin Valley, including the APE, is yet to be determined.

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

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

One extensively studied site that shows evidence of intensive occupation during the Middle-Late Horizons transition (~1,500 – 500 YBP) is the Redtfeldt Mound (CA-KIN-66/H), located south of the current APE, near the north shore of ancient Tulare Lake. There, Siefkin (1999) reported on human burials and a host of artifacts and ecofacts excavated from a modest-sized mound. He found

that both Middle Horizon and Middle-Late Horizons transition occupations were more intensive than Late Horizon occupations, which were sporadic and less intensive (Siefkin 1999:110-111).

The Late Horizon can then be understood as a period of recovery from a major demographic collapse. One result is the development of regional archaeological cultures as the precursors to ethnographic Native California; suggesting that ethnographic life-ways recorded by anthropologists extend roughly 800 years into the past.

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

## 2.4 HISTORICAL BACKGROUND

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

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

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

With the increase of ranching in the southern San Joaquin came the dramatic change in the landscape, as non-native grasses more beneficial for grazing and pasture replaced native flora (Preston 1981). After the passing of the Arkansas Act in 1850, efforts were made to reclaim small tracts of land in order to create more usable spaces for ranching. Eventually, as farming supplanted

ranching as a more profitable enterprise, large tracts of land began to be reclaimed for agricultural use, aided in part by the extension of the railroad in the 1870s (Pacific Legacy 2006).

Following the passage of state wide 'No-Fence' laws in 1874, ranching practices began to decline, while farming expanded in the San Joaquin Valley in both large land holdings and smaller, subdivided properties. As the farming population grew, so did the demand for irrigation. Settlers began reclamation of swampland in 1866 and built small dams across the Kern River to divert water into the fields. By 1880, 86 different groups were taking water from the Kern River. Ten years later, 15 major canals provided water to thousands of acres in Kern County.

During the period of reclaiming unproductive land in the southern San Joaquin Valley, grants were given to individuals who had both the resources and the finances to undertake the operation alone. One small agricultural settlement, founded by Colonel Thomas Baker in 1861 after procuring one such grant, took advantage of reclaimed swampland along the Kern River. This settlement became the City of Bakersfield in 1869, and quickly became the center of activity in the southern San Joaquin Valley, and in the newly formed Kern County. Located on the main stage road through the San Joaquin Valley, the town became a primary market and transportation hub for stock and crops, as well as a popular stopping point for travelers on the Los Angeles and Stockton Road. The Southern Pacific Railroad reached the Bakersfield area in 1873, connecting it with important market towns elsewhere in the state, dramatically impacting both agriculture and oil production (Pacific Legacy 2006).

Three competing partnerships developed during this period which had a great impact on control of water, land reclamation and ultimately agricultural development in the San Joaquin Valley: Livermore and Chester, Haggin and Carr, and Miller and Lux, perhaps the most famous of the enterprises. Livermore and Chester were responsible, among other things, for developing the large Hollister plow (three feet wide by two feet deep), pulled by a 40-mule team, which was used for ditch digging. Haggin and Carr were largely responsible for reclaiming the beds of the Buena Vista and Kern lakes, and for creating the Calloway Canal, which drained through the Rosedale area in Bakersfield to Goose Lake (Morgan 1914). Miller and Lux ultimately became one of the biggest private property holders in the country, controlling the rights to over 22,000 square miles. Miller and Lux's impact extended beyond Kern County, however. They recognized early-on that control of water would have important economic implications, and they played a major role in the water development of the state. They controlled, for example, over 100-mi of the San Joaquin River with the San Joaquin and Kings River Canal and Irrigation System. They were also embroiled for many years in litigation against Haggin and Carr over control of the water rights to the Kern River. Descendants of Henry Miller continue to play a major role in California water rights, with his great grandson, George Nickel, Jr., the first to develop the concept of water banking, thus creating a system to buy and sell water (Levine 2011).

Numerous small irrigation districts developed in the Fresno and Kings counties region during the latter decades of the 19$^{th}$ century, as a result of the Wright Act of 1887. These suffered from competition, confusion over water rights and droughts in the 1890s, which left many districts not viable. As documented by Barnes (1920; cf. Shallat 1978), a long history of contention and litigation developed over the water rights to the Cole Slough, as it was the water source for the Emigrant, Liberty and Grant (Laguna de Tache) Canals (Grunsky 1898). These conflicts were

effectively settled circa 1920 – 1921, resulting in the creation of a smaller number of irrigation districts, many of which still exist today, including the Laguna, Riverdale, Fresno and Foothill districts (Shallat 1978).

Lanare and Riverdale both originally fell within the boundaries of the Laguna de Tache. Jeremiah Clark leased the rancho to Polley Heilbron & Company for 10 years, who used it for cattle ranching. Subsequently they purchased the rancho (Pacific Legacy 2006). The Polley Heilbron & Company, by the 1880s owners of the Laguna de Tache Rancho, constructed a number of canals to bring water onto their lands. These included the Grant Canal, sometimes called the Laguna de Tache Canal, which was built in 1873. The upper section of the canal originally had a bed width of about 30-ft and was 2 to 2.5-ft deep. Its source was Cole's Slough, a northward trending tributary of the Kings River. The Grant Canal paralleled the Kings River for much of its course (Grunsky 1898). As Grunsky noted:

> "The lands of the Rancho Laguna de Tache have always been so well watered that the irrigation works which have been constructed may be regarded as serving primarily to establish a convenient control of the water rather than as works intended to increase the supply. To prevent excessive natural inundation, it has been found necessary to erect embankments along the river, also to construct numerous drain ditches from low tracts into natural channels to facilitate drainage. The main irrigation canal supplies water to a large number of distributaries, frequently natural channels, and these in turn to small irrigating ditches, usually 200 to 450 yards apart. As the entire irrigation system lies within the limits of the rancho there has been less study of methods of controlling and distributing water than would have been the case if a large number of consumers had to be supplied, and water measurement has been entirely out of the question" (ibid:61).

The Laguna de Tache Rancho lands were purchased from the Polley Heilbron & Company by E.B. Perrin and his brother in 1891. They transferred the riparian rights to the Fresno Canal and Irrigation Company in 1893. The Perrins defaulted on their loan, however, and an English syndicate of insurance companies purchased the property with the intentions of sub-dividing. This syndicate was headed by Charles A. Laton and L.A. Nares, the source of the names for these two local communities. The community of Laton developed shortly thereafter, likewise with an impetus from the establishment of a rail depot. By 1904, it had a population of approximately 400 people (http://latoncalifornia.org/the-beginning.html; accessed 7/17/2018). Lanare had a U.S. Post office from 1912 to 1925. The Riverdale U.S. post office was established in 1875 and it still operates and serves both communities. According to the 2010 U.S. Census, the census-designated community of Riverdale is largely focused on agriculture and the community is mostly surrounded by commercial crops (https://www.city-data.com/city/Riverdale-California.html).

## 2.4.1 Early Irrigation

A brief history prepared by Applied EarthWorks, Inc. (2021):

> Among the various goods produced by settlers of the lower Kings River and Fresno Slough areas, livestock was the most commercially important (Grunsky 1898; Mead 1901; Vandor 1919). And while periodic flooding of the river and sloughs did continue to water the natural

grasses of riparian lands, alfalfa quickly emerged as the region's dominant commodity, both as feed and as a crop for cash sale. Similar to vineyards and orchards, this flowering plant can only be grown commercially with irrigation. Moreover, through such appropriated water, the alfalfa farmer could cultivate land that did not contain a natural source of water (i.e., not riparian). Built specifically for this purpose, the Riverdale Ditch, along with the (Liberty) Millrace, Turner, Reed, and Burrell ditches posed a problem for ditch owners: this water conveyance system still depended on the natural flow of the Kings River, which, like all Sierra Nevada streams, varied wildly from one year to the next. Compounding the matter, Murphy Slough, one of the river's many tributaries, lay in the lowermost reaches of the Kings River system and the water's course had to pass by the gates of numerous other upstream irrigators before entering the slough.

Given the often limited supply of this critical resource, in 1898 the five owners of the Riverdale area ditches organized the Murphy Slough Association in order to fairly apportion and minimize confrontations over the use of the slough's waters (Adams 1915:55–57; Mead 1901:306). A critical part of the association's formation was its agreement with the Fresno Canal and Irrigation Company (FCIC). Earlier in the decade, the FCIC had purchased Rancho Laguna de Tache, including its long-standing riparian water rights on the Kings River. This necessitated that the association make a deal with the FCIC to prevent losing their water supply during years of poor runoff. Despite the FCIC's larger size and greater experience in litigious matters, the association may have held at least some legal leverage on account of the relatively early appropriations by the Riverdale and Turner ditches in 1875. Per their agreement, until the flow of the slough exceeded 300 cubic feet per second, the FCIC and association members shared the available water equally. The association further stipulated distribution among its members: the Turner Ditch, which still maintained its own head gate, received one-sixth of the flow; the Riverdale and Burrell ditches, which shared the same head gate, were entitled to a combined one-third; and the Millrace and Reed ditches took one-third and one-sixth, respectively. Within the central and southern San Joaquin Valley, such associations were common in areas that lacked a dominant irrigation company, like the FCIC in the Fresno area or the San Joaquin and Kings River Canal Company, owned by the powerful Miller & Lux Company, on the lower San Joaquin River (Applied EarthWorks, Inc. 2021:14-15).

## 2.4.2 Brief History of the Riverdale Irrigation District Infrastructure

The predecessor of the Riverdale Irrigation District was the Riverdale Ditch Company, a mutual water company comprised of multiple share owners, including the Fresno Canal and Land Corporation (Barnes 1918:58). The main components of the irrigation system were ditches that were constructed in the late nineteenth century: Turner Ditch, Riverdale Ditch, and Burrell Ditch/Lateral that conveyed water from the Riverdale Ditch. The Burrell Ditch/Lateral was managed by the Burrell Ditch Company. The two main ditches, Turner and Riverdale ditches, were constructed around 1875 by farmers. They were separately managed by the Riverdale Ditch Company and Turner Ditch Company, but the Summit Lake Irrigation Company (1907) facilitated the merging of the two water sources. Together they irrigated around 10,000 to 11,000 acres (Barnes 1918:58). In 1875, the population had grown large enough to warrant a post office that established the town of Riverdale (Salley 1977:186).

The Riverdale Ditch Company irrigation system was part of the Murphy Slough Association (established 1898) that also included the Liberty Mill Race Company, Turner Ditch Company, and the Reed Ditch Company (Adams 1929:224-226; Barnes 1918:55-56, 58). Riverdale and Turner ditches utilized water from the Murphy Slough and originally retained separate headgates, but by 1918 they both utilized the Turner Ditch headgate (Figure 2 and 3). The Burrell Ditch/Lateral conveyed water from the Riverdale Ditch. While other ditch companies also diverted water from Murphy Slough since 1898, including the Liberty Mill Race Company and the Reed Ditch, Riverdale and Turner ditches had water rights to half of the water allotment. Available water flowed freely in the winter and spring, but water was not typically available in the summer (Adams 1929:224-226; Barnes 1918:58). On 19 April 1920, the Riverdale Irrigation District organized (Riverdale Irrigation District 2023a). Two years later, the Burrell Ditch Company and the Turner Ditch Company agreed to sell the ditches to the Riverdale Irrigation District and the proposal went to the stockholders for a bond to purchase the ditches (*Hanford Sentinel* 1922). A portion of the ditches were acquired by 1929 when the Riverdale Irrigation District's irrigation system consisted of the main, middle, and north Turner, Riverdale, and Burrell ditches that stretched to 30.6 mi. The Turner Ditch extended 17.5-mi with a 7.5-mi extension for the irrigation of Summit Lake Investment Company land. Most of the main canals (Turner and Riverdale ditches) were unlined except for 750 ft. Wooden side gates replaced delipidated structures with the expectation and concrete structures would be added later. Water users lavishly received all water available, similar to flood irrigation, and supplemented with pumped wells during the summer season (Adams 1929:224-226; Barnes 1918:55-56, 58).

By 1929, the Riverdale Irrigation District was one of 13 irrigation districts that conveyed water from the Kings River (Figure 4) (Adams 1929: XXIV). The Riverdale Irrigation District grew alfalfa, grain and/or grain hay, field and truck crops. All of the farms relied on the water conveyed by the district as none of the acreage within the district was dry farmed (Barnes 1918:63; State of California Department of Public Works 1934:32). Today the Riverdale Irrigation District irrigation system is shown in Figure 5. The area has been predominantly developed as agriculture.

### 2.4.3 Burrell Ditch

A brief history of the ditch had been prepared by Applied EarthWorks, Inc. (2021):

> The Burrell Ditch is named after Cuthbert Burrell, who was a prominent figure and business tycoon in Fresno County. His name appears in the records as both "Burrell" and "Burrell." In the 1850s, Burrell helped Enoch A. Smith settle the area known as Squaw Valley, just south of present-day Dunlap (Ulam 1925). Additionally, Burrell played a role in the county's mining industry as a chairman of the Elkhorn Mining District. He distinguished himself as one of 24 men in the county who owned the most land in 1873, with his land holdings totaling 23,403 acres. He owned sections in the Riverdale area, 2,000 acres in the Visalia area in Tulare County, and 18,000 acres in what was then known as Elkhorn. The acreage in Elkhorn was commonly referred to as the Burrell Ranch and eventually became the Burrell township that still exists today (Vandor 1919:234, 286, 803).
>
> Of the vast amount of land owned by Burrell, his sections in Riverdale made up the smallest portion, and it is within these sections that the Burrell Ditch was constructed. Burrell organized

the Burrell Ditch Company to construct the ditch, which was completed in 1890. The ditch was built very late in Burrell's life and acted as a means to bolster his estate. When he died in 1893, there were several legal disputes over the rights to his estate, which was valued at $1,000,000. After a year of litigation, the discovery of Burrell's will allowed for closure of these cases in 1894 (Fresno Weekly Republican 1894). His will left the management of his estate, including the Burrell Ditch Company, to his stepson, Charles Lincoln Adams (Fresno Bee 1929; Fresno Morning Republican 1894). Adams was likely the final owner of the company before the Riverdale Irrigation District absorbed it in 1920 (Adams 1929:57–61; 224–226) [Applied EarthWorks, Inc. 2021].

### 2.4.4 Burrell Ditch Sublateral

Due to the constraints of this Project, ASM did not fully develop the history of the Riverdale Irrigation District, the history of agricultural development in the Riverdale area, or the history of the community and the role irrigation played. Typically, these themes are developed as part of a historic context for an assessment of historical significance under NRHP Criterion A and CRHR Criterion 1. However, historical maps provide some historical information on the development of the Burrell Ditch extension within the Project Area. Figures 6 illustrates that a Burrell Ditch sublateral did not exist within the Project Area by 1891; therefore, it was not a part of the original alignment of the Burrell Ditch. Figure 7 shows that the Burrell Ditch sublateral did not extend into the Project Area in 1924 but by 1954 the Burrell Ditch sublateral had been constructed within the Project Area as shown in Figure 8. The Burrell Ditch is associated with the Riverdale Irrigation District and the RID refers to the segment within the Project Area as a lateral ditch. However, since the Burrell Ditch is a secondary ditch from the main ditch, the Riverdale Ditch; the lateral through the Project area functions like a sublateral in the RID irrigation system. ASM contacted the RID, but they did not have any historical information on the Burrell Ditch or the Burrell Ditch sublateral. However, a portion of the Burrell Ditch sublateral was piped sometime after 2021 for a residential community developed on Marks Avenue (Riverdale Irrigation District 2023b).

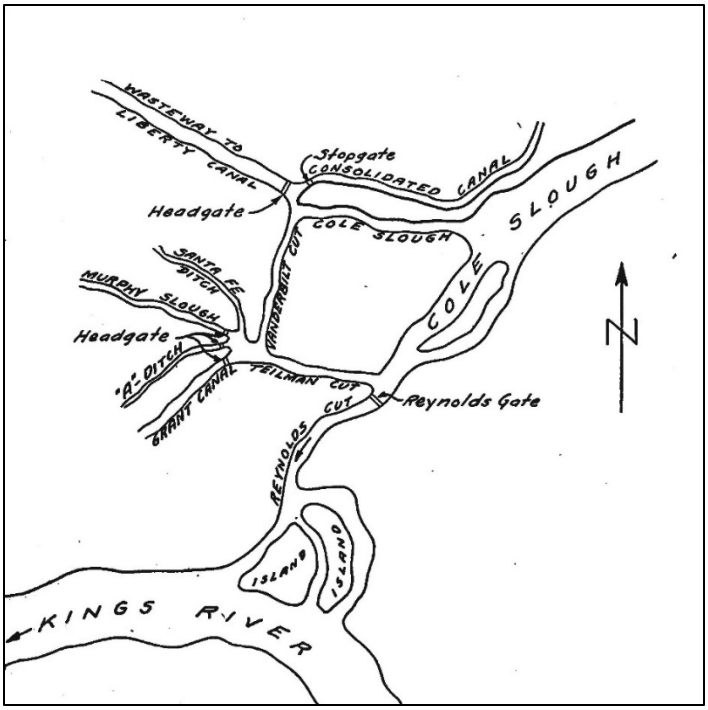


**Figure 2. Sketch drawn in 1918 that shows the conveyance systems that diverted Kings River water to the Murphy Slough. Source: Harry Barnes, Plate IX in Bulletin No. 7: Use of Water from Kings River, California. California State Printing Office, Sacramento, 1920.**

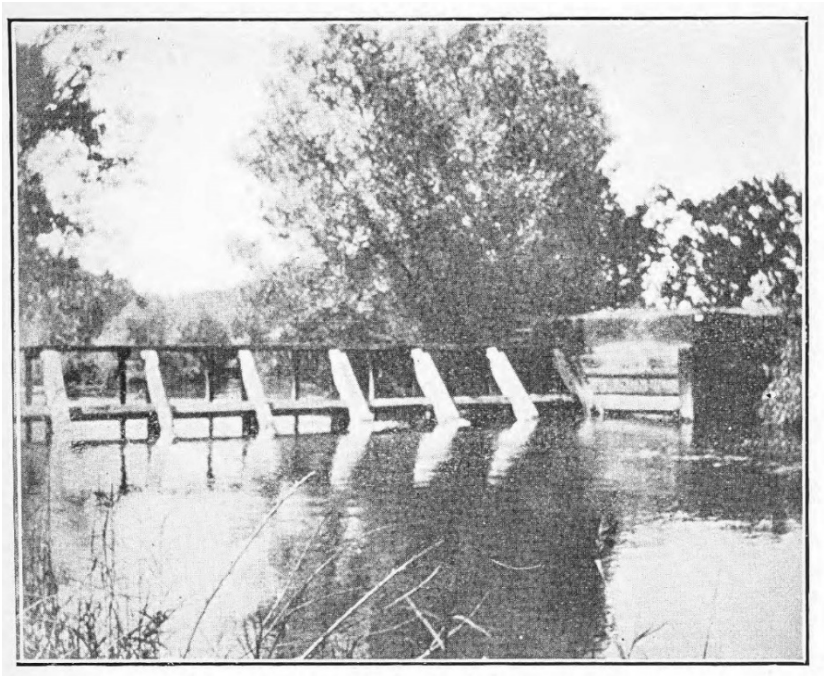

**Figure 3. Photograph of the Murphy Slough headgate shared by the Turner and Riverdale ditches. Source: Harry Barnes, Plate X in Bulletin No. 7: Use of Water from Kings River, California. California State Printing Office, Sacramento, 1920.**

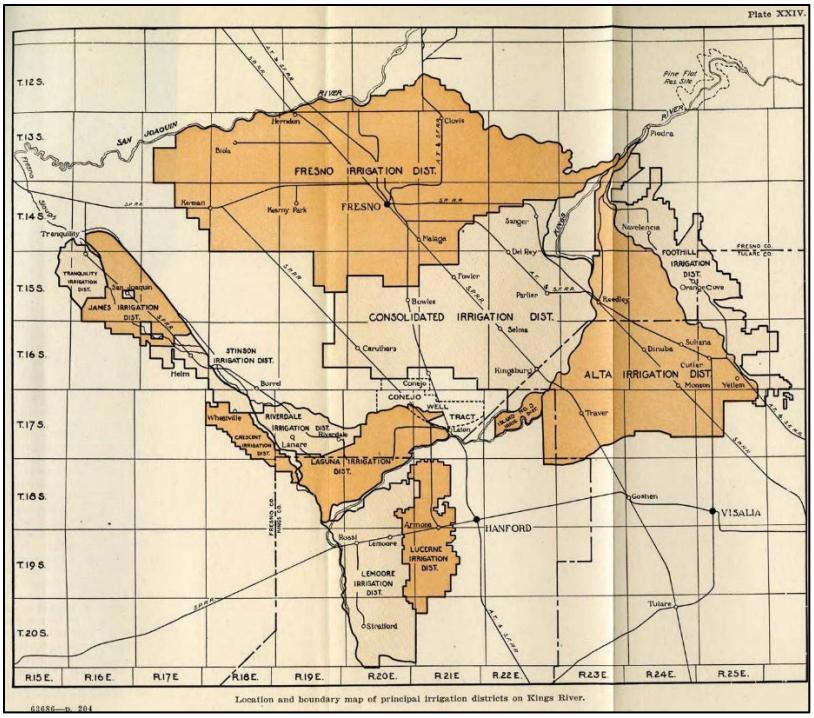


**Figure 4. A 1929 map that identifies the 13 irrigation districts that received water from Kings River. Source: Frank Adams, Bulletin No. 21: Irrigation Districts in California. State of California, Department of Public Works, 1929.**

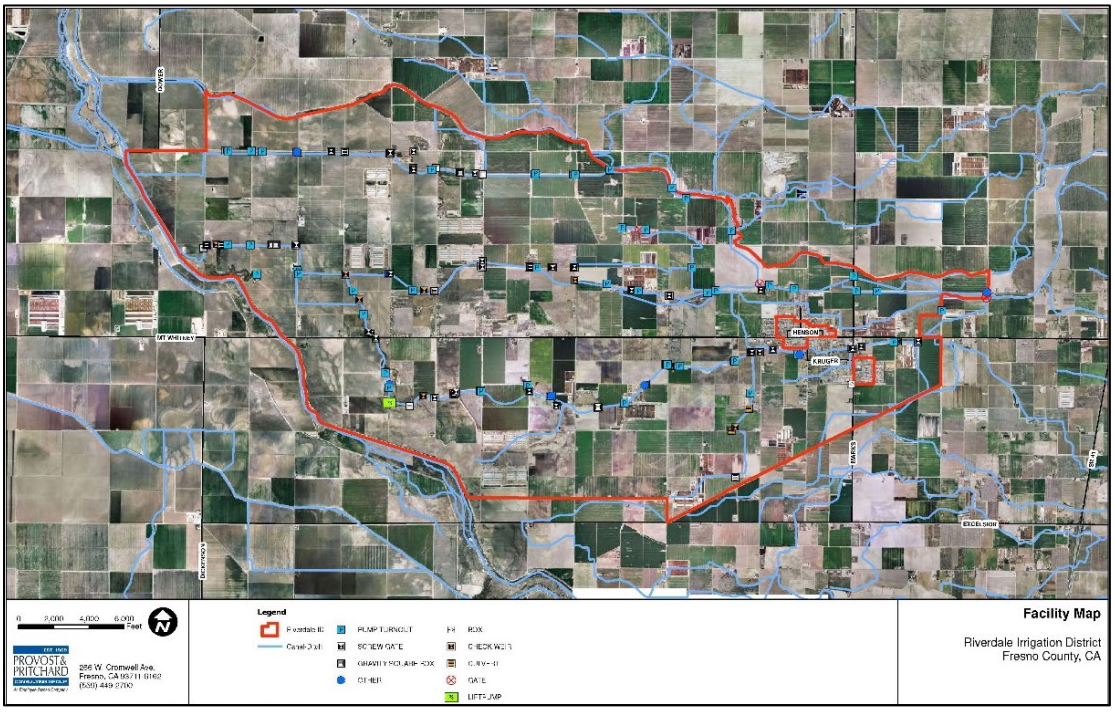


**Figure 5. A 1929 map that identifies the 13 irrigation districts that received water from Kings River. Source: Frank Adams, Bulletin No. 21: Irrigation Districts in California. State of California, Department of Public Works, 1929.**

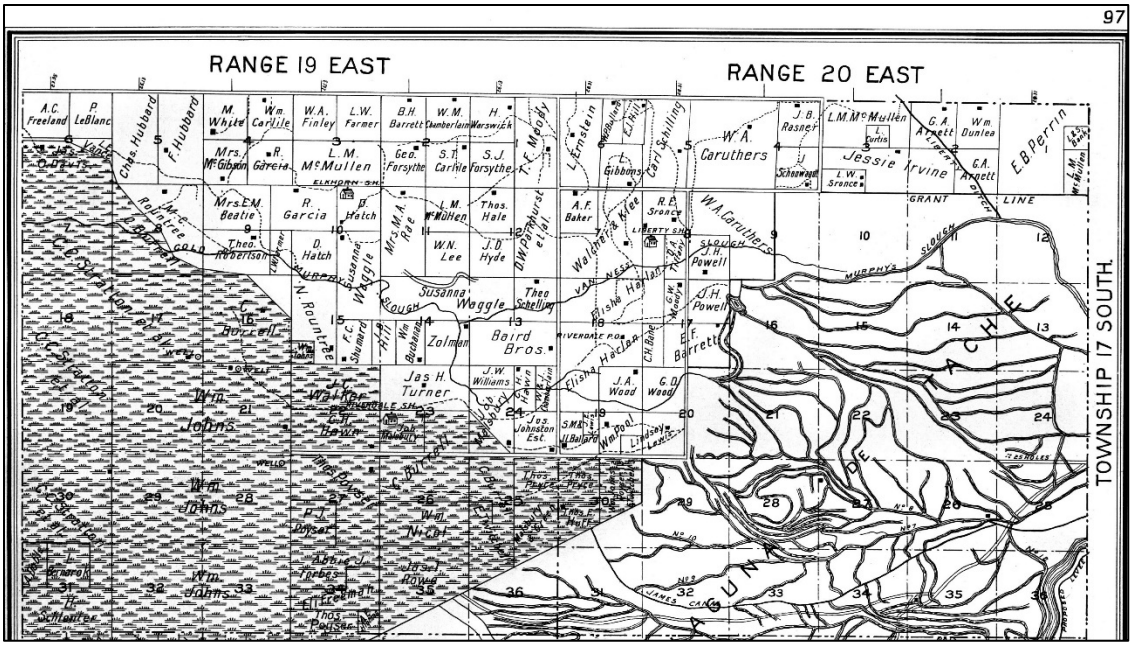


**Figure 6. A portion of the 1891 Official Historical Atlas of Fresno County. Source: Fresno County Public Library.**

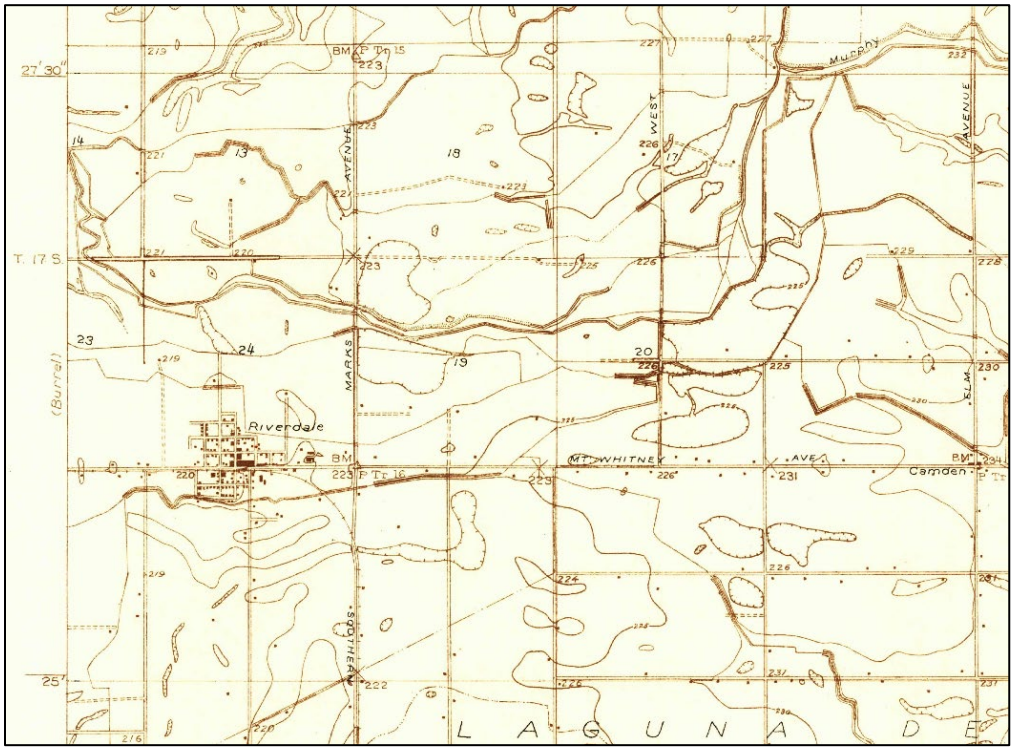


**Figure 7. 1924 USGS topographical map showing the Burrell Ditch sublateral alignment. Source: USGS.**

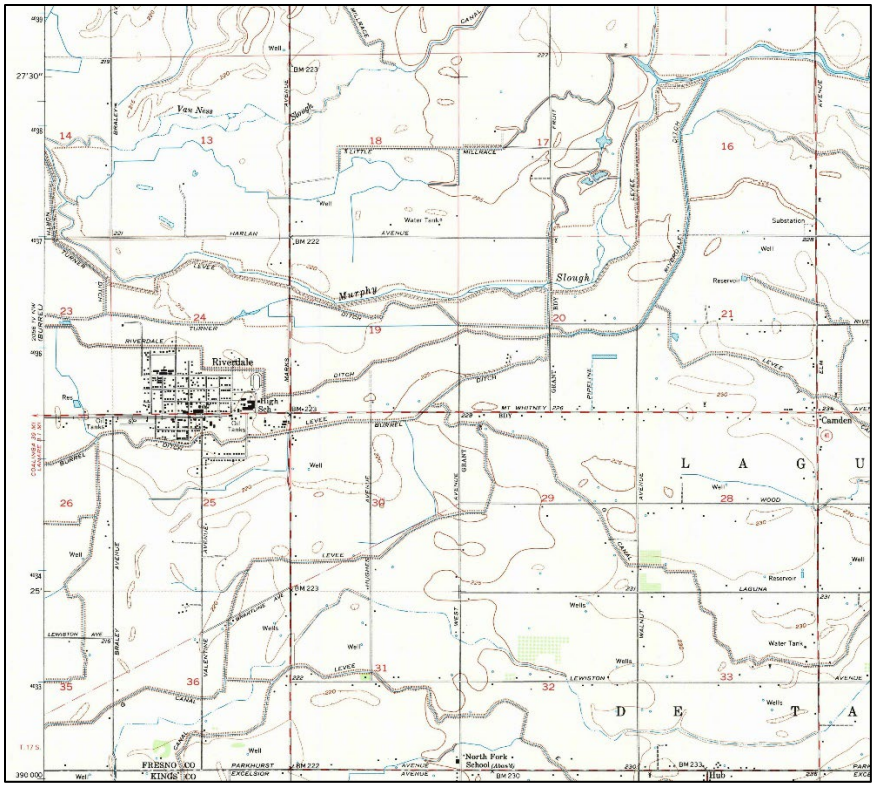


**Figure 8. 1954 USGS topographical map showing the Burrell Ditch sublateral alignment. Source: USGS.**

# 2.5 RESEARCH DESIGN

## 2.5.1 Historical Archaeology: Euro-American

Approaches to historical Euro-American archaeological research relevant to the region have been summarized by Caltrans (1999, 2000, 2007, 2008). These concern the general topics of historical landscapes, agriculture and farming, irrigation (water conveyance systems), and mining.

For archaeological sites, Caltrans has identified an evaluation matrix aiding determinations of eligibility emphasizing potential eligibility under NRHP Criterion D, research potential. The identified research issues include site structure and land-use (lay-out, land use, feature function); economics (self-sufficiency, consumer behavior, wealth indicators); technology and science (innovations, methods); ethnicity and cultural diversity (religion, race); household composition and lifeways (gender, children); and labor relations. Principles useful for determining the research potential of an individual site or feature are conceptualized in terms of the mnemonic AIMS-R, as follows:

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

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

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

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

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

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

Historical structures, most likely to be pertinent to the current APE, in contrast are typically evaluated for NRHP eligibility under Criteria A and/or B, for their associated values with major historical trends or individuals, and C for potential design or engineering importance. Water conveyance systems comprise a particular sub-set of historical structures that warrant discussion in light of the known presence of two such resources within the Project APE.

## 2.5.2 Significant Themes

Water conveyance systems within the Project APE can be evaluated in terms of two NRHP themes, as follows.

**Theme 1: Development of Irrigated Agriculture in the San Joaquin Valley, 1852-1964**

As identified by Caltrans in the *Water Conveyance Systems in California Historic Context Development and Evaluation Procedures,* the "Development of Irrigated Agriculture" is a

historically significant theme or event in the history of California and the Central Valley region. In the years following California's statehood and the gold rush, increasing population created a growing market for agricultural products. The total irrigated acreage in the state grew from 60,000 acres in 1860 to nearly 400,000 acres by 1880, an increase of more than 650 percent, and the San Joaquin Valley contained the highest percentage of that land (approximately 47 percent) (Caltrans 2000). Private water companies, land colonies, mutual water companies, and irrigation districts were established in the mid- to late nineteenth century to build irrigation systems to further develop the state's agriculture industry. Irrigation districts became the most influential of these organizations, especially after state legislation—the Wright Act of 1887—causing irrigation districts to grow in number, power, as well as the actual amount of irrigated land throughout the state. Forty-nine irrigation districts were organized between 1887 and 1896, most of them located between Stockton and Bakersfield. However, by the late 1920s, only seven of the original districts were still in existence, among them the Modesto, Turlock, and Tulare irrigation districts (Caltrans 2000). Under the impetus of increased demand during World War I, agricultural production reached a new peak in 1920. Companies like Pacific Gas & Electric and San Joaquin Valley Light and Power helped finance large irrigation reservoirs to feed district canals in return for the power generated. By 1930, there were 94 active districts in California, and the land watered by these agencies mushroomed to 1.6 million acres (Caltrans 2000). Irrigation districts provided more than 90 percent of the surface water used for irrigation in the San Joaquin Valley before the Central Valley Project came on line in the 1940s (Caltrans 2000). Most were located in the San Joaquin Valley, with the most successful in Modesto, Turlock, Merced, and Fresno.

The period of significance for this theme begins with the earliest developments of irrigated agriculture in the San Joaquin Valley, with the construction of the earliest earthen ditches in Visalia in 1852. Irrigated agriculture continues to be an important industry and influence in the Valley. The period of significance ends in 1968 following recommended guidance for closing a period of significance 50 years ago when activities continued to have importance, but no more specific date can be defined to end the historic period, and there is no justification for exceptional significance to extend the period of significance to an end date within the last 50 years (National Register of Historic Places 1997).

**Associated Property Types: *Water Conveyance Systems***

Following the framework established by Caltrans in *Water Conveyance Systems in California Historic Context Development and Evaluation Procedures*, the water conveyance system is the property type that has the potential to reflect this theme and period. Components and features of water conveyance systems include diversion structures, conduits, flow control devices, cleansing devices, and associated resources and settings. Water Conveyance Systems that are associated with Development of Irrigated Agriculture in the San Joaquin Valley, 1852-1968 will be eligible under NRHP Criterion A/CRHR Criterion 1 for their association with this significant theme if:

- the association with the theme is important--simply because a water conveyance existed during the period of significant is not enough for that system to be eligible;
- the resource retains high overall integrity because of the high number of comparable examples. The property should retain most of the seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association.

- Due to the nature of this type of resource, repairs and modifications are acceptable but not if those modifications substantially modified the resource.

Water Conveyance Systems that are associated with Development of Irrigated Agriculture in the San Joaquin Valley, 1852-1968 will be eligible under NRHP Criterion B/CRHR Criterion 2 for their association with this significant theme if they are:

- associated with an important person's productive life ***and*** they are the property that is most closely associated with that person;
- the resource retains high overall integrity because of the high number of comparable examples. The property should retain most of the seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association.
- Due to the nature of this type of resource, repairs and modifications are acceptable but not if those modifications substantially modified the resource.

Water conveyance systems will rarely be found eligible under Criterion B. In California notable names for which there might be associations with water planning, construction, or engineering include: Anthony Chabot, George Chaffey, Frederick Eaton, William Mulholland, George Maxwell, Robert Marshall, Elwood Mead and C. E. Grunsky (Caltrans 2000).

**Theme 2: Technological Innovation in Irrigated Agriculture in California, 1852-1964**

Caltrans clearly defines the historic context for this theme in the "Legacy of Irrigation Canals" section of the context, while ASM has defined a period of significance based on the Caltrans context (Caltrans 2000). The following is a direct excerpt from the context:

> "The earliest irrigation water conveyances in California were roughly made, earthen ditches to divert water. Techniques used to construct irrigation canals have varied widely during the various periods of California's history, from the relatively short, hand-dug, early masonry and tile ditches, to horse-scraped and hand-dug earthen irrigation ditches, to the large concrete-lined, machine-formed irrigation canals of the middle decades of the twentieth century. Evidence of these changes in scale, methods of construction, and knowledge of engineering are reflected in the remaining physical resources found on the landscape today. Substantial regional variation exists with respect to the adoption and dissemination of the new technologies, such as where and when concrete replaced wood in the engineering works of major irrigation canals. These regional differences can be explained in part by cultural traditions with respect to water management, ownership of water rights, and environmental factors, but economics, politics, and the formation of particular types of irrigation institutions also played a significant role.
>
> "Older canals were often subject to substantial change over time. A common change was to expand the system in order to serve more acreage. Unless pumps are used, irrigation canals rely on gravity to move water, and they can provide service only to land lying below the canal's water level. As irrigated acreage expanded, water companies frequently consolidated smaller ditch systems, moved the point of diversion upstream, and built a high-line canal to service new acreage. In this manner, pioneer canals were often absorbed

into larger systems, frequently by irrigation districts, to pull in more potentially irrigable lands. Segments of earlier irrigation systems might remain largely intact within the larger framework of a new irrigation system, or the changes could be such that the old separate irrigation system would become, in essence, a typical component of a new 1920s irrigation district canal.

"Another important factor is that water is notoriously difficult to control; it can be, and frequently is, an engine of destruction. Flood waters, for example, repeatedly overwhelmed the flimsy wooden control structures built on nineteenth and early-twentieth century irrigation systems in the San Joaquin Valley. Canals required periodic maintenance and were also often altered as a result of improvements designed to counteract the normal erosion that occurs from water moving through earth-lined canals. Improvements to stabilize canals ranged from realigning segments of the channel, to lining ditches or putting them in pipe, to replacement of checks, drops, culverts, or other regulation structures. These improvements were sometimes carried out system-wide, sometimes on a piecemeal basis. In light of the proclivity for change and the wide diversity of canal materials and modes of construction, adequate documentary research is essential to understand the evolution of an important irrigation canal and to assess its integrity" (Caltrans 2000).

The period of significance for this theme begins with the earliest developments of irrigated agriculture in the San Joaquin Valley, with the construction of the earliest earthen ditches in Visalia in 1852. Technological innovations in agricultural irrigation are ongoing, but the period of significance ends in 1968 following recommended guidance for closing a period of significance 50 years ago when activities continued to have importance, but no more specific date can be defined to end the historic period, and there is no justification for exceptional significance to extend the period of significance to an end date within the last 50 years (National Register of Historic Places 1997).

**Associated Property Types: *Water Conveyance Systems***

Following the framework established by Caltrans in *Water Conveyance Systems in California Historic Context Development and Evaluation Procedures*, the water conveyance system is the property type that has the potential to reflect this theme and period. Components and features of water conveyance systems include diversion structures, conduits, flow control devices, cleansing devices, and associated resources and settings. Water Conveyance Systems that are associated with Technological Innovation in Irrigated Agriculture in California, 1852-1968 will be eligible under NRHP Criterion C/CRHR Criterion 3 for their association with this significant theme if they are/have:

- unique values;
- the best or good example of the property type as one that possess distinctive characteristics of the type and through those characteristics clearly illustrates at least one of the following;
    - the pattern of features common to a particular class of resources
    - the individuality or variation of features that occurs within the class;
    - the evolution of that class; or

    - the transition between classes of resources
- the earliest, best preserved, largest, or sole surviving example of particular types of water conveyance systems;
- a design innovation of evolutionary trends in engineering
- designed by a figure of acknowledged greatness in the field or by someone unknown whose workmanship is distinguishable from others by its style and quality ***and*** be a good example of that designer's work;
- the resource retains high overall integrity because of the high number of comparable examples. The property should retain most of the seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association.

A large water conveyance system with multiple components will often be evaluated as a district rather than as a single property. An eligible historic district must possess a significant concentration or linkage of resources that are united historically or aesthetically by plan or physical development. It should be a significant and distinguishable entity, although its components need not possess individual distinction (Caltrans 2000).

# 3. ARCHIVAL RECORDS SEARCH

## 3.1 ARCHIVAL RECORDS SEARCH

In order to determine whether the Project area had been previously surveyed for cultural resources, and/or whether any such resources were known to exist on any of them, an archival records search was conducted by the staff of the Southern San Joaquin Valley Information Center (IC) on 17 April 2023, at the request ASM Affiliates. The records search was completed to determine: (i) if prehistoric or historical archaeological sites had previously been recorded within the Project area; (ii) if the Project area had been systematically surveyed by archaeologists prior to the initiation of this field study; and/or (iii) whether the region of the field project was known to contain archaeological sites and to thereby be archaeologically sensitive. Records examined included archaeological site files and maps, the NRHP, Historic Property Data File, California Inventory of Historic Resources, and the California Points of Historic Interest.

According to the IC records search (Confidential Appendix A), one previous survey (FR-03054) had covered a portion of the Project area (Table 1) and that one historical resource (P-10-007262/ CA-FRE-3931H, Burrell Ditch) was known to exist within it (Table 2). Four previous surveys have been conducted in a 0.5-mi radius of the Project (Table 3) and these surveys have resulted in the identification of the two resources: the Southern Pacific Railroad (P-10-003930/CA-FRE-3109H); and the Riverdale Ditch (P-10-007056) (Table 4).

**Table 1. Survey Reports within the Project Area**

| Report No. | Year | Author (s)/Affiliation | Title |
|---|---|---|---|
| FR-03054 | 2022 | Granado, Gabriel, Good, Cheyenne F., Yates, Timothy, Long, Amber, and Hoover, Anna / Applied EarthWorks, Inc. | Cultural Resource Inventory and Built Environment Evaluation for Willow View Apartments, Riverdale, Fresno County, California |

**Table 2. Resources within the Project Area.**

| Primary # | Type | Description |
|---|---|---|
| P-10-007262/ CA-FRE-3931H | Structure | Burrell Ditch |

**Table 3. Survey Reports within 0.5-mi of the Project Area**

| Report No. | Year | Author (s)/Affiliation | Title |
|---|---|---|---|
| FR-00974 | 1984 | Wren, Donald G./ individual consultant | Love Estates Tract # 3641 EA 2167 |
| FR-02563 | 2013 | Franco, Lalo, Brum, Shana, and Scoggin, Bill/ Santa Rosa Rancheria Cultural Department | Riverdale Native American Site Visit and Survey |

| Report No. | Year | Author (s)/Affiliation | Title |
|---|---|---|---|
| FR-02879 | 2017 | Lloyd, Jay B., Baloian, Randy, and Wingate, Ernest / Applied EarthWorks, Inc. | Cultural Resource Inventory and Evaluation for the Riverdale Wastewater Treatment Plant Expansion Project, Fresno County, California |
| FR-02922 | 2012 | Loftus, Shannon L. and Orfila, Rebecca S./ SLL Consulting | Cultural Resources Assessment: 1.29 Acres, Riverdale Well No. 5 Riverdale, Fresno County, California |

**Table 4. Resources within 0.5-mi of the Project Area.**

| Primary # | Type | Description |
|---|---|---|
| P-10-003930 | Segment | Segments of Southern Pacific railroad |
| P-10-007056 | Structure | Riverside ditch |

# 3.2 TRIBAL OUTREACH

A *Sacred Lands File* request was completed by the NAHC on 18 May 2023. The results of the search were negative for tribal cultural resources or sacred sites in the vicinity of the APE. Outreach letters were sent to all tribes listed on the NAHC-provided contact list on 25 April 2023, with follow-up emails sent on 11 August 2023.

One response was received from the Santa Rosa Rancheria Tachi-Yokut Tribe on 28 June 2023 with the following requests:

- To have the survey results sent to us upon completion;
- To have an *Sacred Lands File* search done through the NAHC and to have the results sent to the Tribe as well;
- To be retained for a cultural presentation for all construction staff; and,
- To have a tribal monitor onsite for all ground disturbance related to the project.

The client was notified about the response and requests to continue consultation on 28 June 2023 and ASM responded to Santa Rosa Rancheria Tachi-Yokut Tribe that the results of the report would be made available once completed.

No additional responses were received.

# 4. METHODS AND RESULTS

## 4.1 FIELD METHODS

An intensive Class III inventor/Phase I survey of the Riverdale PUD Distribution Improvements Project APE was conducted by ASM Associate Archaeologist Robert Azpitarte, B.A., with assistance in the field from ASM Assistant Archaeologist Maria Silva, B.A. The survey was completed on 24 April 2023. The field methods employed included intensive pedestrian examination of the ground surface for evidence of archaeological sites in the form of artifacts, surface features (such as bedrock mortars, historical mining equipment), and archaeological indicators (e.g., organically enriched midden soil, burnt animal bone); the identification and location of any discovered sites, should they be present; tabulation and recording of surface diagnostic artifacts; site sketch mapping; preliminary evaluation of site integrity; and site recording, following the California Office of Historic Preservation Instructions for Recording Historic Resources and the BLM 8100 Manual, using DPR 523 forms.

The entirety of the approximately 20-ac Project APE, including a 100-ft buffer, was intensively surveyed.

## 4.2 SURVEY RESULTS

The Project APE follows existing surface roads and the Burrell Ditch in Riverdale, and it is surrounded by suburban residential tract homes and agricultural fields (Figures 9 and 10) and is bisected by an existing irrigation ditch: Burrell Ditch (Figures11 and 12). The Well 8 site is within a block that is bounded within West Mt. Whitney Avenue on the north, South Feland Avenue to the west, S. Marks Avenue to the east, and W. Kruger Avenue on the south. It is immediately bordered by a school on the northwest, a church on the north, the Portuguese Hall to the northeast, a residence on the east, an agricultural field to the southeast, and a residential housing tract in the south and southwest. The Burrell Ditch forms the southernmost portion of the well site APE. The pipeline will travel west along the Burrell Ditch to a tie-in on S. Feland Ave.

Vegetation within the APE consisted mostly of invasive weeds and seasonal grasses in otherwise undeveloped roadside areas, along with various ornamental trees. In residential areas, lawns and invasive weeds were present, along with introduced trees and shrubbery. The orchard on the south side of Wood Avenue consisted of mature almond trees. Due to the presence of often thick grasses, ground surface visibility varied from excellent to poor within the proposed APE. Therefore, special attention was paid to any exposed ground surface areas along the right-of-way and in other spots where the better ground surface visibility was improved. Survey spacing was reduced to 5-m in areas of poor visibility. The bare road shoulders, present within much of the Project area, provided the best surface visibility.

One previously recorded resource was identified and recorded within the project area: P-10-007262/CA-FRE-3931H (Burrell Ditch). This structure was constructed in 1890 and is associated with one of numerous historic water conveyance systems that are found throughout the area dating to the late nineteenth and early twentieth centuries. This resource was relocated during the current

project. An updated DPR site form for resource P-10-007262/CA-FRE-3931H (Burrell Ditch) is available in Confidential Appendix B.

No other cultural resources of any kind were identified during the Project APE survey.

## 4.2.1 Previously Recorded Resources

### P-10-007262/CA-FRE-3931H UPDATE

Built environment resource P-10-007262 is an irrigation canal known as the Burrell Ditch. The previously recorded segment of the canal measures approximately 810-ft in length heading west from South Marks Avenue. It is recorded as measuring 30-ft wide at the top with a 15-ft wide bed and varying between 9-ft and 10-ft in depth. This canal is situated at an elevation between 214-ft amsl on the west end and 216-ft amsl on the east. The resource is in good condition.

The resource is a late 19th century irrigation canal known as the Burrell Ditch and continues to function as an integral component of the current mid-20th century system. As noted above, the initial manifestation this canal segment within the APE was as early as 1890. According to the 2021 Applied Earthworks site record for the Burrell Ditch, it extends 7.2-mi southwest from its' head gate on the Murphy Slough. The ditch was named after local businessman Cuthbert Burrell, who came to the area in the mid-1800s, and by 1873, was one of the largest 24 landowners in Fresno County. He organized the Burrell Ditch Company in the late 1880s, and the 7-mi ditch was completed in 1890. The Burrell Ditch was absorbed into the Riverdale Irrigation District in 1920 (Yates & Good 2021).

Viewed as a water conveyance system, the path of the canal has been altered multiple times since initial construction and components of the canal (i.e., weirs, sluice gates, slide gates, standpipes, and culvert crossings, etc.) have been upgraded. The recorded segment however follows the original canal path.

The canal was originally recorded by Applied EarthWorks in 2021 as part of a built environment survey. In general, the canal is similar in construction to other irrigation canals of the late nineteenth and early twentieth centuries in that it is an uncovered earthen ditch cut with short and moderately steep side walls. Dirt roads run parallel to the canal on either side for maintenance. Basic slide gates and check structures are present to distribute water throughout a network of ancillary ditches.


**Figure 9. Overview of Project area showing existing infrastructure, looking east.**


**Figure 10. Overview of Project area showing existing infrastructure, looking northeast.**

**Figure 11. Overview of Project area showing Burrell Ditch, looking east.**


**Figure 12. Overview of bridge on S. Feland Avenue crossing the Burrell Ditch (P-10-007262), looking northwest.**

# 5. SUMMARY AND RECOMMENDATIONS

An intensive Class III archaeological inventory/Phase I survey was conducted for the Riverdale PUD Distribution Improvement Project APE, Fresno County, California. A records search was conducted at the Southern San Joaquin Valley Archaeological Information Center, California State University, Bakersfield. This indicated that one previous study had taken place within the APE and that one historic cultural resource was known to exist within it (P-10-007262/CA-FRE-003931H). A records search of the NAHC *Sacred Lands Files* was also conducted and contacts with designated tribal organizations were also completed. No tribal cultural resources or sacred sites have been identified within the APE.

The Phase I survey fieldwork was conducted on 24 April 2023, with parallel transects spaced at 15-meter intervals walked across the entire project area and bisecting dirt roads. No new cultural resources of any kind were identified within the Project APE. The site record for the segment of P-10-007262, the Burrell Ditch, that was located within the APE was updated and the resource was evaluated.

## 5.1 P-10-007262/CA-FRE-003931 (Burrell Ditch)

In 2021, Applied EarthWorks, Inc. (*Æ*) evaluated the 7.2-mi Burrell Ditch under CEQA for a proposed project that potentially affected 810-ft segment of the Burrell Ditch and a portion of the Burrell Ditch extension or lateral for a residential project that piped a portion of the ditch and ditch extension/lateral. While *Æ* did not survey and record the 7.2-mi Burrell Ditch or the ditch extension/lateral, *Æ* recommended that the Burrell Ditch is not eligible for listing in the CRHR based on the following findings:

> **Criterion 1.** The Burrell Ditch's construction and early use was part of a larger, historically important pattern of irrigation and canal development in Fresno County and other parts of the San Joaquin Valley region. This pattern of development played an essential role in the growth of the region's agricultural economy. However, this development was a widespread element of the region's late nineteenth- and early-twentieth-century history. Therefore, direct association with irrigation development is too commonplace an association to confer significance on a ditch under CRHR Criterion 1.
>
> The segment of the Burrell Ditch is not an important representation of this pattern of events. Research yielded no evidence that the Burrell Ditch functioned as an essential element of a historically significant early irrigation system or a significant twentieth-century water system. As one of thousands of canals and ditches within the irrigation infrastructure developed for regional agriculture, the Burrell Ditch's construction and early use, as well as its long-term use over the course of the twentieth century, do not meet the threshold of significance necessary for eligibility under Criterion 1.
>
> **Criterion 2.** The Burrell Ditch was constructed by the Burrell Ditch Company as part of the wide-reaching economic activities undertaken by Cuthbert Burrell, one of the leading landowners and entrepreneurs of the area during the latter part of the nineteenth century. However, to be eligible for CRHR listing under Criterion 2, a non-residential property, such

as the Burrell Ditch, must be associated with the productive life of a person who was determined to be significant in the past and must have functioned as a place where the historically significant person performed the work or other activity for which she or he is primarily known.

The ditch was constructed late in Burrell's life in a locale where he did not reside. Although Burrell clearly invested in the ditch's development, research yielded no evidence that he spent notable time on site, constructing or operating the ditch, or irrigating adjacent lands himself. Burrell's role in the development and operation of the irrigation ditch did not involve the kind of place-bound relationship necessary to confer significance on the resource. Research did not reveal any other individuals associated with the ditch who could potentially be considered historically significant. The segment of the Burrell Ditch does not, therefore, meet the threshold of significance necessary for eligibility under Criterion 2.

**Criterion 3.** The segment of the Burrell Ditch is not significant for its type, period, or method of construction. Research did not reveal any evidence that the ditch was the work of a master engineer or builder, and its physical attributes do not suggest that it represents the work of a master. The Burrell Ditch traverses level terrain that did not pose noteworthy engineering challenges for the Burrell Ditch Company. It incorporates typical features of the type, including check structures, gates, pipes, and secondary field channels. As an earthen ditch, entirely utilitarian in design, and purposed solely for water conveyance, the Burrell Ditch is a commonplace element of the county's vast network of irrigation infrastructure. For these reasons, the segment of the Burrell Ditch does not meet the threshold of significance necessary for eligibility under Criterion 3.

**Criterion 4.** Criterion 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. The history of Fresno County irrigation development is well documented. Structural analysis of the segment of the Burrell Ditch is unlikely to yield information not readily available through historical research. Additionally, due to ongoing maintenance and improvements, the soils of the ditch are highly disturbed. As such, it is unlikely that archaeologists would uncover any objects or artifacts associated with the ditch that would yield important historical information. For these reasons, the segment of the Burrell Ditch does not meet the threshold necessary for eligibility under Criterion 4.

Based on the information and evaluation presented above, the segment of the Burrell Ditch, that abuts the Project area, is not significant under any of the CRHR eligibility criteria. Therefore, *Æ* recommends that the segment of the Burrell Ditch is not eligible for listing in the CRHR and is not considered a historical resource for the purposes of the California Environmental Quality Act (Applied EarthWorks, Inc. 2021).

The brief historic context prepared by *Æ* as the foundation for evaluation of the ditch under Criterion 1 did not develop the themes of Agriculture and Community Development. ASM differs on the analysis under Criterion 1, which is detailed below. However, ASM largely concurs with *Æ* (2021) on Criterion 2-4 as detailed above with an additional qualification for Criterion 3 below.

**Criterion A/1.** Cuthbert Burrell constructed the Burrell Ditch in 1890 as a secondary ditch of the Riverdale Ditch. The Riverdale Ditch was one of the two main ditches constructed early in 1875 for the irrigation system of the Riverdale Ditch Company (later Riverdale Irrigation District). The ditches represent the historical development of irrigation systems throughout California in the late nineteenth century when individual farmers constructed their own ditches or worked with their neighbors to build them. Those efforts grew into water collectives following the Wright Act of 1887 when farmers and businessmen increasingly pooled their resources and constructed larger irrigation systems, merged with other systems, and added new ditches and laterals to serve a consortium of farmers. The Burrell Ditch is potentially eligible under the theme of Agriculture and Community Development for local significance as a secondary ditch of the main Riverdale Ditch. The community of Riverdale began in 1878 when the population had grown large enough to warrant a post office. The Riverdale Irrigation Company/District conveyed water for agriculture that aided in development of the town. As a lateral that conveyed water from the Riverdale Ditch and not a main ditch that conveyed water from the Kings River, it is a secondary linear feature. Therefore, its potential historical significance is not as an individual historical resource but as a potential contributing feature of the Riverdale irrigation system. The Riverdale Irrigation District (1920) expanded over time as needed to serve its customers, which included the addition of the sublateral of the Burrell Ditch/Lateral between 1924 and 1954. The irrigation system of the Riverside Irrigation District is potentially historically significant because it, like other irrigation districts and water companies in California, laid the foundation for community development through an agricultural water supply to the greater Riverdale area. While the Burrell Ditch/Lateral and its sublateral that extends through the Project area are part of the Riverdale Irrigation District, the Burrell Ditch/Lateral is a secondary linear feature and its lateral extension through the Project area (essentially a sublateral of the overall system) was constructed later in the history of the Riverdale Irrigation District.

As part of this Project, ASM was not tasked with surveying or evaluating the entire 7.2-mi of the Burrell Ditch/Lateral and is only evaluating the sublateral of the Burrell Ditch/Lateral through the Project area. The sublateral of the Burrell Ditch within the Project area is not associated with the earliest alignment of the Burrell Ditch and therefore it is not individually eligible under NRHP/CRHR Criterion A/1. Instead, its potential historical significance is as a contributing segment to the potentially eligible historic district/linear resources of the Riverdale Irrigation District's irrigation system. The Burrell Ditch sublateral through the Project area was constructed later in Riverdale Irrigation Districts history and it is also a minor linear feature that diverts water from the Burrell Ditch/Lateral. As a minor feature of the system, it does not adequately represent the historical significance of the original 30.5-mi Riverdale Ditch Company/Irrigation District system that had been constructed by 1920 when the ditch company became an irrigation district to be considered a contributing segment. ASM recommends that the Burrell Ditch/Lateral sublateral does not retain a strong enough association with Riverdale Ditch Company/Irrigation District system to be a potential contributor to a historic district/linear resource under NRHP/CRHR Criterion A/1.

**Criterion C/3.** ASM finds that the extension of the Burrell Ditch within the Project area is not eligible under Criterion C/3 because the segment ASM recorded does not retain dimensions typical of a canal constructed during the late nineteenth century in California. The extension

of the Burrell Ditch within the Project area is not associated with the Burrell Ditch as it was constructed in 1890. Instead, its potential historical significance is as part of the Riverdale Irrigation District because it was constructed as part of the larger District distribution system between 1924 and 1954 as an extension or sublateral. The Burrell Ditch extension/sublateral retains a design typical of canal and ditch projects constructed during this period across California. The screw gate that diverts water from the Burrell Ditch into the Burrell Ditch extension is a typical manual hoist gate. Its design, method, materials, and technology are not unique for the period. Therefore, ASM recommends the Burrell Ditch/Lateral extension (lateral) is not eligible under NRHP/CRHR Criterion C/3.

ASM recommends that the Burrell Ditch/Lateral extension (lateral) is not eligible for listing in the NRHP or CRHR under Criteria A/1-D/4 based on the criteria and pertinent integrity assessment described above.

## 5.2 RECOMMENDATIONS

An intensive Phase I survey/Class III inventory demonstrated that the Riverdale PUD Distribution Improvement Project APE lacks historic properties or significant archaeological and historical resources. The proposed Project therefore does not have the potential to result in adverse impacts or effects to significant historical resources or historic properties. In the unlikely event that cultural resources are encountered during project construction or use, however, it is recommended that an archaeologist be contacted to assess the discovery. No further archaeological work is recommended at this time.

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# CONFIDENTIAL APPENDICES